DRAFT ENVIRONMENTAL IMPACT REPORT

FOR THE

SCANNELL INDUSTRIAL PROJECT
(SCH# 2025020776)

JUNE 2026

Prepared for:

City of Modesto-Planning Division
1010 10th Street
Modesto, CA 95354

Prepared by:

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De Novo Planning Group

A Land Use Planning, Design, and Environmental Firm

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DRAFT EIR

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INTRODUCTION

The City of Modesto, as the lead agency, determined that the proposed project, Scannell Industrial Project is a "project" within the definition of CEQA. CEQA requires the preparation of an environmental impact report (EIR) prior to approving any project, which may have a significant impact on the environment. For the purposes of CEQA, the term "project" refers to the whole of an action, which has the potential for resulting in a direct physical change or a reasonably foreseeable indirect physical change in the environment (CEQA Guidelines Section 15378[a]).

The EIR contains a description of the Project, description of the environmental setting, identification of Project impacts, and mitigation measures for impacts found to be significant, as well as an analysis of Project alternatives, identification of significant irreversible environmental changes, growth-inducing impacts, and cumulative impacts. This EIR identifies issues determined to have no impact or a less than significant impact, and provides detailed analysis of potentially significant and significant impacts. Comments received in response to the Notice of Preparation (NOP) were considered in preparing the analysis in this EIR.

PROJECT DESCRIPTION

The Scannell Industrial Project (proposed Project) consists of approximately 145 acres located at the northwest corner of Kiernan Avenue and Dale Road intersection, within the unincorporated Community of Salida. The Project site is located within the Stanislaus County Salida Community Plan (SCP) and is zoned for development as Salida Community Plan Industrial/Business Park (SCP-IBP) and Salida Community Plan Planned Industrial (SCP-PI). The area is also within the City of Modesto General Plan Planning Area with a designation of Salida Community Plan (SCP). The Project site is currently located outside the City of Modesto Sphere of Influence (SOI) and would require an SOI amendment, annexation, and prezoning as part of the Project entitlements.

The proposed Project will result in the construction of up to 2,503,230 square feet (maximum development scenario) of warehouse, distribution, and manufacturing space. In addition, a small 2–3-acre retail site is proposed at the corner of Dale Road and Kiernan Avenue (SR 219) to provide retail service to the project. The proposed Project includes a Tentative Map that would create eight parcels for the industrial and retail buildings.

The applicant proposes to construct seven industrial buildings. The warehouse buildings would be single-story, with a maximum height of 45 feet. For the analysis, future uses are anticipated to be evenly split between manufacturing, warehouse, and distribution uses. The end user is not known currently, but cold storage is anticipated to occupy between 0-20% of the total space.

The projected project phasing is currently expected to be four (4) phases of development over approximately ten (10) years. Each phase would include removal of existing almond trees or ground crops (based on current farming practices). Improvements to serve each phase could include, but would not be limited to, any required off-site street improvements and extension of utilities, site grading, construction of underground utilities on-site (water, sewer, and dry utilities), storm

drainage and storm drainage retention, paving, landscaping, lighting, and construction of buildings. As the project develops, the timing, size, and number of phases may change based on market conditions.

The project would operate continuously, and the site would be active 24 hours a day, seven days a week. It is estimated that the warehouse facilities would provide approximately 1,000 employment opportunities, based on the employment generation assumptions in the Salida Community Plan.

The 2–3-acre retail site does not have a proposed end use, but a variety of commercial retail uses allowed under the City's commercial land use and zoning standards could occupy the retail site. Based on the size of the parcel, it is expected that the end user would be a local serving retail as opposed to regional shopping, and examples of such uses include a gas station, and possibly a small restaurant use.

The principal objective of the proposed Project is to develop a multiple phase and well-planned industrial project with the potential for warehouse, distribution, and manufacturing uses with onsite commercial retail that will attract businesses to the City of Modesto and provide for local employment opportunities.

AREAS OF CONTROVERSY AND ISSUES TO BE RESOLVED

This Draft EIR addresses environmental impacts associated with the proposed Project that are known to the City of Modesto, were raised during the NOP process, or raised during preparation of the Draft EIR. This Draft EIR discusses potentially significant impacts associated with aesthetics and visual resources, agricultural resources, air quality, biological resources, cultural and tribal resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and population, noise, public services, transportation and circulation, and utilities.

The City of Modesto received written comment letters on the NOP for the proposed Project. Copies of those letters are provided in Appendix A of this Draft EIR. The commenting agency/citizen is provided below. The City also held a public scoping meeting on March 20, 2025. Verbal comments were provided at that scoping meeting and are included in Appendix A.

- Pricilla Torres-Fuentes, Native American Heritage Commission (2/25/2025);
- Ninos Shamoon/Yama Noorzai, Stanislaus County Department of Environmental Resources (3/6/2025);
- Lauren Q Evans, Adams Broadwell Joseph & Cardoza (3/12/2025);
- Leonard Powell, Salida Resident (3/19/2025);
- Plan Review Team Land Management/Matthieu McNair, Pacific Gas & Electric (3/20/2025);
- Anita Young, Modesto Resident (3/24/2025);
- Michael Corder, San Joaquin Valley Air Pollution Control District (3/24/2025);
- Duane Wolterstorff, Modesto City Schools (3/25/2025);
- Alaura McGuire, Adams Broadwell Joseph & Cardoza (3/27/2025);
- David Schwarz, William D Ross (3/27/2025);

- Garry Pearson, Resident Riverbank (3/27/2025);
- Julie Vance/John Riede, California Department of Fish and Wildlife (3/27/2025);
- Peter Minkel, Central Valley Regional Water Quality Control Board (3/27/2025);
- Sara Lytle-Pinhey, Local Agency Formation Commission (3/27/2025);
- Tina Rocha, Stanislaus County Chief Executive Officer (3/27/2025).

ALTERNATIVES TO THE PROPOSED PROJECT

The CEQA Guidelines require an EIR to describe a reasonable range of alternatives to the Project or to the location of the Project which would reduce or avoid significant impacts, and which could feasibly accomplish the basic objectives of the proposed Project. Five alternatives to the proposed Project were developed based on input from City staff and the technical analysis performed to identify the environmental effects of the proposed Project. The alternatives analyzed in this EIR include the following five alternatives in addition to the proposed Project.

- **Alternative 1: No Project (No Build).** Under this alternative, development of the Project site would not occur, and the Project site would remain in its current existing condition.
- **Alternative 2: No Project/Existing SCP Designations.** Under this alternative, the Project site would develop under the Salida Community Plan's Planned Industrial and Business Park zones, and the Project site would not be annexed to the City of Modesto.
- **Alternative 3: Reduced Intensity.** Under this alternative, the Project site would be developed with the same types of warehouse, distribution, and manufacturing uses with onsite commercial retail uses as described in the Project Description, but the commercial and industrial square footage would decrease by 25 percent, and the amount of developed land would decrease by 25 percent.
- **Alternative 4: Offsite Location:** Under this alternative, the proposed Project would be relocated to a similarly-sized alternate site within the Salida Community Plan Area, on an area zoned for Planned Industrial uses. However, the Project would not annex into the City of Modesto.
- **Alternative 5: No Commercial.** Under this alternative, the Project site would be developed with the same types of warehouse, distribution, and manufacturing uses as described in the Project Description, but the retail site would be eliminated and the 3-acre retail parcel at the corner of Kiernan Avenue and Dale Road would be left open and undeveloped.

CEQA requires that an environmentally superior alternative be identified among the alternatives that are analyzed in the EIR. If the No Project (No Build) Alternative is the environmentally superior alternative, an EIR must also identify an environmentally superior alternative among the other alternatives (CEQA Guidelines Section 15126.6(e)(2)). The environmentally superior alternative is that alternative with the least adverse environmental impacts when compared to the proposed Project.

The following table presents a comparison of the alternative Project impacts with those of the proposed Project. As shown in the table, the No Project (No Build) Alternative is the environmentally superior alternative. However, as required by CEQA, when the No Project (No Build) Alternative is

the environmentally superior alternative, the environmentally superior alternative among the others must be identified. Among the other remaining alternatives, Alternative 3 results in fewer environmental impacts than Alternative 5 because it reduces the total site area by 25 percent, resulting in lesser impacts across all topical areas, while Alternative 5 develops the same 145-acre footprint as the proposed Project and results in equal or similar impacts in several topical areas, including Aesthetics, Agriculture, Biological Resources, Cultural Resources, Geology, Hydrology, Public Services, and Utilities. Therefore, Alternative 3, Reduced Intensity, is identified as the environmentally superior alternative among the non-No-Project alternatives.

TABLE ES-1: COMPARISON SUMMARY OF ALTERNATIVES TO THE PROPOSED PROJECT

ENVIRONMENTAL ISSUE	*PROPOSED PROJECT*	*ALTERNATIVE 1: NO PROJECT / NO BUILD*	*ALTERNATIVE 2: NO PROJECT / EXISTING SCP DESIGNATIONS*	*ALTERNATIVE 3: REDUCED INTENSITY*	*ALTERNATIVE 4: OFFSITE LOCATION*	*ALTERNATIVE 5: NO COMMERCIAL*
Aesthetics and Visual Resources	SU	Less (Best)	Greater	Less (2nd Best)	Equal/ Similar	Equal/ Similar
Agricultural Resources	SU	Less (Best)	Equal/ Similar	Less (2nd Best)	Less	Equal/ Similar
Air Quality	SU	Less (Best)	Greater	Less (2nd Best)	Greater	Less
Biological Resources	LTSMM	Less (Best)	Equal/ Similar	Less (2nd Best)	Equal/ Similar	Equal/ Similar
Cultural and Tribal Resources	LTSMM	Less (Best)	Equal/ Similar	Less (2nd Best)	Equal/ Similar	Equal/ Similar
Geology and Soils	LTSMM	Less (Best)	Equal/ Similar	Less (2nd Best)	Equal/ Similar	Equal/ Similar
Greenhouse Gases, Climate Change and Energy	LTS	Less (Best)	Greater	Less (2nd Best)	Greater	Less
Hazards and Hazardous Materials	LTSMM	Less (Best)	Greater	Less (2nd Best)	Equal/ Similar	Less
Hydrology and Water Quality	LTSMM	Less (Best)	Equal/ Similar	Less (2nd Best)	Equal/ Similar	Equal/ Similar
Land Use and Population	LTS	Less (Best)	Less	Less (2nd Best)	Greater	Less
Noise	SU	Less (Best)	Greater	Less (2nd Best)	Greater	Less
Public Services	LTS	Less (Best)	Greater	Less (2nd Best)	Equal/ Similar	Equal/ Similar
Transportation and Circulation	SU	Less (Best)	Greater	Less (2nd Best)	Equal/ Similar	Less
Utilities and Service Systems	LTSMM	Less (Best)	Greater	Less (2nd Best)	Equal/ Similar	Equal/ Similar

SU = AT LEAST ONE IMPACT WAS FOUND TO BE SIGNIFICANT AND UNAVOIDABLE.

LTSMM = AT LEAST ONE IMPACT WAS FOUND TO BE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

LTS = ALL IMPACTS WERE FOUND TO BE LESS THAN SIGNIFICANT.

GREATER = GREATER IMPACT THAN THAT OF THE PROPOSED PROJECT

LESS = LESS IMPACT THAN THAT OF THE PROPOSED PROJECT

EQUAL/SIMILAR = NO SUBSTANTIAL CHANGE IN IMPACT FROM THAT OF THE PROPOSED PROJECT

SUMMARY OF IMPACTS AND MITIGATION MEASURES

In accordance with the CEQA Guidelines, this EIR focuses on the significant effects on the environment. The CEQA Guidelines defines a significant effect as a substantial adverse change in the physical conditions which exist in the area affected by the proposed Project. A less than significant effect is one in which there is no long or short-term significant adverse change in environmental conditions. Some impacts are reduced to a less than significant level with the implementation of mitigation measures and/or compliance with regulations.

Section 15126.2(c) of the CEQA Guidelines requires that an EIR describe any significant impacts that cannot be avoided, even with the implementation of feasible mitigation measures. The environmental effects of the proposed Project on various aspects of the environment are discussed in detail in Sections 3.1 through 3.14. Project-specific and cumulative impacts that cannot be avoided if the project is approved as proposed are identified below. Prior to certifying this EIR, the City Council will be required to adopt Findings of Fact and a Statement of Overriding Considerations addressing each of the significant and unavoidable impacts identified in this EIR, in accordance with Public Resources Code Section 21081 and CEQA Guidelines Section 15093.

- **Impact 3.1-3:** Project implementation may, substantially degrade the existing visual character or quality of public views of the site and its surroundings in a non-urbanized area. (Public views are those that are experienced from publicly accessible vantage point.)
- **Impact 3.1-6:** The proposed Project, in combination with other cumulative development, could substantially degrade the existing visual character or quality of public views of the site and its surroundings .
- **Impact 3.2-1:** The proposed Project would result in the conversion of Farmlands, including Prime Farmland and Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural uses.
- **Impact 3.2-4** Cumulative Impacts Related to Agricultural Resources
- **Impact 3.3-1:** Project operation would conflict with or obstruct implementation of the District's air quality plan.
- **Impact 3.3-2:** The proposed Project would result in a cumulatively considerable net increase of a criteria pollutant for which the region is in nonattainment under an applicable federal or State ambient air quality standard.
- **Impact 3.3-5:** Cumulative Impact on the Region's Air Quality
- **Impact 3.11-4:** Cumulative Exposure of Existing and Future Noise-Sensitive Land Uses to Increased Noise Resulting from Cumulative Development.
- **Impact 3.13-1:** Project implementation would conflict with or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).
- **Impact 3.13-2:** Project implementation would conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.
- **Impact 3.13-3:** Project implementation would substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- **Impact 3.13-5:** Cumulative Impacts Related to VMT.

- **Impact 3.13-6:** Cumulative Impacts Related to Conflicts with Adopted Policies, Plans, or Programs Regarding Bicycle or Pedestrian Facilities under Cumulative Conditions.
- **Impact 3.13-7:** Cumulative Impacts Related to Increased Hazards due to a Geometric Design Feature (e.g., sharp curves or dangerous intersections) or Incompatible Uses (e.g., farm equipment).

The environmental impacts of the proposed Project, the impact level of significance prior to mitigation, the proposed mitigation measures and/or adopted policies and standard measures that are already in place to mitigate an impact, and the impact level of significance after mitigation are summarized in Table ES-2.

TABLE ES-2: PROJECT IMPACTS AND PROPOSED MITIGATION MEASURES

ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
AESTHETICS AND VISUAL RESOURCES			
Impact 3.1-1: Project implementation would not have a substantial adverse effect on a scenic vista	LS	*None required.*	--
Impact 3.1-2: Project implementation would not substantially damage scenic resources within a state scenic highway	LS	*None required.*	--
Impact 3.1-3: Project implementation would substantially degrade the existing visual character or quality of public views of the site and its surroundings in a non-urbanized area (Public views are those that are experienced from publicly accessible vantage point)	PS	*None feasible.*	SU
Impact 3.1-4: Project implementation, with mitigation, would not result in light and glare which would adversely affect day or nighttime views in the area	PS	***Mitigation Measure 3.1-1**: The approved site plan shall conform with the most recent version of the California Building Code (California Code of Regulations, Title 24, Part 11) adopted by the City of Modesto at the time of site plan approval, including outdoor lighting requirements designed to minimize the effects of light pollution.* *Additionally, the approved site plan shall comply with the applicable provisions of the Commercial and Industrial Design Guidelines pertaining to lighting, including standards which require exterior lighting to be shielded and directed away from adjoining properties and public rights-of-way. Compliance shall be documented in a lighting plan or other documentation acceptable to the City.*	LS
Impact 3.1-5: The proposed Project, in combination with other cumulative development, would not result in substantial	LS and LCC	*None required.*	--

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PS – potentially significant *B – beneficial impact* *SU – significant and unavoidable*

ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
adverse effects on scenic vistas or damage scenic resources within a state scenic highway			
Impact 3.1-6: The proposed Project, in combination with other cumulative development, could substantially degrade the existing visual character or quality of public views of the site and its surroundings	PS	*None feasible.*	CC and SU
Impact 3.1-7: The proposed Project, in combination with other cumulative development, would not result in light and glare impacts	LS and LCC	*None required.*	--
AGRICULTURAL RESOURCES			
Impact 3.2-1: The proposed Project would result in the conversion of Farmlands, including Prime Farmland and Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural uses	PS	***Mitigation Measure 3.2-1:*** *Prior to the issuance of grading permits, the Project applicant shall secure permanent protection of offsite farmland based on a 1:1 ratio to the amount of gross Farmland converted because of development. The acreage requiring agricultural mitigation shall be equal to the site dedicated to developed uses for lands designated as Prime Farmland. Permanent preservation shall consist of the purchase of agricultural conservation easements granted in perpetuity from willing seller(s), enforceable deed restrictions, purchase of banked mitigation credits, or other conservation mechanisms acceptable to the City and LAFCo.* *The permanent protection of farmland shall be accomplished by either: (1) the landowner/developer working directly with an established farmland trust or similar organization, and providing certification satisfactory to the City and LAFCo that such lands have been permanently preserved at the specified ratio; or (2) working with a qualified land trust or similar organization, to establish a fee for agricultural land conservation easements.*	SU

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PS – potentially significant *B – beneficial impact* *SU – significant and unavoidable*

ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
Impact 3.2-2: The proposed Project would not conflict with existing zoning for agricultural use, or Williamson Act Contracts	NI	*None required.*	--
Impact 3.2-3: Project implementation would not involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use	LS	*None required.*	--
Impact 3.2-4: Cumulative Impacts Related to Agricultural Resources	PS	*Implement* ***Mitigation Measure 3.2-1.***	CC and SU
AIR QUALITY			
Impact 3.3-1: Project operation would conflict with or obstruct implementation of the District's air quality plan	PS	***Mitigation Measure 3.3-1:*** *During Project construction, off-road diesel-powered equipment shall be prohibited from being in the "on" position for more than 10 hours per day.* ***Mitigation Measure 3.3-2****: The Project applicant shall ensure that diesel generators, if needed, shall not be used on site during project operations, except in emergency situations (i.e. power outages caused by natural disasters, equipment failure, or other events that disrupt the primary energy supply), in which case such generators shall have Best Available Control Technology (BACT) that meets CARB's final Tier IV emission standards.* ***Mitigation Measure 3.3-3****: The Project applicant shall install and maintain perimeter landscaping that includes vegetation and a tree canopy. The intent is to help create more shade within the overall Project site, thereby reducing the local heat island effect, which may reduce localized energy consumption needs. As an alternative, the Project applicant may install structural solar canopies along the perimeter of the Project site, in place of perimeter landscaping (in whole or part).*	SU

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
		Mitigation Measure 3.3-4*: The Project applicant shall install Energy Star certified appliances or equivalent.* ***Mitigation Measure 3.3-5****: The Project applicant shall install energy efficient lighting that meets or exceeds Title 24 requirements.* ***Mitigation Measure 3.3-6****: The Project applicant shall devise and implement a property maintenance plan during Project operation that includes sweeping parking lots regularly (i.e. weekly or monthly) to remove road dust, tire wear, brake dust, and other contaminants. Prior to Project operation and finalization of the property maintenance plan, the Project applicant shall consult with the SJVAPCD (Air District), to ensure the property maintenance plan complies with applicable SJVAPCD rules and regulations, as well a any other applicable Air District requirements.* ***Mitigation Measure 3.3-7****: Truck idling (during construction and operation) onsite shall be limited to two minutes, and in no instance shall idling exceed five minutes consistent with the requirements established by the California Air Resources Board. To achieve this limit, the developer shall inform drivers and operators of idling time limits by including highly visible signage at key points onsite, such as at docks and delivery areas. Additionally, the Project Applicant shall require that their construction contractors and future tenants comply with this requirement, in writing, within construction contracts and/or operational leases, as applicable.* ***Mitigation Measure 3.3-8****: The Project applicant shall train managers and employees on efficient scheduling and load management to minimize queuing and idling of trucks.* ***Mitigation Measure 3.3-9****: The Project applicant shall ensure that all landscape equipment used on-site shall be electric or zero-emission vehicles. The Project applicant shall provide on-site electrical charging facilities to adequately service such electric vehicles.* ***Mitigation Measure 3.3-10****: The Project applicant shall install conduit as infrastructure for electric vehicle charging stations onsite to allow for truck docks to charge electric trucks in*	

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
		the future. Such conduit shall be provided on the site to serve a minimum of 50% of the number of truck docking stations, with the location of conduit at the discretion of the developer (e.g., truck trailer parking spaces or other locations). ***Mitigation Measure 3.3-11****: The Project applicant shall install conduit as infrastructure for electric vehicle charging stations onsite to allow for truck docks to serve Transport Refrigeration Units (TRUs) so that those TRUs that can accept electric plug-ins will not be required to use the vehicle's TRUs to keep perishable items cold. Such conduit shall be provided on the site to serve a minimum of 50% of the number of truck docking stations, with the location of conduit at the discretion of the developer (e.g., truck trailer parking spaces or other locations).* ***Mitigation Measure 3.3-12****: The Project applicant shall provide priority parking for employee carpool vehicles.* ***Mitigation Measure 3.3-13****: The Project shall incorporate daylighting within the warehouses to minimize energy consumption associated with lighting.* ***Mitigation Measure 3.3-14****: The Project applicant shall, during construction, use super compliant architectural coatings that have a maximum of 10 grams per liter. This will apply to the majority of flat and nonflat coatings. Exemptions to this requirement will be limited to specialty coatings that do not have a super compliant VOC content option. A list of manufacturers that provide architectural coatings with 10 grams per liter of VOCs can be found at: https://www.aqmd.gov/home/rules-compliance/compliance/vocs/architectural-coatings/super-compliant-coatings.*	
Impact 3.3-2: The proposed Project would result in a cumulatively considerable net increase of a criteria pollutant for which the region is in nonattainment under an applicable federal or State ambient air quality standard	PS	*Implement* ***Mitigation Measures 3.3-1 through 3.3-14.***	SU

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
Impact 3.3-3: The proposed Project would not expose sensitive receptors to substantial pollutant concentrations	LS	*None required.*	--
Impact 3.3-4: The proposed Project would not cause exposure to other emissions (such as those leading to odors) adversely affecting a substantial number of people	LS	*None required.*	--
Impact 3.3-5: Cumulative Impact on the Region's Air Quality	PS	*None feasible.*	CC and SU
BIOLOGICAL RESOURCES			
Impact 3.4-1: The proposed Project, with mitigation, would not have a direct or indirect effect on special-status invertebrate species	PS	***Mitigation Measure 3.4-1:*** *The Project applicant shall implement the following measure to avoid or minimize impacts on special-status bumble bees:* • *A qualified biologist(s) shall conduct a preconstruction survey within seven (7) days of the commencement of work. If special-status bees of any species are observed, they shall be photographed for identification. If construction begins between March 1 and November 1, the ground shall also be searched during the survey for active bumble bee colonies. If bee colonies are identified, these colonies shall be demarcated with a flagged avoidance buffer, as determined by a qualified biologist and shall be avoided during the active season from March 1 through November 1, or until the qualified biologist has determined that the colony is no longer active or until the colony is relocated.*	LS
Impact 3.4-2: The proposed Project would not have a direct or indirect effect on special-status reptile and amphibian species	LS	*None required.*	--

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
Impact 3.4-3: The proposed Project, with mitigation, would not have direct or indirect effects on special-status bird species	PS	***Mitigation Measure 3.4-2:*** *The Project applicant shall implement the following measure to avoid or minimize impacts on western burrowing owl:* • *No less than 14 days before initiating ground disturbance activities, the Project applicant shall complete an initial take avoidance survey. Implementation of avoidance and minimization measures would be triggered if the initial take avoidance survey results in positive owl presence in the Project Area where project activities shall occur. If needed, the development of avoidance and minimization approaches shall be developed in consultation with CDFW, consistent with the March 7, 2012, CDFW Staff Report on Burrowing Owl Mitigation.* • *Permanent loss of burrowing owl foraging habitat shall be compensated for by preservation and management of foraging habitat of at least a similar quality and equivalent acreage at a biologically appropriate location. An example of similar quality shall be cropland for cropland, grassland for grassland, etc. An example of an appropriate location would be within the breeding range of burrowing owl in the Central Valley. The mitigation shall be documented in a mitigation plan that identifies the mitigation site, compensation acreage, performance criteria, and monitoring and management requirements to ensure the site provides suitable habitat for the applicable species. Long-term protection of mitigation lands shall be ensured through fee title acquisition, conservation easement, or other suitable mechanisms. Long-term management of mitigation lands shall be ensured by establishing a management endowment or other suitable funding source. It is anticipated that mitigation land would also function to mitigate for other species requiring mitigation land with similar characteristics (i.e. Swainson's hawk). In other words, the same acreage could function as mitigation for more than one species.*	LS

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
		Mitigation Measure 3.4-3: *The Project applicant shall implement the following measures to avoid or minimize impacts on Swainson's hawk:* • *No more than 30 days before the commencement of construction, a qualified biologist shall perform preconstruction surveys for nesting Swainson's hawk and other raptors during the nesting season (February 1 through August 31).* • *Appropriate buffers shall be established and maintained around active nest sites during construction activities to avoid nest failure as a result of project activities. A ½-mile no-disturbance buffer from active Swainson's hawk nests. If such a buffer is not feasible, consult with CDFW prior to any ground disturbing activities to determine if an Incidental Take Permit (ITP) pursuant to Fish and Game Code section 2081 subdivision (b) is necessary to avoid an unauthorized take of Swainson's hawk. The appropriate size and shape of the buffers shall be determined by a qualified biologist, in consultation with CDFW, and may vary depending on the nest location, nest stage, and construction activity. In determining the size of the buffers, the qualified biologist shall take into consideration the natural history of the Swainson's hawk, the proposed activity level adjacent to the nest, the nest occupants' habituation to existing or ongoing activity, nest concealment (i.e., whether there are visual or acoustic barriers between the proposed activity and the nest), and what (if any) nest monitoring is proposed. The buffers may be adjusted if a qualified biologist determines, based on these same considerations, that a change in the buffer size would not be likely to adversely affect the nest. Monitoring shall be conducted to confirm that project activity is not resulting in detectable adverse effects on nesting birds or their young. No project activity shall commence within the buffer areas until a qualified biologist has determined that the young have fledged or the nest site is otherwise no longer in use.* • *Before the commencement of construction, the Project applicant shall provide compensatory mitigation for the permanent loss of Swainson's hawk foraging*	

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
		habitat. Loss of Swainson's hawk foraging habitat shall be compensated for by preservation and management of foraging habitat of at least a similar quality at an appropriate location. An example of similar quality shall be cropland for cropland, grassland for grassland, etc. An example of an appropriate location would be within the breeding range of Swainson's hawk in the Central Valley. The mitigation shall be documented in a mitigation plan that identifies the mitigation site, compensation acreage, performance criteria, and monitoring and management requirements to ensure the site provides suitable habitat for the applicable species. Long-term protection of mitigation lands shall be ensured through fee title acquisition, conservation easement, or other suitable mechanisms. Long-term management of mitigation lands shall be ensured by establishing a management endowment or other suitable funding source. It is anticipated that mitigation land would also function to mitigate for other species requiring mitigation land with similar characteristics (i.e. burrowing owl). • *To mitigate for the loss of foraging habitat (as specified in this document), the project applicant shall compensate based on the following ratios:* o *(a) Portions of the project within 1 mile of an active nest tree shall provide:* ▪ *one acre of either lands protected through fee title acquisition or conservation easement (acceptable to the CDFW) on agricultural lands or other suitable habitats which provide foraging habitat for Swainson's hawk for each acre of development authorized (1:1 ratio); or* ▪ *One-half acre of either lands protected through fee title acquisition or conservation easement (acceptable to the CDFW) on agricultural lands or other suitable habitats which*	

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
		provide foraging habitat for Swainson's hawk for each acre of development authorized (0.5:1 ratio). ○ *(b) Portions of the project within 5 miles of an active nest tree but greater than 1 mile from the nest tree shall provide 0.75 acres of either lands protected through fee title acquisition or conservation easement (acceptable to the CDFW) on agricultural lands or other suitable habitats which provide foraging habitat for Swainson's hawk for each acre of development authorized for each acre of urban development authorized (0.75:1 ratio).* ○ *(c) Portions of the project within 10 miles of an active nest tree but greater than 5 miles from an active nest tree shall provide 0.5 acres of either lands protected through fee title acquisition or conservation easement (acceptable to the CDFW) on agricultural lands or other suitable habitats which provide foraging habitat for Swainson's hawk for each acre of development authorized (0.5:1 ratio).* ***Mitigation Measure 3.4-4:*** *The Project applicant shall implement the following measure to avoid or minimize impacts on other protected bird species that may occur on the site:* • *If ground-disturbing activities occur during the nesting bird season (February 1 - September 15), a qualified biologist shall conduct pre-activity surveys for active nests no more than one week prior to the start of ground disturbance to maximize the probability that nests that could potentially be impacted are detected. Surveys shall cover a sufficient area around the work site to identify nests and determine their status. A sufficient area means any area potentially affected by a project. In addition to direct impacts (i.e., nest destruction), noise, vibration, odors, and movement of workers or equipment could also affect nests. Prior to initiation of construction activities, a qualified biologist conduct a survey to establish a behavioral baseline of all identified nests.*	

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
		• *Once construction begins, a qualified biologist shall continuously monitor nests to detect behavioral changes resulting from the Project. If behavioral changes occur, the work causing that change shall cease and CDFW shall be consulted for additional avoidance and minimization measures. If continuous monitoring of identified nests by a qualified biologist is not feasible, a minimum no-disturbance buffer of 250 feet around active nests of non-listed bird species and a 500-foot no-disturbance buffer around active nests of non-listed raptors. These buffers are advised to remain in place until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival. Variance from these no-disturbance buffers is possible when there is a compelling biological or ecological reason to do so, such as when the construction area would be concealed from a nest site by topography. A qualified biologist shall advise and support any variance from these buffers and notify CDFW in advance of implementing a variance.*	
Impact 3.4-4: The proposed Project, with mitigation, would not result in direct or indirect effects on special-status mammal species	LS	***Mitigation Measure 3.4-5:*** *Prior to orchard removal and/or ground disturbance of the Project site, the Project applicant shall conduct a survey of the area to be disturbed for bat roosts, and if present, the Project applicant shall implement the following measures to avoid or minimize impacts on special-status bats:* • *If removal of suitable roosting areas (i.e., trees, shrubs, etc.) must occur during the bat pupping season (April 1 through July 31), surveys for active maternity roosts shall be conducted by a qualified biologist. The surveys shall be conducted from dusk until dark.* • *If a special-status bat maternity roost is located, appropriate buffers around the roost sites shall be determined by a qualified biologist and implemented to avoid destruction or abandonment of the roost resulting from habitat removal or other project activities. The size of the buffer shall depend on the species, roost location, and specific construction activities to be performed in the vicinity. No*	--

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
		project activity shall commence within the buffer areas until the end of the pupping season (August 1) or until a qualified biologist confirms the maternity roost is no longer active. • *If a non-maternal roost is located, eviction and exclusion techniques shall be conducted as recommended by the qualified biologist. Methods may include opening the roosting area to change the air flow and lighting, installing one-way doors, or other appropriate methods that allow the bats to exit and find a new roost. After eviction is believed to be completed, acoustic monitoring, and an evening emergence survey shall be performed by the qualified biologist to ensure eviction is complete. For tree removal, a two-step tree removal process involving removal of all branches that do not provide roosting habitat on the first day, and then the next day cutting down the remaining portion of the tree.*	
Impact 3.4-5: The proposed Project would not result in direct or indirect effects on candidate, sensitive, or special-status plant species	LS	*None required.*	--
Impact 3.4-6: The proposed Project would not affect protected wetlands and jurisdictional waters	NI	*None required.*	--
Impact 3.4-7: The proposed Project would not result in adverse effects on riparian habitat or a sensitive natural community	NI	*None required.*	--
Impact 3.4-8: The proposed Project would not result in interference with the movement of native fish or wildlife species or with established wildlife corridors, or impede the use of native wildlife nursery sites	LS	*None required.*	--

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Impact 3.4-9: The proposed Project would not conflict with an adopted Habitat Conservation Plan	NI	*None required.*	--
Impact 3.4-10: The proposed Project would not conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance	LS	*None required.*	--
Impact 3.4-11: Cumulative Loss of Biological Resources Including Habitats and Special-Status Species	LS and LCC	*None required.*	--
CULTURAL AND TRIBAL RESOURCES			
Impact 3.5-1: The proposed Project, with mitigation, would not cause a substantial adverse change to a significant historical resource, as defined in CEQA Guidelines §15064.5	PS	***Mitigation Measure 3.5-1:*** *Prior to any ground-disturbing activities on the Project site, all construction workers shall receive a cultural resources sensitivity training session before they begin site work in order to identify any potentially significant cultural or similar resources that may result during construction. The sensitivity training session shall be instructed by a professional archaeologist, and shall include discussion of the statutory criteria for defining unique archaeological resources, historical resources of an archaeological nature, and tribal cultural resources. The sensitivity training shall inform the workers of their responsibility to identify and protect any cultural resources, including prehistoric or historic artifacts, or other indications of archaeological resources, discovered during construction. The sensitivity training shall cover laws pertaining to cultural resources, examples of cultural resources that may be discovered, and what to do if a cultural resource, or anything that may be a cultural resource, is discovered.* ***Mitigation Measure 3.5-2:*** *Prior to any ground-disturbing activities on the northern half of the Project site (alfalfa field), a qualified archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards in prehistoric or historical archaeology, as*	LS

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		appropriate, shall perform a second survey the northern half of the Project site to determine whether any cultural resources, including prehistoric or historic artifacts, or other indications of archaeological resources, are located on-site. The second survey shall occur after the alfalfa cutting when the ground is more visible to ensure full coverage. The results of the second survey shall be submitted to the City's Community Development Division. *If any cultural resources are found, and are determined to be potentially significant, the City shall require the preparation of a treatment plan and report of findings for cultural and tribal cultural resources. The City and the applicant shall consult and agree to implement all measures the City deems feasible. Such measures may include avoidance, preservation in place, excavation, documentation, curation, data recovery, or other appropriate measures. The applicant shall be required to implement measures necessary for the protection and documentation of cultural resources.* ***Mitigation Measure 3.5-3:** If any cultural resources, including prehistoric or historic artifacts, or other indications of archaeological resources, are found during grading and construction activities during any phase of the Project, all work shall be halted immediately within a 200-foot radius of the discovery until an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards in prehistoric or historical archaeology, as appropriate, has evaluated the find(s).* *The following notifications and measures shall apply to potential unique archaeological resources, potential historical resources of an archaeological nature, and potential tribal cultural resources, depending on the nature of the find:* • *If the professional archaeologist determines that the find clearly does not represent a cultural resource that might qualify as a unique archaeological resource, an historical resource of an archaeological nature, or a tribal cultural resource, work may resume immediately and no agency notifications are required.*	

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
		• *If the professional archaeologist determines that the find does represent a cultural resource that might qualify as a unique archaeological resource, an historical resource of an archaeological nature, or a tribal cultural resource, he or she shall immediately notify the City's Community Development Division (CDD) and applicable landowner, and, in the case of a potential tribal cultural resource, a tribal representative from an ethnically appropriate group in order to give such a person an opportunity to participate.* • *With respect to finds that may qualify as a unique archaeological resource or an historical resource of an archaeological nature (but not a tribal cultural resource), the professional archaeologist and a representative from the City CDD shall consult to determine whether any unique archaeological resources or historical resources of an archaeological nature are present, in part based on a finding of eligibility for inclusion in the NRHP or CRHR. If it is determined that unique archaeological resources or historical resources of an archaeological nature are present, the qualified archaeologist shall develop mitigation or treatment measures for consideration and approval by the City CDD. Mitigation shall be developed and implemented in accordance with Public Resources Code Section 21083.2 and Section 15126.4 of the CEQA Guidelines, with a preference for preservation in place. Consistent with Section 15126.4(b)(3), preservation in place may be accomplished through planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement. If approved by the City CDD, such measures shall be implemented and completed prior to commencing further work for which grading or building permits were issued, unless otherwise directed by the City CDD. Avoidance or preservation of unique archaeological resources or historical resources of an archaeological nature shall not be required where such avoidance or preservation in place would preclude the construction of important structures or infrastructure or require exorbitant expenditures, as determined by the City CDD. Where avoidance or preservation are not appropriate for these reasons, the professional archaeologist, in consultation with the City CDD, shall prepare a*	

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
		detailed recommended a treatment plan for consideration and approval by the City CDD, which may include data recovery. If employed, data recovery strategies for unique archaeological resources that do not also qualify as historical resources of an archaeological nature shall follow the applicable requirements and limitations set forth in Public Resources Code Section 21083.2. Data recovery will normally consist of (but would not be limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim of recovering important scientific data contained within the unique archaeological resource or historical resource of an archaeological nature. The data recovery plan shall include provisions for analysis of data in a regional context, reporting of results within a timely manner, curation of artifacts and data at an approved facility, and dissemination of reports to local and State repositories, libraries, and interested professionals. If data recovery is determined by the City CDD to not be appropriate, then an equally effective treatment shall be proposed and implemented. Work may not resume within the no-work radius until the City CDD, in consultation with the professional archaeologist, determines that the site either: 1) does not contain unique archaeological resources or historical resources of an archaeological nature; or 2) that the preservation and/or treatment measures have been completed to the satisfaction of the City CDD. • *With respect to finds that may qualify as a tribal cultural resource, the professional archaeologist and a representative from the City CDD shall consult with a tribal representative from an ethnically appropriate group, if one has chosen to participate, to determine whether any tribal cultural resources are present, in part based on the criteria set forth in Public Resources Code section 21074. If it is determined that tribal cultural resources are present, the qualified archaeologist, in consultation with any participating tribal representative, shall develop mitigation or treatment measures for consideration and approval by the City CDD. In doing so, the qualified archaeologist shall give great weight to the wishes of the tribal representative, if one is participating. Mitigation shall be developed with a preference for preservation in place and with reference to the*	

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
		Guidelines for Monitors/Consultants of Native American Cultural, Religious, and Burial Sites established by the Native American Heritage Commission. Preservation in place may be accomplished through planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement. If approved by the City CDD, measures involving avoidance and/or preservation in place shall be implemented and completed prior to commencing further work for which grading or building permits were issued, unless otherwise directed by the City CDD. Avoidance or preservation of a tribal cultural resource shall not be required where such avoidance or preservation in place would preclude the construction of important structures or infrastructure or require exorbitant expenditures, as determined by the City CDD. Where avoidance or preservation are not appropriate for these reasons, the professional archaeologist, in consultation with the City CDD and any participating tribal representative, whose input shall be given great weight, shall prepare a detailed recommended a treatment plan for consideration and approval by the City CDD, which may include data recovery. Data recovery may consist of (but would not be limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim of recovering important scientific data contained within the unique archaeological resource or historical resource of an archaeological nature. The data recovery plan shall include provisions for analysis of data in a regional context, reporting of results within a timely manner, curation of artifacts and data to an institution identified by the participating tribal representative, if any, or at an approved facility, and dissemination of reports to local and State repositories, libraries, and interested professionals. If data recovery is determined by the City CDD to not be appropriate, then an equally effective treatment shall be proposed and implemented. Work may not resume within the no-work radius until the City CDD, in consultation with the professional archaeologist, determines that the site either: 1) does not contain tribal cultural resources; or 2) that the	

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
		preservation and/or treatment measures have been completed to the satisfaction of the City CDD.	
Impact 3.5-2: The proposed Project, with mitigation, would not cause a substantial adverse change to a significant archaeological resource, as defined in CEQA Guidelines §15064.5, or a significant tribal cultural resource, as defined in Public Resources Code §21074	PS	***Mitigation Measure 3.5-4:*** *If human remains are discovered during the course of construction during any phase of the Project, work shall be halted at the site and at any nearby area reasonably suspected to overlie adjacent human remains until the Stanislaus County Coroner has been informed and has determined that no investigation of the cause of death is required. If the remains are of Native American origin, either of the following steps will be taken:* • *The coroner shall contact the Native American Heritage Commission in order to ascertain the proper descendants from the deceased individual. The coroner shall make a recommendation to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods, which may include obtaining a qualified archaeologist or team of archaeologists to properly excavate the human remains.* • *The landowner shall retain a Native American monitor, and an archaeologist, if recommended by the Native American monitor, and rebury the Native American human remains and any associated grave goods, with appropriate dignity, on the property and in a location that is not subject to further subsurface disturbance when any of the following conditions occurs:* o *The Native American Heritage Commission is unable to identify a descendent.* o *The descendant identified fails to make a recommendation.* o *The City of Modesto or its authorized representative rejects the recommendation of the descendant, and the mediation by the Native American Heritage Commission fails to provide measures acceptable to the landowner.*	LS
Impact 3.5-3: The proposed Project, with mitigation, would not disturb human remains,	PS	*Implement* ***Mitigation Measure 3.5-4.***	LS

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
including those interred outside of formal cemeteries			
Impact 3.5-4: Cumulative Impacts on Known and Undiscovered Cultural and Tribal Resources	LS and LCC	*None required.*	--
GEOLOGY, SOILS AND MINERAL RESOURCES			
Impact 3.6-1: The proposed Project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: rupture of a known earthquake fault, strong seismic ground shaking, seismic related ground failure, or landslides	LS	*None required.*	--
Impact 3.6-2: Implementation and construction of the proposed Project would not result in substantial soil erosion or the loss of topsoil	LS	*None required.*	--
Impact 3.6-3: The proposed Project, with mitigation would not be located on a geologic unit or soil that is unstable, or that would become unstable as a result of Project implementation, and potentially result in landslide, lateral spreading, subsidence, liquefaction or collapse	PS	***Mitigation Measure 3.6-1**: Prior to earthmoving activities for each phase of the Project, a certified geotechnical engineer, or equivalent, shall be retained to perform a final geotechnical evaluation of the soils at a design-level as required by the requirements of the California Building Code Title 24, C.C.R., Part 2, Chapter 18, Section 1803.1.1.2 related to expansive soils and other soil conditions. The evaluation shall be prepared in accordance with the standards and requirements outlined in California Building Code, Title 24, C.C.R., Part 2, Chapter 16, Chapter 17, and Chapter 18, which addresses structural design, tests and inspections, and soils and foundation standards. The final geotechnical evaluation shall include design recommendations to ensure that soil conditions do not pose a threat to the health and safety of people or structures, including threats from liquefaction or lateral spreading. The grading and improvement plans, as well as the storm drainage and*	LS

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
		building plans for each phase of the Project shall be designed in accordance with the recommendations provided in the final geotechnical evaluation.	
Impact 3.6-4: The proposed Project, with mitigation, would not have the potential for expansive soils to create substantial risks to life or property	PS	*Implement* ***Mitigation Measure 3.6-1.***	LS
Impact 3.6-5: The proposed Project, with mitigation, would not directly or indirectly destroy a unique geological feature or paleontological resource	PS	***Mitigation Measure 3.6-2:*** *If any paleontological resources are found during grading and construction activities of the Project, all work shall be halted immediately within a 200-foot radius of the discovery until a qualified paleontologist has evaluated the find.* *Work shall not continue at the discovery site until the paleontologist evaluates the find and makes a determination regarding the significance of the resource and identifies recommendations for conservation of the resource, including preserving in place or relocating on the* Project site*, if feasible, or collecting the resource to the extent feasible and documenting the find with the University of California Museum of Paleontology.*	LS
Impact 3.6-6: The proposed Project would not be located on soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water	NI	*None required.*	--
Impact 3.6-7: The proposed Project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state, or result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan	LS	*None required.*	--

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Impact 3.6-8: Cumulative Impact on Geologic and Soils Resources	LS and LCC	*None required.*	--
GREENHOUSE GASES, CLIMATE CHANGE AND ENERGY			
Impact 3.7-1: Project implementation would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment and would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases	LS	*None required.*	--
Impact 3.7-2: Project implementation would not result in the inefficient, wasteful, or unnecessary use of energy resources, and would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency	LS	*None required.*	--
Impact 3.7-3: Cumulative Impact on Climate Change from Increased Project-Related Greenhouse Gas Emissions, and Impact Associated with Energy	LS and LCC	*None required.*	--
HAZARDS AND HAZARDOUS MATERIALS			
Impact 3.8-1: The proposed Project, with mitigation, would not result in a significant hazard through the routine transport, use, or disposal of hazardous materials or through the reasonably foreseeable upset and accident	PS	***Mitigation Measure 3.8-1:*** *Conduct a Phase I, and as required additional Phase II Environmental Site Assessments to verify soil contamination associated with past uses including agricultural applications and uses associated with past developed site uses, and implement all additional recommended investigations and remediation as necessary.*	LS

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
conditions involving the release of hazardous materials into the environment		***Mitigation Measure 3.8-2****: In the event that hazardous materials are encountered during construction, a Soils Management Plan (SMP) shall be submitted and approved by the Stanislaus County Department of Environmental Resources. The SMP shall establish management practices for any required soil disposals, and handling hazardous materials during construction in accordance with applicable laws. The approved SMP shall be posted and maintained onsite during construction activities and all construction personnel shall acknowledge that they have reviewed and understand the plan.* ***Mitigation Measure 3.8-3***: *Prior to the issuance of grading permits for any of the parcels identified on the Project's Tentative Subdivision Map (see Figure 2.0-7 of this EIR), the applicant or future project proponent shall hire a qualified consultant to perform site-specific soil sampling to determine if chemicals of potential concern associated with the historical agricultural uses at the Project site are present in shallow soil at concentrations that would pose a threat to human health. If results of the soil sampling identify concentrations of hazardous materials exceeding appropriate ESLs for the future site-specific uses, on-site remediation would be required in coordination with the Stanislaus County Department of Environmental Resources.* ***Mitigation Measure 3.8-4****: Prior to bringing hazardous materials onsite, the applicant shall submit a Hazardous Materials Business Plan (HMBP) to Stanislaus County Department of Environmental Resources. (CUPA) for review and approval. If during the construction process the applicant or his subcontractors generates hazardous waste, the applicant must register with the CUPA as a generator of hazardous waste, obtain an EPA ID# and accumulate, ship and dispose of the hazardous waste per Health and Safety Code Ch. 6.5. (California Hazardous Waste Control Law).* ***Mitigation Measure 3.8-5:*** *New business on the project site that may handle quantities of hazardous materials equal to or greater than 55 gallons of a liquid, 500 pounds of a solid, or 200 cubic feet of a compressed gas at any given time shall submit a Hazardous Materials Business Plan to the Certified Unified Program Agency (CUPA) of Stanislaus County. The Hazardous Materials Business Plan shall include an inventory of hazardous materials and*	

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		hazardous wastes and an emergency response plan for incidents involving hazardous materials and wastes	
Impact 3.8-2: The proposed Project, with mitigation, would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school	PS	***Mitigation Measure 3.8-6:*** *Additional scrutiny shall be required for any industrial site use within ¼ mile of a school and the approval of future development projects and or required HMBPs shall only be made if the CUPA and Modesto Fire department determine that the activities do not pose additional risk to the neighboring school. As part of the Hazardous Materials Business Plan requirements identified under mitigation 3.8-4 and 3.8-5, The City shall consult with the CUPA and finding shall be provided for comment to Modesto City Schools district affected schools (Joseph A. Gregori High School) prior to the approval of any hazardous materials business plan for new businesses that store or use hazardous materials within ¼ mile of the existing school site.* ***Mitigation Measure 3.8-7:*** *The property line of all school sites (even if it is a joint use agreement as described in subsection (o) of § 14010) shall be at least the following distance from the edge of respective power line easements as identified in the California Code of Regulations Title 5, Article 2. School Sites § 14010, Standards for School Site Selection (c):* • *100 feet for 50-133 kV line.* • *150 feet for 220-230 kV line.* • *350 feet for 500-550 kV line.*	LS
Impact 3.8-3: The proposed Project would not result in impacts from being included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5	NI	*None required.*	--
Impact 3.8-4: The proposed Project would not result in a safety hazards for people residing or	LS	*None required.*	--

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
working on the Project site as a result of public airport or public use airport			
Impact 3.8-5: The proposed Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan	LS	*None required.*	--
Impact 3.8-6: The proposed Project would not have a significant impact related to wildfire risks associated with lands in or near State Responsibility Areas or lands classified as very high fire hazard severity zones	NI	*None required.*	--
Impact 3.8-7: The proposed Project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires	NI	*None required.*	--
Impact 3.8-8: Implementation of the proposed Project, in combination with other cumulative development, would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through the reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment	LS and LCC	*None required.*	--

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Impact 3.8-9: Implementation of the proposed Project, in combination with other cumulative development, could be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment	LS and LCC	*None required.*	--
Impact 3.8-10: The proposed Project, in combination with other cumulative development, would not be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, resulting in a safety hazard for people residing or working in the Project site	LS and LCC	*None required.*	--
Impact 3.8-11: Implementation of the proposed Project, in combination with other cumulative development, would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan	LS and LCC	*None required.*	--
Impact 3.8-12: Implementation of the proposed Project, in combination with other cumulative development, would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste	PS	Implement **Mitigation Measures 3.8-1 through 3.8-6**, and **Mitigation Measure 3.9-1**	LS and LCC

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within one-quarter mile of an existing or proposed school			
HYDROLOGY AND WATER QUALITY			
Impact 3.9-1: The proposed Project, with mitigation, would not violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality	PS	***Mitigation Measure 3.9-1:*** *The project shall prepare a SWPPP for each development project under the specific plan (or one Master SWPPP for all development) designed to reduce potential impacts to surface water quality through the construction period of all of the project components (whether or not the particular portion of the project disturbs more than one acre). The SWPPP shall emphasize measures designed to minimize erosion and off-site sedimentation.* *Industrial uses on the project shall obtain coverage under the Central Valley RWQCB Industrial General Permit program and implement pollution control measures using the best available technology economically achievable and best conventional pollutant control technology. All facility operators shall prepare, retain on site, and implement a SWPPP implementing applicable Industrial General Permit requirements, including a monitoring program.* ***Mitigation Measure 3.9-2:*** *Prior to the issuance of grading permits, the applicant and/or future Project proponent must submit a site-specific Project Stormwater Quality Control Plan to the City of Modesto City Engineer for review and approval. The project must comply with the Modesto Municipal Code Section 5-10.204, which requires construction activities to be designed and conducted to minimize discharge of sediment and all other pollutants and Section 5-10.205, which contains standards for implementation of Best Management Practices. The site-specific Project Stormwater Quality Control Plan must specify BMPs the Project will use and design specifications for selected BMPs to ensure the Project's consistency with State and local water quality regulations.*	LS
Impact 3.9-2: The proposed Project would not substantially deplete groundwater supplies or	LS	*None required.*	--

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin			
Impact 3.9-3: The proposed Project would not alter the existing drainage pattern of the site or area, including the alteration of the course of a river or through the addition of impervious surfaces, in a manner which would result in substantial erosion, siltation, surface runoff, flooding, or polluted runoff	LS	*None required.*	--
Impact 3.9-4: The proposed Project would not have the potential to, in a flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation	LS	*None required.*	--
Impact 3.9-5: The proposed Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan	LS	*None required.*	--
Impact 3.9-6: Implementation of the proposed Project, in combination with other cumulative development, would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality	LS and LCC	*None required.*	--

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Impact 3.9-7: Implementation of the proposed Project, in combination with other cumulative development, would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin	LS and LCC	*None required.*	--
Impact 3.9-8: Implementation of the proposed Project, in combination with other cumulative development, would not 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 flooding on- or offsite; 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 impede or redirect flood flows	LS and LCC	*None required.*	--
Impact 3.9-9: Implementation of the proposed Project, in combination with other cumulative development, would not risk release of pollutants due to project inundation in flood hazard, tsunami, or seiche zone	LS and LCC	*None required.*	--

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LAND USE AND POPULATION			
Impact 3.10-1: The proposed Project would not physically divide an established community	LS	*None required.*	--
Impact 3.10-2: The proposed Project would not conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project adopted to avoid or mitigate an environmental effect	LS	*None required.*	--
Impact 3.10-3: The proposed Project would not 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)	LS	*None required.*	--
Impact 3.10-4: The proposed Project, in combination with cumulative development, would not result in the physical division of an established community	LS and LCC	*None required.*	--
Impact 3.10-5: The proposed Project, in combination with cumulative development, would not conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted to avoid or mitigate an environmental effect	LS and LCC	*None required.*	--

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Impact 3.10-6: The proposed Project, in combination with cumulative development, would not 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)	LS and LCC	*None required.*	--
NOISE			
Impact 3.11-1: The proposed Project would not generate 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	LS	*None required.*	--
Impact 3.11-2: The proposed Project would not generate excessive groundborne vibration or groundborne noise levels	LS	*None required.*	--
Impact 3.11-3: The proposed Project would not expose people residing or working in the Project area to excessive noise levels associated with a private airstrip or airport	NI	*None required.*	--
Impact 3.11-4: Cumulative Exposure of Existing and Future Noise-Sensitive Land Uses to Increased Noise Resulting from Cumulative Development	PS	*None feasible.*	CC and SU

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Impact 3.11-5: Cumulative Exposure of Existing and Future Noise-Sensitive Land Uses to Increased Vibration Resulting from Cumulative Development	LS and LCC	*None required.*	--
PUBLIC SERVICES			
Impact 3.12-1: The proposed Project would not require the construction of police department facilities which may cause substantial adverse physical environmental impacts	LS	*None required.*	--
Impact 3.12-2: The proposed Project would not require the construction of fire department facilities which may cause substantial adverse physical environmental impacts	LS	*None required.*	--
Impact 3.12-3: The proposed Project, in combination with cumulative development, would not require the construction of police department facilities which may cause substantial adverse physical environmental impacts	LS and LCC	*None required.*	--
Impact 3.12-4: The proposed Project, in combination with cumulative development, would not require the construction of fire department facilities which may cause substantial adverse physical environmental impacts	LS and LCC	*None required.*	--

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TRANSPORTATION AND CIRCULATION			
Impact 3.13-1: Project implementation would conflict with or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)	PS	***Mitigation Measure 3.13-1:*** *The Project applicant shall comply with SJVAPCD Rule 9410 (Employer Based Trip Reduction). SJVAPCD Rule 9410 (found at: https://ww2.valleyair.org/media/tlbogtid/rule-9410.pdf) requires major employers in the region to implement an Employer Trip Reduction Implementation Plan (ETRIP). Two types of worksites are identified: Tier 1 worksites consist of 100 to 249 eligible employees, while Tier 2 worksites have at least 250 eligible employees (who worked at least 16 consecutive weeks during the previous fiscal year). Eligible employees are any employees excluding the following: emergency health and safety employees, employment agency personnel, farm workers; field personnel, field construction workers, home garage employees, on-call employees, part-time employees, seasonal employees, volunteers, and employees who do not report to work during the peak period, which is defined as 6:00 AM to 10:00 AM. The number of eligible employees that work for a major employer would determine whether that employer falls into a Tier 1 or 2 worksite.* *Table 1 of Rule 9410 indicates that Tier 1 and 2 worksites shall implement an ETRIP that achieves at least 44 and 66 points, respectively, based on selecting various TDM strategies, which fall into the following four groups:* 1. *Marketing Strategies;* 2. *Program Support Strategies;* 3. *Service and Facilities Strategies;* 4. *and Transportation, Alternative Schedule, and Incentives Strategies.* *Table 2 of Rule 9410 contains 59 different strategies, which are split into the above four groups, that could be considered to reduce vehicle trips. Strategies are applicable only to eligible employees.* *It is not known how many of the individual warehouse tenants will qualify as a Tier 1 or 2 worksite because of uncertainties around start time, shift hours and amount of square feet*	SU

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		per employee. Additionally, it is not possible to identify which specific strategies that tenants of individual buildings would select since they have not been identified, signed leases, etc. Accordingly, it is not possible to quantify the VMT savings achieved by the strategies that would be selected. ***Mitigation Measure 3.13-2:*** *The Project applicant shall implement the following transportation demand management (TDM) strategies, some of which may overlap with strategies selected under Rule 9410, that are considered feasible and will have a material effect on reducing VMT:* 1. *Implement a Voluntary Commute Trip Reduction (CTR) program. Required elements of the program include:* o *Commute Trip Reduction Marketing - implements a marketing strategy to promote the Project site employer's CTR program (which includes a guaranteed ride home program).* o *Ridesharing Program - implements a ridesharing program and establishes a permanent transportation management association with funding requirements for employers.* o *Subsidized or Discounted Transit Program - provides subsidized or discounted, or free transit passes for employees.* o *End-of-Trip Bicycle Facilities - installs and maintains end-of-trip facilities (including bike parking, bike lockers, showers, and personal lockers) for employee use.* o *Employer-Sponsored Vanpool - implements an employer-sponsored vanpool service for employee groups of 5 to 15 people.* 2. *Implement Employee Parking Cash-Out program – requires Project employers to offer employees the choice of foregoing their current subsidized/free parking for a cash payment (in exchange for not driving).* *The above strategies are ongoing measures that would begin in the first phase of industrial development and continue through Project buildout. Most of the above TDM strategies*	

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		are included in the Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity (CAPCOA, 2021). In late 2021, the CAPCOA Board of Directors adopted this report (henceforth known as the CAPCOA GHG Reduction Handbook). In addition to listing a variety of TDM strategies, the CAPCOA GHG Reduction Handbook presents the maximum effectiveness that a given strategy or set of strategies can have. However, that effectiveness can vary considerably depending on geographic context (urban, suburban, versus rural), tenant type, and availability of non-auto modes).	
Impact 3.13-2: Project implementation would conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities	PS	***Mitigation Measure 3.13-3a**: The Project applicant shall construct sidewalk improvements along the Kiernan Avenue (SR 219), Dale Road, and Pirrone Road Project frontages as well as Class II bicycle lane improvements along Dale Road and Pirrone Road Project frontages in accordance with City of Modesto design standards.* *The City of Modesto Standard Specifications (City of Modesto, 2014) require a minimum 10-foot sidewalk and five-foot Class II bicycle lanes on both sides of a standard "Minor Arterial" section. Although Kiernan Avenue (SR 219) is under Caltrans jurisdiction, the Project applicant shall provide minimum 10-foot wide sidewalk and maintain the existing 10-foot wide Class II bicycle lane along the Kiernan Avenue (SR 219) frontage.* *These requirements shall be noted on the Project improvement plans.* ***Mitigation Measure 3.13-3b**: The Project applicant shall construct a crosswalk with corresponding directional curb ramps and pedestrian signal heads without countdown timers across the western leg of the Kiernan Avenue (SR 219)/Dale Road intersection in accordance with Caltrans design standards.* *The Kiernan Avenue (SR 219)/Dale Road intersection currently lacks a crosswalk on the east leg, requiring pedestrians to navigate crosswalks on the south, west, and north legs to access the Project site from the southwest corner of the intersection. Constructing a new crosswalk at this existing signalized intersection would provide direct access from the south, enhance pedestrian safety, and connect the frontage sidewalk improvements*	SU

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
		described in Mitigation Measure 3.13-3a to the existing sidewalk network on the west side of Dale Road, south of Kiernan Avenue (SR 219). *These requirements shall be noted on the Project improvement plans.* ***Mitigation Measure 3.13-3c**: The Project applicant shall coordinate with City of Modesto Engineering Services Department, Public Works Department and administrators at Joseph A. Gregori High School to identify and construct high-visibility crosswalk connecting the northwest corner of the Project site and southeast corner of the high school. Potential improvements to be considered include (but are not limited to):* • *Installation of high-visibility crosswalk striping* • *Installation of rectangular rapid flashing beacon (RRFB) or pedestrian hybrid beacon (PHB) crossing controls* • *Installation of ADA compliant curb ramps with adequate connections to existing sidewalk on high school frontage and future sidewalk on Project site frontage* *A new pedestrian crossing on Pirrone Road connecting the Project site to Joseph A. Gregori High School would enhance pedestrian and bicycle connectivity to and from the school. The installation of traffic controls, such as a RRFB or PHB, would alert drivers to yield to pedestrians and bicyclists in the crosswalk.* *These requirements shall be noted on the Project improvement plans.*	
Impact 3.13-3: Project implementation would substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)	PS	***Mitigation Measure 3.13-4**: The Project applicant shall construct physical improvements at Project access intersections along Kiernan Avenue (SR 219) in accordance with Caltrans standards and along Dale Road in accordance with City of Modesto design standards. Additional considerations should be made for the need to accommodate STAA trucks, enhanced pavement structural sections, and increased truck turn lane storage.* *It would be premature at this juncture to identify every specific design detail required at*	SU

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
		each Project access and on-site intersection. Instead, to ensure that the Project roadway designs provide the necessary infrastructure improvements to accommodate the special travel needs of trucks, the following performance standards are established for this mitigation measure: • *All frontage street sections that would be improved by the Project are designed with the appropriate Traffic Index (TI) to ensure that the structural section is capable of accommodating the added weight of trucks for that street section.* • *All left and right turn lanes constructed at intersections along Kiernan Avenue (SR 219) and Dale Road provide adequate vehicle storage to accommodate the 95th percentile vehicle queues (considering cumulative travel demands and the effects of trucks on storage requirements).* • *Intersection designs consider curb return radii requirements, width of receiving travel lanes, placement of traffic control equipment, and other design parameters to ensure that trucks can perform left and right-turns without encroaching onto oncoming travel lanes, driving over curbs, or colliding with signal equipment or signs.* *The roadway design review process (overseen by the City of Modesto Engineering Services Department) will ensure that these performance standards are met. These requirements shall be noted on the Project improvement plans.* ***Mitigation Measure 3.13-5**: The Project applicant shall coordinate with the City of Modesto Public Works Department to post "Local Trucks Only" signs along Dale Road between Kiernan Avenue (SR 219) and the northernmost Project site driveway, as well as "No Trucks Allowed" signs north of the northernmost driveway.* *The addition of these signs would discourage trucks from using the segment of Dale Road north of the northernmost Project site driveway. Depending on the level of compliance, enforcement activities may also be necessary.*	

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
		These requirements shall be noted on the Project improvement plans. ***Mitigation Measure 3.13-6****: The Project applicant shall prepare a Local Transportation Analysis Report, to the satisfaction of the City of Modesto Engineering Services Department, to identify intersections along the State Highway System where the Project would cause 95th percentile queues to exceed the available storage. Additionally, the Project applicant shall prepare a transportation phasing analysis to determine which phases of Project development would trigger the need for geometric improvements to accommodate 95th percentile queues for State Highway System intersection turning movements where the Project causes the 95th percentile queue to exceed available storage. All geometric improvements at State Highway System intersections shall be designed in accordance with Caltrans standards.* *The extent of intersection improvements required on the State Highway System to accommodate 95th percentile queue lengths will be determined through a separate Local Transportation Analysis Report. This analysis shall include an evaluation of the following intersections along the State Highway System:* • *Hammett Road/SR 99 Southbound Ramps* • *Hammett Road/SR 99 Northbound Ramps* • *Patterson Road/SR 108* • *McHenry Avenue/SR 108* • *Broadway Avenue/SR 99 Southbound Ramps* • *Kiernan Avenue (SR 219)/SR 99 Northbound Ramps* • *Kiernan Avenue (SR 219)/Sisk Road* • *Kiernan Avenue (SR 219)/Stoddard Road* • *Kiernan Avenue (SR 219)/Dale Road* • *Kiernan Avenue (SR 219)/Carver Road* • *Kiernan Avenue (SR 219)/Tully Road* • *Kiernan Avenue (SR 219)/McHenry Avenue (SR 108)* • *Salida Boulevard/SR 99 Southbound Ramps* • *Pelandale Avenue/Salida Boulevard/SR 99 Southbound Off-Ramp* • *Sisk Road/SR 99 Northbound Ramps*	

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
Impact 3.13-4: Project implementation, with mitigation, would not result in inadequate emergency access	PS	***Mitigation Measure 3.13-8****: The Project applicant shall construct the on-site fire apparatus access road network in accordance with the City of Modesto Fire Code, subject to approval by the City of Modesto Fire Department. These requirements shall be noted on the Project improvement plans.*	LS
Impact 3.13-5: Cumulative Impacts Related to VMT	PS	*Implement* ***Mitigation Measures 3.13-1 and 3.13-2****.*	SU and CC
Impact 3.13-6: Cumulative Impacts Related to Conflicts with Adopted Policies, Plans, or Programs Regarding Bicycle or Pedestrian Facilities under Cumulative Conditions	PS	*Implement* ***Mitigation Measures 3.13-3a, 3.13-3b, and 3.13-3c.***	SU and CC
Impact 3.13-7: Cumulative Impacts Related to Increased Hazards due to a Geometric Design Feature (e.g., sharp curves or dangerous intersections) or Incompatible Uses (e.g., farm equipment)	PS	*Implement* ***Mitigation Measures 3.13-4, 3.13-5, 3.13-6, and 3.13-9.***	SU and CC
Impact 3.13-8: Cumulative Impacts Related to Inadequate Emergency Access	PS	*Implement* ***Mitigation Measure 3.13-8.***	LS and LCC
UTILITIES AND SERVICE SYSTEMS			
Impact 3.14-1: The proposed Project would not to require or result in the construction of new wastewater treatment or collection facilities or expansion of existing facilities, the construction of which could cause significant environmental effects	LS	*None required.*	--

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PS – potentially significant *B – beneficial impact* *SU – significant and unavoidable*

ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
Impact 3.14-2: The proposed Project would not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board	LS	*None required.*	--
Impact 3.14-3: Cumulative Impacts Related to Wastewater	LS and LCC	*None required.*	--
Impact 3.14-4: The proposed Project would not require construction of new water treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects	LS	*None required.*	--
Impact 3.14-5: The proposed Project would not have insufficient water supplies available to serve the Project from existing entitlements and resources	LS	*None required.*	--
Impact 3.14-6: Cumulative Impacts Related to Water Service	LS and LCC	*None required.*	--
Impact 3.14-7: The proposed Project would not require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects	LS	*None required.*	--
Impact 3.14-8: Cumulative Impacts Related to Stormwater and Drainage	LS and LCC	*None required.*	--

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PS – potentially significant *B – beneficial impact* *SU – significant and unavoidable*

ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
Impact 3.14-9: The proposed Project would be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs and comply with federal, State, and local statutes and regulations related to solid waste	LS	*None required.*	--
Impact 3.14-10: Cumulative Impacts Related to Solid Waste	LS and LCC	*None required.*	--
Impact 3.14-11: The proposed Project would not require construction of new electric power, natural gas, or telecommunications facilities or expansion of existing facilities, the construction of which could cause significant environmental effects	LS	*None required.*	--
Impact 3.14-12: Cumulative Impacts Related to Electric Power, Natural Gas, and Telecommunications Facilities	LS and LCC	*None required.*	--

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1.1 PURPOSE AND INTENDED USES OF THE EIR

The City of Modesto, as the lead agency, determined that the proposed Scannell Industrial Project is a "Project" within the definition of CEQA. CEQA requires the preparation of an environmental impact report (EIR) prior to approving any project, which may have a significant impact on the environment. For the purposes of CEQA, the term "Project" refers to the whole of an action, which has the potential for resulting in a direct physical change or a reasonably foreseeable indirect physical change in the environment (CEQA Guidelines Section 15378[a]).

An EIR must disclose the expected environmental impacts, including impacts that cannot be avoided, growth-inducing effects, impacts found not to be significant, and significant cumulative impacts, as well as identify mitigation measures and alternatives to the proposed project that could reduce or avoid its significant adverse environmental impacts. CEQA requires government agencies to consider and, where feasible, minimize environmental impacts of proposed development.

The City of Modesto, as the lead agency, has prepared this Draft EIR to provide the decisionmakers, the public and the responsible and trustee agencies with an objective analysis of the potential environmental impacts resulting from implementation of the proposed Project. The environmental review process enables interested parties to evaluate the proposed Project in terms of its environmental consequences, to examine and recommend methods to eliminate or reduce potentially significant adverse impacts, and to consider a reasonable range of alternatives to the proposed Project. This EIR will be used by the City of Modesto to determine whether to approve, modify, or deny the proposed Project and associated approvals in light of the Project's environmental effects. The EIR will be used as the primary environmental document to evaluate full development, all associated infrastructure improvements, and permitting actions associated with the proposed Project. All of the actions and components of the proposed Project are described in detail in Chapter 2.0, Project Description.

1.2 TYPE OF EIR

The State CEQA Guidelines identify several types of EIRs, each applicable to different project circumstances. This EIR has been prepared as a Project-level EIR, described in State CEQA Guidelines § 15161 as: "The most common type of EIR (which) examines the environmental impacts of a specific development project. This type of EIR should focus primarily on the changes in the environment that would result from the development project. The EIR shall examine all phases of the project including planning, construction, and operation. The project-level analysis considers the broad environmental effects of the proposed Project.

1.3 KNOWN RESPONSIBLE AND TRUSTEE AGENCIES

The term "Responsible Agency" includes all public agencies other than the Lead Agency that have discretionary approval power over the proposed Project or an aspect of the proposed Project (CEQA Guidelines Section 15381). For the purpose of CEQA, a "Trustee" agency has jurisdiction by law over

natural resources affected by a project which are held in trust for the people of the State of California (CEQA Guidelines Section 15386).

The following agencies are considered “Responsible Agencies” and will need to rely on this EIR to issue permits or approve certain aspects of the proposed Project. A "Responsible Agency" is any public agency, other than the lead agency, which has the responsibility for approving the project where more than one public agency is involved. Other governmental agencies that may require approval include, but are not limited to, the following:

- Central Valley Regional Water Quality Control Board (CVRWQCB) – Storm Water Pollution Prevention Plan (SWPPP) NOI pursuant to the Clean Water Act;
- San Joaquin Valley Air Pollution Control District (SJVAPCD) – Construction-related permits;
- San Joaquin Valley Air Pollution Control District (SJVAPCD) – As an industrial development, the Project may be subject to Indirect Source Review (ISR);
- San Joaquin Valley Air Pollution Control District (SJVAPCD) – As an industrial development, the Project may be subject to Authority to Construct depending on the industrial user;
- Stanislaus County Local Agency Formation Commission (LAFCO)- Approval of SOI Amendment, Annexation, MSR Amendment, and Plan for Services;
- Modesto Fire Department – Plan check of the site plan and roadway improvements for adequate emergency vehicle access and fire flow capabilities; Plan check of all building plans for Early Suppression, Fast Response (ESFR) fire sprinkler system.

1.4 ENVIRONMENTAL REVIEW PROCESS

The review and certification process for the EIR has involved, or will involve, the following general procedural steps:

NOTICE OF PREPARATION AND INITIAL STUDY

The City of Modesto circulated a Notice of Preparation (NOP) of an EIR for the proposed Project on February 21, 2025 to the State Clearinghouse, State Responsible Agencies, State Trustee Agencies, Other Public Agencies, Organizations and Interested Persons. A public scoping meeting was held during the Planning Commission meeting on March 20, 2025 to present the project description to the public and interested agencies, and to receive comments from the public and interested agencies regarding the scope of the environmental analysis to be included in the Draft EIR. Concerns raised in response to the NOP were considered during preparation of the Draft EIR. The NOP and comments received on the NOP by interested parties are presented in Appendix A.

DRAFT EIR

This document constitutes the Draft EIR. The Draft EIR contains a description of the proposed Project, description of the environmental setting, identification of project impacts, and mitigation measures for impacts found to be significant, as well as an analysis of project alternatives, identification of significant irreversible environmental changes, growth-inducing impacts, and cumulative impacts. This Draft EIR identifies issues determined to have no impact or a less than significant impact, and provides detailed analysis of potentially significant and significant impacts.

Comments received in response to the NOP were considered in preparing the analysis in this EIR. Upon completion of the Draft EIR, the City of Modesto will file the Notice of Completion (NOC) with the State Clearinghouse of the Governor's Office of Planning and Research to begin the public review period. Additionally, the City of Modesto will file the Notice of Availability with the County Clerk and have it published in a newspaper of regional circulation to begin the local public review period.

PUBLIC NOTICE/PUBLIC REVIEW

The City of Modesto will provide a public notice of availability for the Draft EIR, and invite comment from the general public, agencies, organizations, and other interested parties. Consistent with CEQA, the review period for this Draft EIR is forty-five (45) days. Public comment on the Draft EIR will be accepted in written form. All comments or questions regarding the Draft EIR should be addressed to:

Attn: Radha Hayagreev | Principal Planner
City of Modesto | Planning Division
1010 10th St.,
Modesto, CA 95354
209-577-5267
rhayagreev@modestogov.com

RESPONSE TO COMMENTS/FINAL EIR

Following the public review period, a Final EIR will be prepared. The Final EIR will respond to written comments received during the public review period and to oral comments received at any public hearing that may be held during such review period.

CERTIFICATION OF THE EIR/PROJECT CONSIDERATION

The City of Modesto will review and consider the Final EIR. If the City of Modesto finds that the Final EIR is "adequate and complete", the City of Modesto will certify the Final EIR in accordance with CEQA. The rule of adequacy generally holds that an EIR can be certified if:

1) The EIR shows a good faith effort at full disclosure of environmental information; and

2) The EIR provides sufficient analysis to allow decisions to be made regarding the proposed project in contemplation of environmental considerations.

Following review and consideration of the Final EIR, the City of Modesto may take action to approve, modify, or reject the proposed Project. A Mitigation Monitoring and Reporting Program, as described below, would also be adopted in accordance with Public Resources Code Section 21081.6(a) and CEQA Guidelines Section 15097 for mitigation measures that have been incorporated into or imposed upon the proposed Project to reduce or avoid significant effects on the environment. This Mitigation Monitoring and Reporting Program will be designed to ensure that these measures are carried out during project implementation, in a manner that is consistent with the EIR.

1.5 ORGANIZATION AND SCOPE

Sections 15122 through 15132 of the State CEQA Guidelines identify the content requirements for Draft and Final EIRs. An EIR must include a description of the project and its environmental setting, an environmental impact analysis, mitigation measures, alternatives, significant irreversible environmental changes, growth-inducing impacts, and cumulative impacts. Discussion of the environmental issues addressed in the Draft EIR was established through review of environmental and planning documentation developed for the proposed Project, environmental and planning documentation prepared for recent projects located within the City of Modesto, applicable local and regional planning documents, and responses to the Notice of Preparation (NOP).

This Draft EIR is organized in the following manner:

EXECUTIVE SUMMARY

The Executive Summary summarizes the characteristics of the proposed project, known areas of controversy and issues to be resolved, and provides a concise summary matrix of the proposed Project's environmental impacts and possible mitigation measures. The Executive Summary also identifies the alternatives that reduce or avoid at least one significant environmental effect of the proposed Project.

CHAPTER 1.0 – INTRODUCTION

Chapter 1.0 briefly describes the purpose of the environmental evaluation, identifies the lead, trustee, and responsible agencies, summarizes the process associated with preparation and certification of an EIR, and identifies the scope and organization of the Draft EIR.

CHAPTER 2.0 – PROJECT DESCRIPTION

Chapter 2.0 provides a detailed description of the proposed Project, including the location, intended objectives, background information, the physical and technical characteristics, including the decisions subject to CEQA, related improvements, and a list of related agency action requirements.

CHAPTER 3.0 – ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION MEASURES

Chapter 3.0 contains an analysis of environmental topic areas as identified below. Each subchapter addresses a topical area and is organized as follows:

Environmental Setting. A description of the existing environment as it pertains to the topical area.

Regulatory Setting. A description of the regulatory environment that may be applicable to the proposed Project.

Impacts and Mitigation Measures. Identification of the thresholds of significance by which impacts are determined, a description of project-related impacts associated with the environmental topic,

identification of appropriate mitigation measures, and a conclusion as to the significance of each impact.

The following environmental topics are addressed in this section:

- Aesthetics and Visual Resources
- Agricultural Resources
- Air Quality
- Biological Resources
- Cultural and Tribal Resources
- Geology, Soils and Mineral Resources
- Greenhouse Gases, Climate Change, and Energy
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Population
- Noise
- Public Services and Recreation
- Transportation and Circulation
- Utilities and Service Systems

CHAPTER 4.0 – OTHER CEQA-REQUIRED TOPICS

Chapter 4.0 evaluates and describes the following CEQA required topics: impacts considered less-than-significant, significant and irreversible impacts, growth-inducing effects, cumulative, and significant and unavoidable environmental effects.

CHAPTER 5.0 – ALTERNATIVES TO THE PROJECT

State CEQA Guidelines Section 15126.6 requires that an EIR describe a range of reasonable alternatives to the proposed Project, which could feasibly attain the basic objectives of the proposed Project and avoid and/or lessen any significant environmental effects of the proposed Project. Chapter 5.0 provides a comparative analysis between the environmental impacts of the proposed Project and the selected alternatives.

CHAPTER 6.0 – REPORT PREPARERS

This section lists all authors and agencies that assisted in the preparation of the EIR, by name, title, and company or agency affiliation.

CHAPTER 7.0 – REFERENCES

This section lists references.

APPENDICES

This section includes all notices and other procedural documents pertinent to the EIR, as well as technical material prepared to support the analysis.

1.6 COMMENTS RECEIVED ON THE NOTICE OF PREPARATION

The City of Modesto received sixteen written comment letters on the NOP for the proposed Project from those listed below. Copies of the NOP comment letters are provided in Appendix A of this Draft EIR. The City also held a public scoping meeting on March 20, 2025. No formal written comments were provided, however, verbal comments were summarized in the meeting notes/comments, which is also included in Appendix A.

- Pricilla Torres-Fuentes, Native American Heritage Commission (2/25/2025);
- Ninos Shamoon/Yama Noorzai, County DER (3/6/2025);
- Lauren Q Evans - Public Records Request, Adams Broadwell Joseph & Cardoza (3/12/2025);
- Lauren Q Evans - Request for Notice of Actions and Hearings, Adams Broadwell Joseph & Cardoza (3/12/2025);
- Leonard Powell - (Letter and Attachment), Salida Resident (3/19/2025);
- Plan Review Team Land Management (Letter and attachment)/Matthieu McNair PG&E (3/20/2025);
- Anita Young, Modesto Resident (3/24/2025);
- Michael Corder, SJVAPCD (3/24/2025);
- Duane Wolterstorf, Modesto City Schools (3/25/2025);
- Alaura McGuire, Adams Broadwell Joseph & Cardoza (3/27/2025);
- David Schwarz, William D Ross (3/27/2025);
- Garry Pearson, Resident Riverbank (3/27/2025);
- Julie Vance/John Riedel, CDFW (3/27/2025);
- Peter Minkel, CVRWQCB (3/27/2025);
- Sara Lytle-Pinhey, LAFCo (3/27/2025); and
- Tina Rocha, County CEO (3/27/2025).

1.7 POTENTIAL AREAS OF CONCERN

Topics of concern expressed by written and public comments include the following. It is noted that some of the concerns expressed are not specifically environmental topics that are analyzed within an EIR, rather they are political, social, or economic concerns that are not addressed within an EIR, but are considered by elected officials in their deliberations of entitlement requests. To the extent that a concern presented below is an environmental topic as defined within the CEQA, the topic is analyzed within this EIR.

- Concern that the Project conflicts with a Salida Initiative, Election/ballot initiative, Board of Supervisors decision regarding Salida Community Plan;
- Concern over constitutional rights of citizen;
- Concern that City staff will be held personally liable for constitutional violations;
- Concern over fiscal/economic impacts, cost recovery of services;
- Concern that project is a “land grab;”
- Concern regarding detachment from Salida Fire Protection District and needs a review of fire services;

- Concern regarding County Services, Salida Sewer District, and the need to review all public services;
- Concern regarding school services, and impacts on existing school near project site;
- Concern regarding stormwater, groundwater, and surface water impacts;
- Concern regarding agricultural conversion and impacts on existing agricultural operations;
- Concern regarding air quality Impacts, construction/operational emissions above thresholds, toxic air contaminants, and heat impacts;
- Concern regarding tribal cultural resources/archaeological resources/native American consultation;
- Concern regarding increased traffic, truck routing, heavy-duty trucks, safety, and congestion;
- Concern regarding cumulative impacts.

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2.0.1 PROJECT LOCATION

The Scannell Industrial Project (proposed Project) consists of approximately 145 acres located at the northwest corner of Kiernan Avenue and Dale Road intersection, within the unincorporated Community of Salida. The Project site is located within the Stanislaus County Salida Community Plan (SCP) and is zoned for development as Salida Community Plan Industrial/Business Park (SCP-IBP) and Salida Community Plan Planned Industrial (SCP-PI). The area is also within the City of Modesto General Plan Planning Area with a designation of Salida Community Plan (SCP).

Figures 2.0-1 and 2.0-2 show the Project's regional location and vicinity.

2.0.2 PROJECT SETTING

EXISTING SITE CONDITIONS

The Project site is under active agricultural operations, including cropland and orchard operations. The Project site is flat and ranges in elevation from 75 to 82 feet above mean sea level. Historically, the Project site has been used for intensive agricultural purposes and is designated as Prime Farmland by the California Department of Conservation Farmland Mapping and Monitoring Program (FMMP) but is designated for industrial development by Stanislaus County and the City of Modesto. The Project site is not subject to a Williamson Act Land Conservation Contract and is not enrolled in the Farmland Security Zone program. The Project site is located on a single Assessor's Parcel Number (APN) 003-019-026 as displayed on Figure 2.0-3. Figure 2.0-4 shows aerial imagery of the current existing site uses within the Project site.

EXISTING SURROUNDING USES

The Project site and surrounding properties are in agricultural use, except where development has occurred. There are also light industrial developments east and west of the Project site, along Kiernan Avenue. Joseph A. Gregori High School is located immediately northwest of the Project site on the north side of Pirrone Road. The site plan includes a basin on the west side of the Project site that serves as a buffer from the High School and vacant land to the west. Building 1 on the site plan is the closest building to the High School, located 528 feet from the High School property line. From the High School property line, the closest loading dock is 576 feet, and the closest access road along Pirrone Road is 1,296 feet. In addition, Kaiser Permanente Modesto Medical Center is located over 1,000 feet to the south, along with other similar business park uses.

The Project site is primarily bounded by land within the unincorporated County (Salida Community) to the north, east and west. Lands within the City of Modesto are located to the south. Uses within the surrounding area include the following:

- North – Agricultural lands, Joseph A. Gregori High School.
- East – Agricultural lands, industrial developments, along Kiernan Avenue.
- South – Kaiser Permanente Modesto Medical Center and similar business park uses, within the City of Modesto.

- West – Agricultural lands, industrial developments.

2.0.3 GENERAL PLAN LAND USE AND ZONING DESIGNATIONS

EXISTING GENERAL PLAN LAND USE DESIGNATIONS

City of Modesto

The Modesto General Plan Land Use Map designates the Project site as the Salida Community Plan (SCP) Area. The Modesto General Plan notes that if the Salida Comprehensive planning district (or any portion thereof) is annexed to the City of Modesto, the City does not propose to change any land use designations from those adopted by Stanislaus County.

Stanislaus County

The Stanislaus County General Plan Land Use Map designates the Project site as Salida Community Plan Business Park (SCP-IBP) and Salida Community Plan, Planned Industrial (SCP-PI). A description of each Stanislaus County land use designation is described in further detail below.

- **Salida Community Plan Business Park (SCP-IBP):** The Business Park designation is intended to accommodate development of a full range of uses, including modern, employment-intensive uses. Principal development and employment generating uses allowed within this designation include research, product development, professional office, commercial, and business services.
- **Salida Community Plan Planned Industrial (SCP-PI):** The Planned Industrial designation is intended to help alleviate the existing jobs-housing imbalance in the County by promoting development of employment-generating industrial/business park uses in the area roughly bound by Ladd Road, Dale Road, Pelandale Expressway, and Sisk Road.

Figures 2.0-5a and 2.0-5b depict the Stanislaus County and City of Modesto General Plan land use designations for the Project site and the surrounding areas.

EXISTING ZONING DESIGNATIONS

City of Modesto

The Project site is located outside the Modesto city limits, and the City of Modesto has not zoned the Project site.

Stanislaus County

The Stanislaus County Zoning Ordinance (Chapter 21.66 of the County Code) designates the Project site for Salida Community Plan (SCP) zoning District. The SCP District is intended to implement the General Plan's stated vision for the development of the Salida Community Plan Amendment Area. There are nine sub-zoning districts for the SCP District, of which the Project site is Salida Community Plan, Industrial/ Business Park (SCP-IBP), and Salida Community Plan, Planned Industrial (SCP-PI). Figures 2.0-6a and 2.0-6b depict the Stanislaus County and City of Modesto zoning districts for the Project site and the surrounding areas.

SURROUNDING GENERAL PLAN DESIGNATIONS

Within Stanislaus County, lands to the north and west of the Project site are designated Salida Community Plan Business Park (SCP-IBP) and Salida Community Plan Planned Industrial (SCP-PI); lands to the east are designated Agriculture (AG); and lands to the south are designated Salida Community Plan Business Park (SCP-IBP). As mentioned, the City of Modesto designates the lands to the north and west of the Project site as Salida Community Plan Area.

2.0.4 PROJECT GOALS AND OBJECTIVES

Consistent with the California Environmental Quality Act (CEQA), Guidelines Section 15124(b), a clear statement of objectives is required to help lead agencies, decision-makers, and members of the public understand the project's purpose, and to provide the basis for the examination of the range of reasonable alternatives to the proposed Project (CEQA Guidelines §15124(b)). The statement of objectives also enables the City, as Lead Agency, to make the required findings regarding alternatives. The principal objective of the proposed Project is to develop a well-planned, multi-phase industrial project on a site designated and zoned for such development under the Stanislaus County Salida Community Plan, to facilitate annexation into the City of Modesto, and to provide employment-generating industrial uses consistent with the goals and policies of the City of Modesto General Plan and the Salida Community Plan.

The City has identified eight additional Project goals and objectives that inform the Project purpose. These additional Project goals and objectives are as follows:

- Establish City land use and zoning that is consistent with and facilitates the vision for new growth and development in the Salida Community Plan (SCP). This includes emphasizing Industrial uses planned in the eastern portion of the SCP adjacent to the City of Modesto limits.
- Design an industrial facility that could attract a variety of end users, including a transload facility, short-term storage facility, light industrial, and/or manufacturing uses.
- Incorporate commercial use within the industrial area to provide opportunities for onsite employees to have access to retail services. Locate the commercial use such that it also enhances accessibility for passerby traffic to maximize the success of the commercial businesses.
- Strengthen the local economic base through job creation; development related investment; increased income opportunities; and increased property, and sales taxes through the development of the industrial and commercial uses.
- Provide local and regional employment opportunities that take advantage of the area's high level of accessibility and help create a job/housing balance.
- Install infrastructure improvements, including water, sewer, power, and stormwater systems that meet city standards, and integrate with existing utility network without diminishing services to existing residents.
- Develop a multi-phase plan that could be constructed over an estimated 10-year building horizon and align infrastructure improvements to the infrastructure needs of each phase.
- Design the facilities with efficient transportation access and circulation within site plan, including accessible loading bays, and logistics management. Ensure that offsite transportation systems can facilitate industrial traffic via designated truck routes.

2.0.5 PROJECT CHARACTERISTICS AND DESCRIPTION

PROJECT CHARACTERISTICS

The proposed Project will result in the construction of up to 2,503,230 square feet of warehouse, distribution, and manufacturing space. In addition, a small approximately 3-acre retail site is proposed at the corner of Dale Road and Kiernan Avenue (SR 219) to provide retail service for the proposed Project. The maximum development scenario for the retail site is 6,000 square feet of convenience store, and 8,000 square feet of quick serve restaurants. The proposed Project is characterized as follows:

- 2,503,230 square feet (sf) of industrial land uses; specific tenants are not known; therefore, a mix of warehouse, manufacturing and distribution uses are assumed for purposes of the Project description. It is noted that this reflects an even allocation of square footage among these uses, except for less square footage devoted to cold storage, and no allocation for data centers which are prohibited from this site:
    - 667,528 sf of warehouse uses.
    - 667,528 sf of manufacturing uses
    - 667,528 sf of distribution uses
    - 500,646 sf of cold storage uses.
- Up to 1,963 off-street parking stalls for industrial use
- Up to 788 off-street trailer parking stalls for industrial uses
- Approximately 2.8 acres (121,450 square feet) of developable land area is designated for retail development; specific tenants and uses have not yet been identified. For the purposes of this analysis, it is assumed that the following land uses could be accommodated within this area:
    - Gas station with eighteen vehicle fuel positions and a 6,000-sf convenience store.
    - Two fast-food restaurants with drive-through windows, each with 4,000 sf of building area, totaling 8,000 sf.

The proposed Project includes a Tentative Map that would create eight parcels for the industrial and retail buildings. Figure 2.0-7 provides an illustration of the proposed buildings and parcel lines. Figure 2.0-8 provides an illustration of the utility plan.

The applicant proposes to construct seven industrial buildings. The warehouse buildings would be single-story, with a maximum height of 45 feet. The size of each building (in square feet) is summarized in Table 2.0-1, below. For the analysis, future uses are anticipated to be evenly split between manufacturing, warehouse, and distribution uses. The end user is not known currently, but cold storage is anticipated to occupy between 0-20% of the total space and data centers would be prohibited.

The projected project phasing is currently expected to be four (4) phases of development over approximately ten (10) years. Each phase would include removal of existing almond trees or ground crops (based on current farming practices). Improvements to serve each phase could include, but would not be limited to, any required off-site street improvements and extension of utilities, site grading, construction of underground utilities on-site (water, sewer, and dry utilities), storm drainage retention, paving,

landscaping, lighting, and the construction of buildings. As the project develops, the timing, size, and number of phases may change based on market conditions.

TABLE 2.0-1: SUMMARY OF PROPOSED OFFICE AND WAREHOUSE BUILDINGS

	BUILDING 1	*BUILDING 2*	*BUILDING 3*	*BUILDING 4*	*BUILDING 5*	*BUILDING 6*	*BUILDING 7*
Site Area (sf)	1,145,488	1,116,754	753,947	988,633	627,181	601,557	316,397
Building Area (sf) Office/Warehouse	20,000/ 531,640	20,000/ 510,160	20,000/ 322,700	20,000/ 435,230	20,000/ 240,010	20,000/ 240,010	10,000/ 93,480
Parking Provided Standard/Trailer	290/200	275/200	401/105	265/178	357/ 89	358/89	225/0

SOURCE: CITY OF MODESTO, 2024.

The project would operate continuously, and the site would be active 24 hours a day, seven days a week. The potential noise, lighting, and truck traffic impacts of 24-hour operations on nearby sensitive receptors, including the unincorporated Salida community and Joseph A. Gregori High School, are evaluated in the applicable technical sections of this EIR. It is estimated that the warehouse facilities would provide approximately 1,000 employment opportunities, based on the employment generation assumptions in the Salida Community Plan.

The 2–3-acre retail site does not have a proposed end use, but a variety of commercial retail uses allowed under the City's commercial land use and zoning standards could occupy the retail site. Based on the size of the parcel, it is expected that the end user would be a local serving retail as opposed to regional shopping, and examples of such uses include a gas station, and a small restaurant use. For the analysis, it is assumed that the retail use would include a gas station with eighteen vehicle fueling positions and a 6,000-sf convenience store, as well as two fast-food restaurants with drive-through windows, each with 4,000 sf of building area, totaling 8,000 sf.

The project design will include secure perimeter fencing, landscaping, lighting, and way finding signage.

CITY OF MODESTO GENERAL PLAN AMENDMENT

The proposed Project includes an amendment to the City of Modesto General Plan to designate the site Industrial (I), while maintaining the SCP as a land use overlay designation. The General Plan land use designation on the Project site would be SCP-I. This designation would allow uses consistent with uses anticipated under the Salida Community Plan.

- **Salida Community Plan (SCP) Overlay.** An overlay designation for areas located within the Salida Community Plan area.
    - **Industrial (I)**. To allow industrial uses in the Modesto Urban Area consistent with the SCP. This designation provides for the full range of industrial uses, including but not limited to manufacturing, food processing, trucking, packing, and recycling, as well as those enterprises which may want to combine office and production aspects of their business in the same complex. The guiding intensity is a Floor Area Ratio of approximately 0.50.

Figure 2.0-9 shows the proposed General Plan land use.

PRE-ZONING

The Project site is in unincorporated Stanislaus County and outside the City of Modesto city limits. The Project site is not zoned under the Modesto Zoning Ordinance. The proposed Project would pre-zone the Project site to Heavy Industrial (M-2), as described below. The retail site would maintain the M-2 (Heavy Industrial) zone but would require a Conditional Use Permit to be issued for any retail use within the M-2 zone. The proposed prezoning will ensure that land uses on the Project site align with the long-term vision for development of Salida Community Plan area.

- **M-2 Heavy Industrial (M-2)**. The M-2 Zone is intended to provide suitable sites for a wide range of industrial, manufacturing, business park and other similar uses that are further from non-industrial and potentially incompatible uses.

Figure 2.0-10 shows the proposed pre-zoning.

CIRCULATION IMPROVEMENTS

Pirrone Road is a two-lane road constructed on the north boundary of the Project site, Dale Road is a two-lane road on the east boundary of the Project site, and Kiernan Avenue is a four-lane divided State Highway on the south boundary of the Project site. Kiernan Avenue is planned to be widened to six lanes in the future. The intersection of Dale Road with Kiernan Avenue is signalized.

Access to the Project site would be provided at two locations; main project access will be to Dale Road with right-in/right-out access to Kiernan Avenue. Each of these access points allows for emergency vehicle access. As part of the Project, Dale Road, Pirrone Road, and Kiernan Avenue along the Project site's frontages would be improved with landscaping, as required by the City of Modesto.

The site plan includes various standard parking and trailer stalls as noted in Table 2.0-1, which would be provided within the interior of the site between buildings. The trailer parking stalls would be in the center of the site, primarily adjacent to docking doors of each building, while the standard parking stalls would primarily be located along the Project site boundaries.

UTILITIES AND PLANNED INFRASTRUCTURE IMPROVEMENTS

The construction of infrastructure improvements will be required to accommodate development of the proposed Project. The proposed Project would connect to existing City infrastructure to provide water, sewer, and storm drainage utilities. Dry utility infrastructure (i.e., electrical, gas, telephone, cable) would also be installed to provide utility services to the Project. All infrastructure would be developed to the City of Modesto standards.

Water Service

Upon annexation, the Project would be added to the City of Modesto's future service area. An existing water line and anticipated point of connection is in Dale Road just south of Kiernan Avenue. The Modesto Water Master Plan identifies a 12" waterline that would extend from Kiernan Avenue to Pirrone Road via Dale Road. The proposed Project would require the 12" waterline extension and would loop the system consistent with the City's standards.

Sewer Service

The Project site is located within the City of Modesto's future sewer service area (City of Modesto Wastewater Collection System Master Plan, 2017). The nearest sewer point of connection is at the 12" line located on Dale Road, south of Kiernan Avenue. That 12" line connects to a 27" sewer line at the intersection of Dale Road and Healthcare Way. This 12" sewer line will be extended north in Dale Road across Kiernan Avenue to serve the Project.

Storm Drain

This Project site is not served by existing public storm drain systems and will therefore need to retain all storm water on site. The proposed site plan includes a 6.75-acre storm drainage basin. The final sizing could increase or decrease based on a variety of engineering design factors that control storm drainage.

SOI AMENDMENT AND ANNEXATION

The Project site is currently located within Stanislaus County and within the City of Modesto's General Plan Planning Area, but outside the City's Sphere of Influence (SOI). The proposed Project includes an SOI amendment to incorporate the site into the City's SOI. Concurrent with the SOI amendment, the proposed Project proposes an annexation of the 145-acre site into the City of Modesto. This process will include the preparation of a LAFCo Plan for Services to address infrastructure, utilities, and public services, as well as an amendment to the City's Municipal Service Review (MSR) to ensure that the SOI boundary is reflected in the MSR. The annexation and related approvals will require review and approval by the Stanislaus County LAFCo. Figure 2.0-11 shows the proposed annexation and SOI amendment.

2.0.6 USES OF THE EIR AND REQUIRED AGENCY APPROVALS

This EIR may be used for the following Project approvals and permits associated with adoption and implementation of the proposed Project.

CITY OF MODESTO

The City of Modesto will be the Lead Agency for the proposed Project, pursuant to the State Guidelines for Implementation of CEQA, Section 15050. Actions that would be required by the City include, but are not limited to the following:

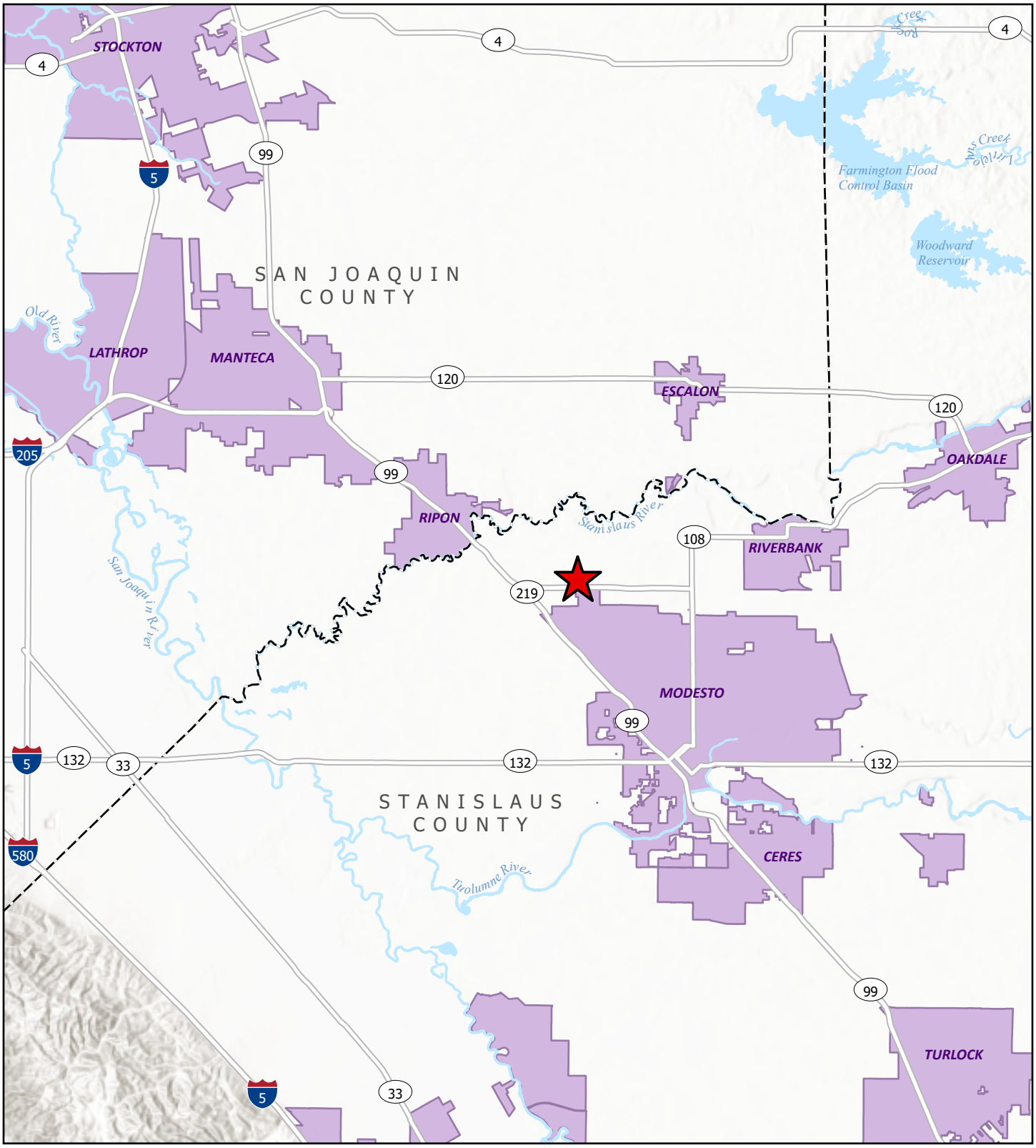
- Certification of the Environmental Impact Report (EIR).
- Adoption of the Findings of Fact, Statement of Overriding Considerations (if necessary), and Mitigation Monitoring and Reporting Program (MMRP).
- Approval of City of Modesto General Plan Amendment to Salida Community Plan-Industrial (SCP-I).
- Approval of City of Modesto Prezoning to Heavy Industrial (M-2).
- Approval of a Conditional Use Permit to allow retail use on the 3-acre site at the corner of Kiernan Avenue and Dale Road.
- Approval of Recommendation to LAFCo for an Amendment to the City's SOI to include the Project site.

- Approval of Recommendation to LAFCo for Annexation of the Project site into the City of Modesto.
- Approval of an Amendment to the City of Modesto Municipal Service Review (MSR).
- Approval of Development Plan Review for building design, landscaping, and other site features.
- Issuance of grading, encroachment, and building permits as necessary for Project construction.

OTHER GOVERNMENTAL AGENCY APPROVALS

The following agencies are considered "Responsible Agencies" and will need to rely on this EIR to issue permits or approve certain aspects of the proposed Project. A "Responsible Agency" is any public agency, other than the lead agency, which has the responsibility for approving the Project where more than one public agency is involved. Other governmental agencies that may require approval include, but are not limited to, the following:

- California Department of Transportation (Caltrans), District 10 – Encroachment Permit for any work within the State right-of-way of Kiernan Avenue (SR-219); Caltrans is a Responsible Agency with commenting authority over Project traffic impacts on the State Highway System.
- Central Valley Regional Water Quality Control Board (CVRWQCB) – Storm Water Pollution Prevention Plan (SWPPP) NOI pursuant to the Clean Water Act.
- San Joaquin Valley Air Pollution Control District (SJVAPCD) – Construction-related permits.
- San Joaquin Valley Air Pollution Control District (SJVAPCD) – As an industrial development, the Project may be subject to Indirect Source Review (ISR).
- San Joaquin Valley Air Pollution Control District (SJVAPCD) – As an industrial development, the Project may be subject to Authority to Construct depending on the industrial user.
- Stanislaus County Local Agency Formation Commission (LAFCO)- Approval of SOI Amendment, Annexation, MSR Amendment, and Plan for Services.
- Modesto Fire Department – Plan check of the site plan and roadway improvements for adequate emergency vehicle access and fire flow capabilities; Plan check of all building plans for Early Suppression, Fast Response (ESFR) fire sprinkler system.



Legend

- Project Location
- County Area
- Water Feature
- Incorporated Area

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 2.0-1. Regional Location Map

0 1 2 Miles

Sources: California State Geoportal. Map Date: December 5, 2024.

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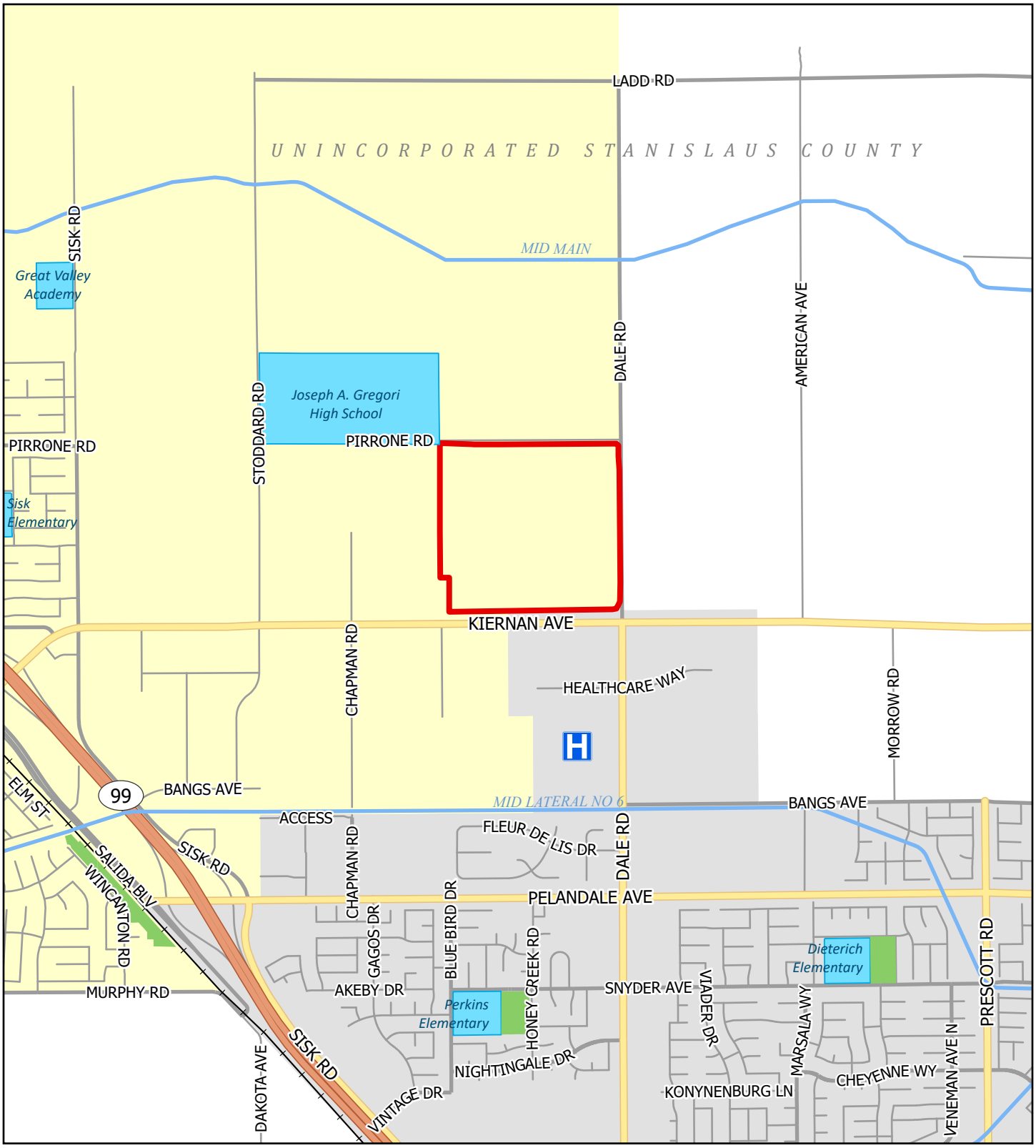

Legend

- Project Boundary
- City of Modesto
- Salida Community Plan Area
- Public School
- Park
- Canal
- Kaiser Medical Center

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 2.0-2. Project Vicinity Map

0 500 1,000 Feet

Sources: Stanislaus County GIS; California School Campus Database; CPAD2024a; OSHPD. Map Date: December 5, 2024.

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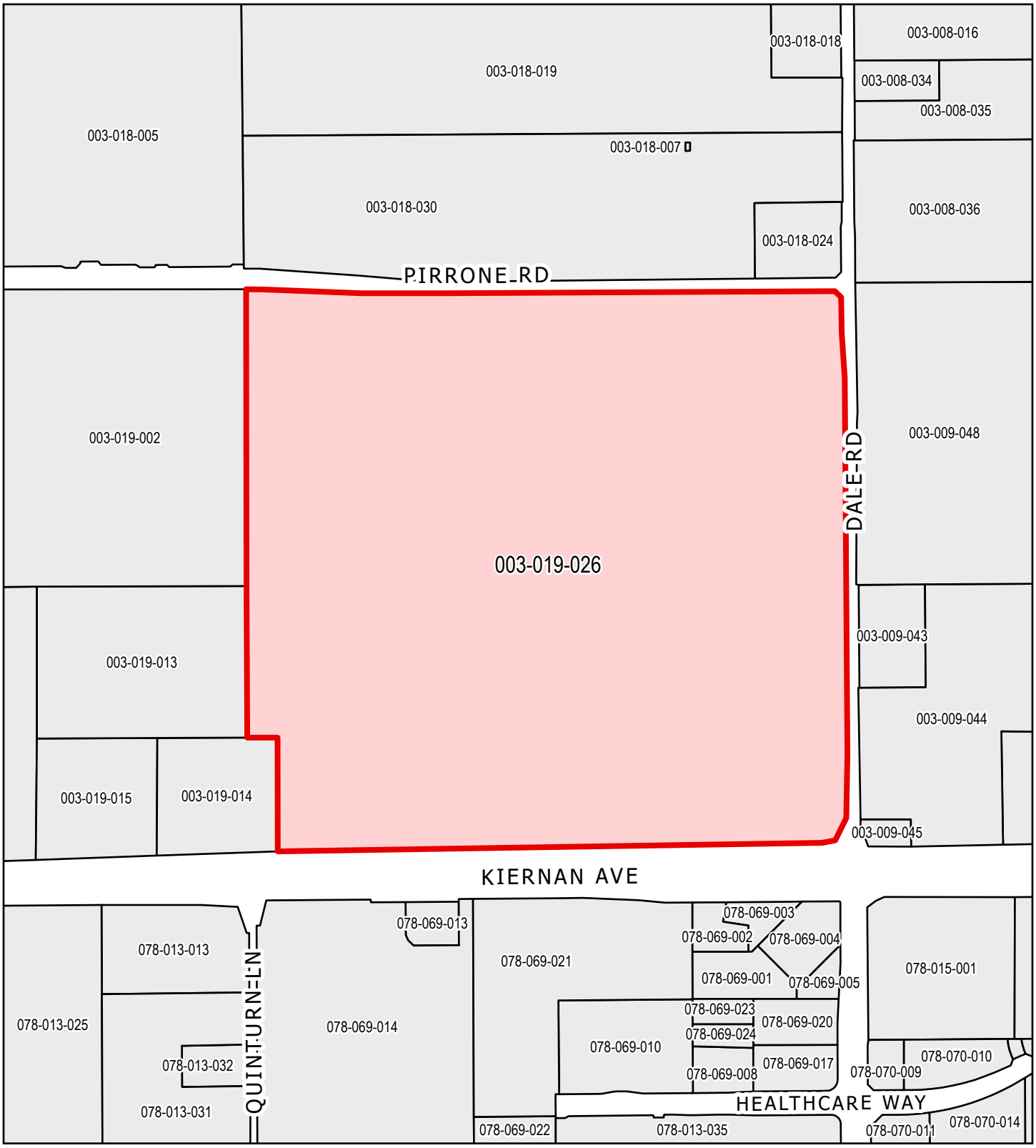

Legend

- Project Parcel
- Surrounding Parcel

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 2.0-3. Assessor Parcel Map

0 150 300 Feet

Sources: Stanislaus County GIS. Map Date: December 5, 2024.

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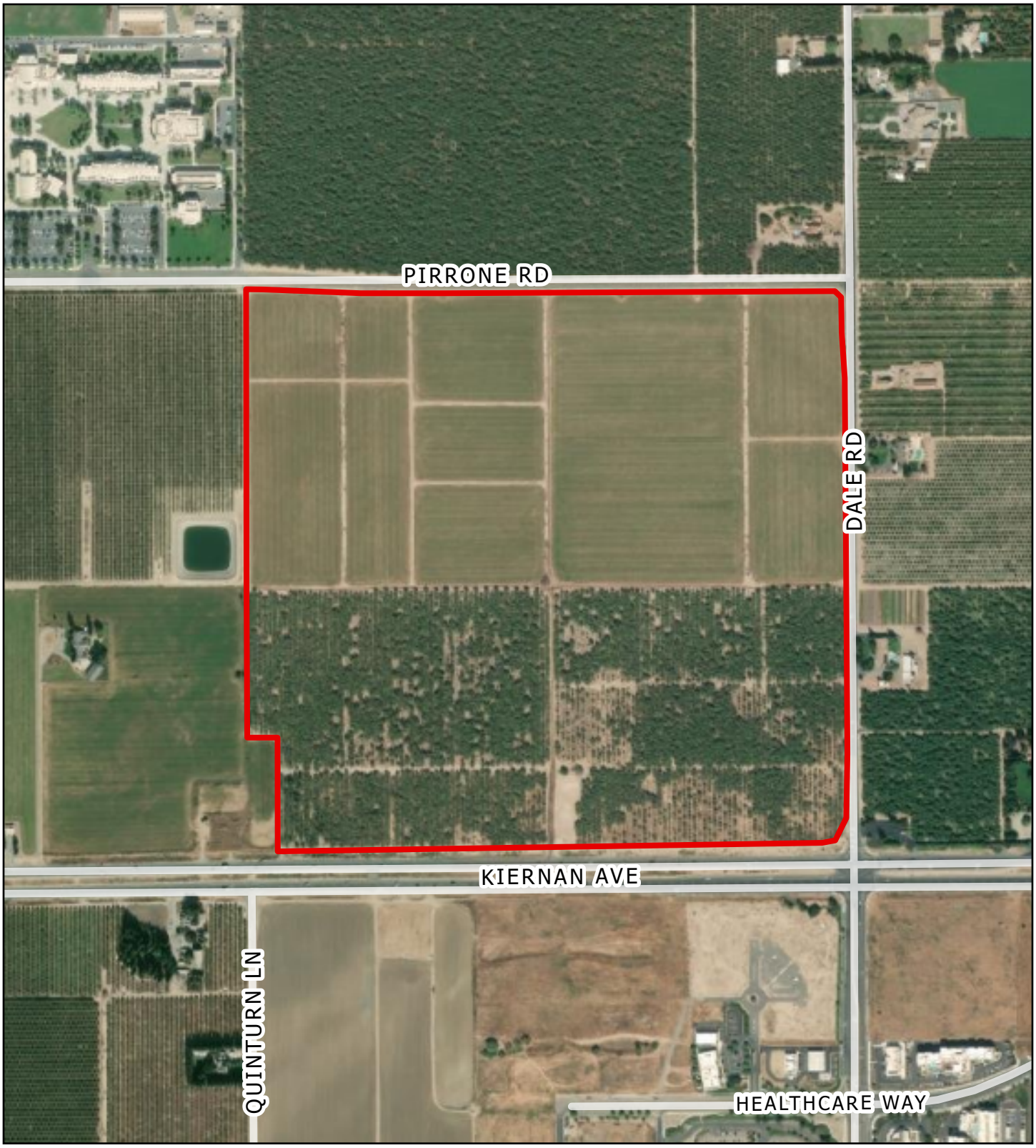

Legend

Project Parcel

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 2.0-4. Aerial View of Project Site

0 150 300 Feet

Sources: Stanislaus County GIS: MAXAR Imagery 9/23/2023.
Map Date: December 5, 2024.

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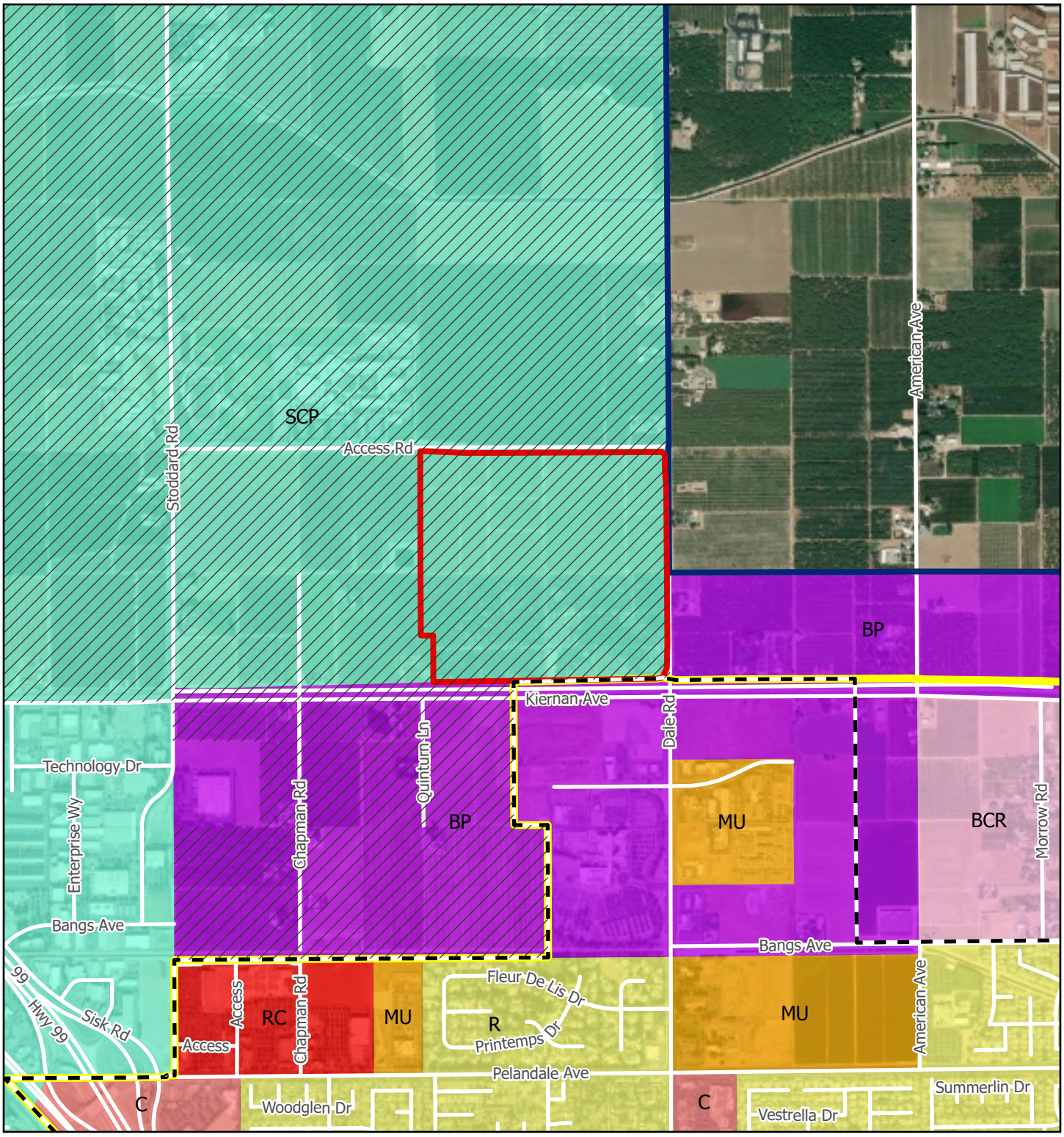

Legend

- Project Parcel
- City of Modesto
- Modesto Sphere of Influence
- Modesto General Plan Planning Area
- Salida Community Plan Area
- R - Residential
- MU - Mixed Use
- C - Commercial
- RC - Regional Commercial
- BCR - Business-Commercial-Residential
- BP - Business Park
- SCP - Salida Community Plan

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 2.0-5a.
Existing General Plan Land Use Designations
City of Modesto

0 500 1,000 Feet

De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm

Sources: City of Modesto General Plan. Map Date: December 13, 2024.

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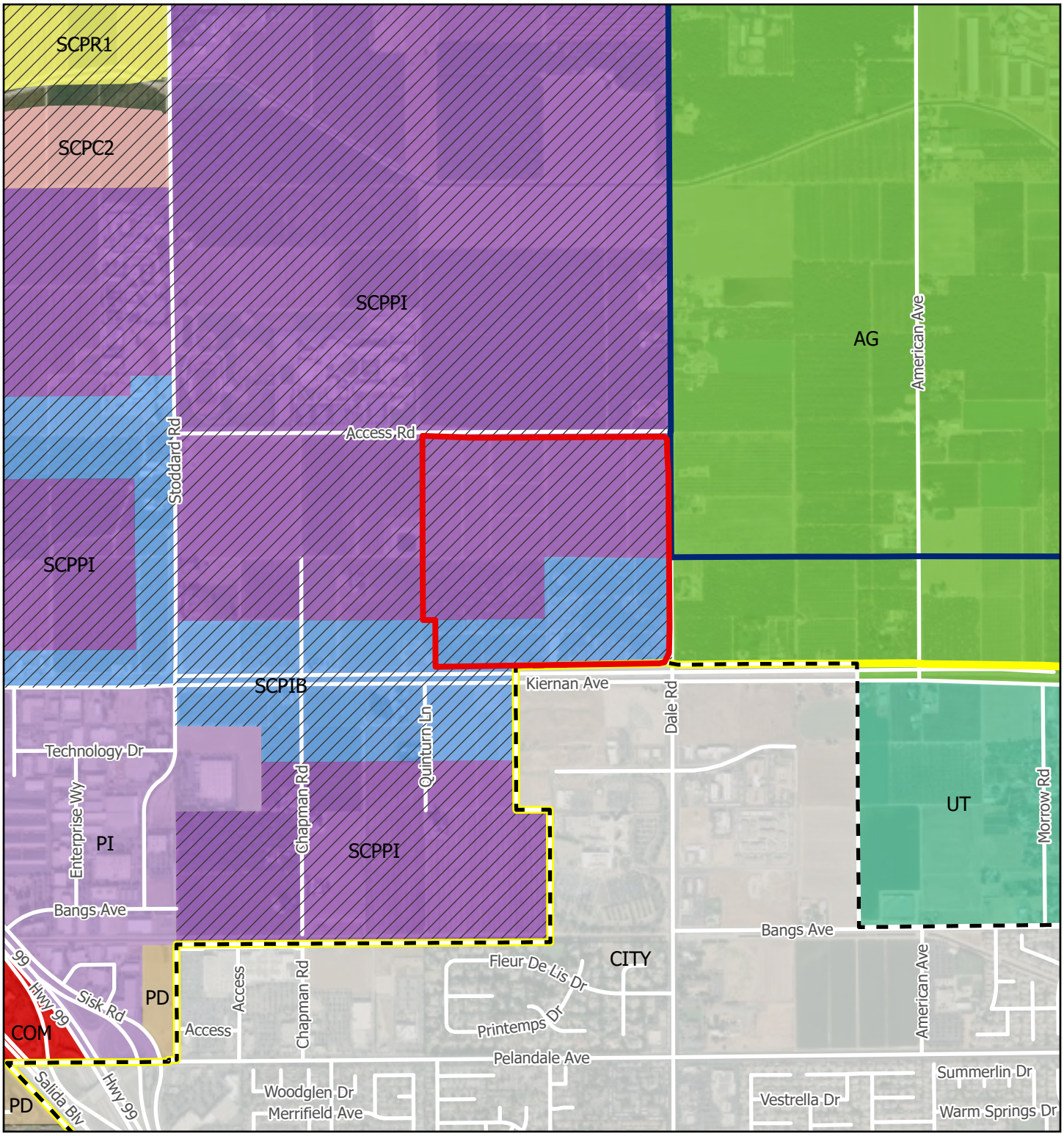

Legend

- Project Parcel
- City of Modesto
- Modesto Sphere of Influence
- Modesto General Plan Planning Area
- Salida Community Plan Area
- AG - Agriculture
- COM - Commercial
- PD - Planned Development
- PI - Planned Industrial
- UT - Urban Transition
- SCPR1 - Salida Community Plan R-1
- SCPC2 - Salida Community Plan C-2
- SCPIB - Salida Community Plan IPB
- SCPPI - Salida Community Plan PI
- CITY - City of Modesto

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 2.0-5b.
Existing General Plan Land Use Designations
Stanislaus County

0 500 1,000 Feet

De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm

Sources: Stanislaus County General Plan. Map Date: December 13, 2024.

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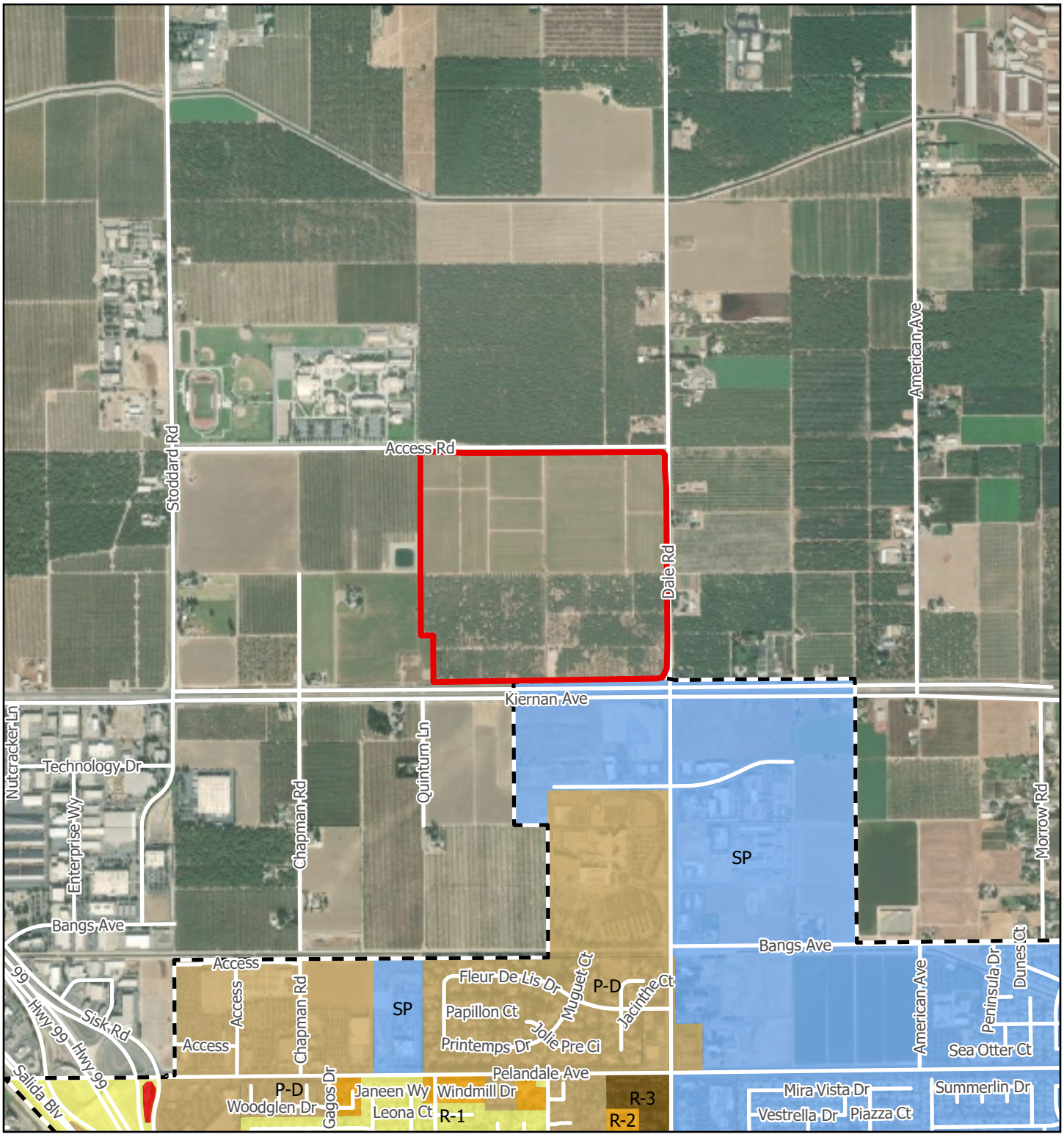

Legend

- Project Parcel
- City of Modesto
- R-1
- R-2
- R-3
- C-3
- P-D
- SP

Sources: City of Modesto Zoning Map. Map Date: December 13, 2024.

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 2.0-6a.
Existing Zoning Districts - City of Modesto

0 500 1,000 Feet

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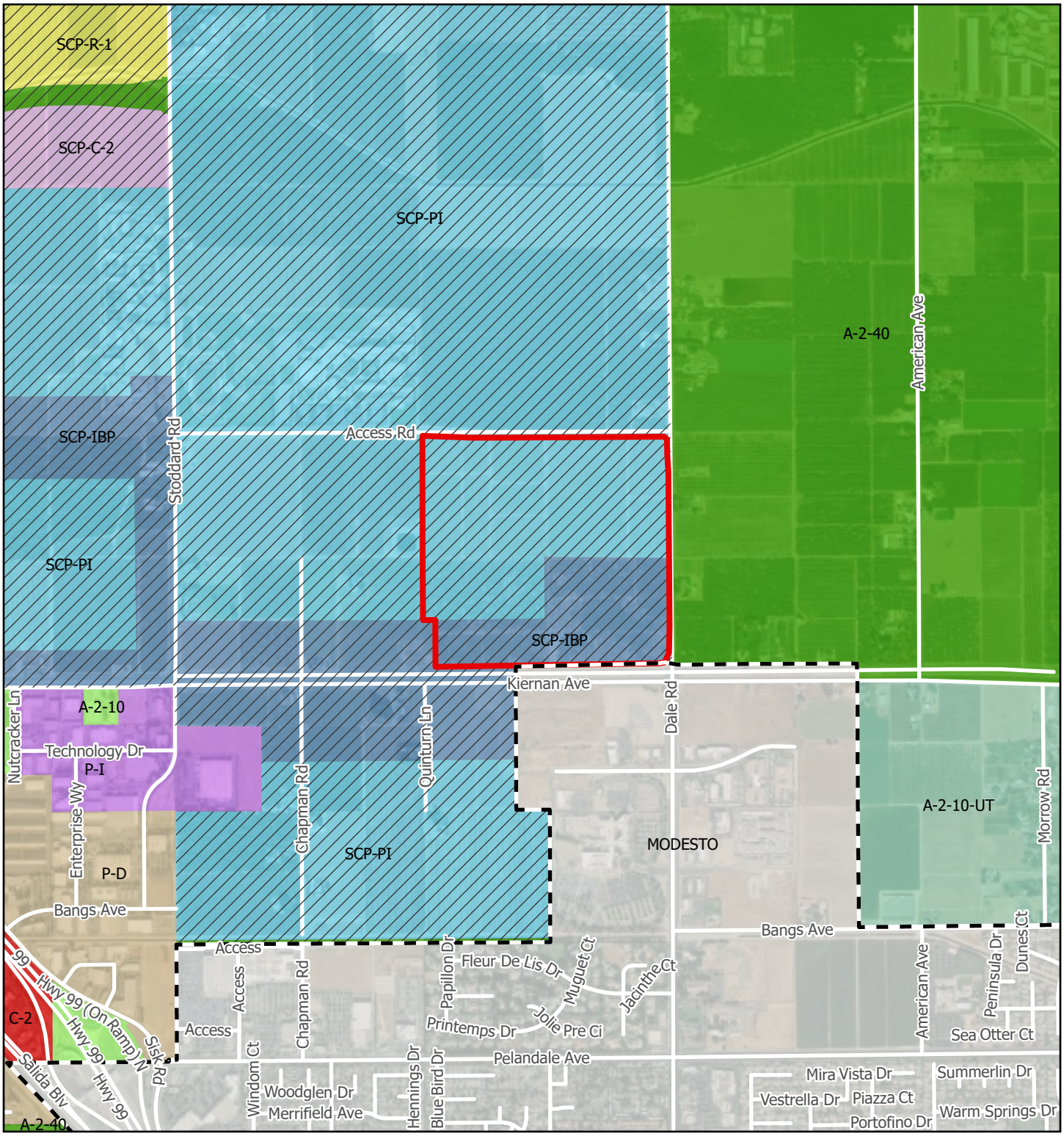

Legend

- Project Parcel
- City of Modesto
- Salida Community Plan Area
- A-2-10 - General AG 10 Acre
- A-2-10-UT - General AG 10 Acre UT
- A-2-40 - General AG 40 Acre
- C-2 - General Commercial
- P-I - Planned Industrial
- P-D - Planned Development
- SCP-R-1 - Salida Community Plan SF
- SCP-C-2 - Salida Community Plan C-2
- SCP-IBP - Salida Community Plan IBP
- SCP-PI - Salida Community Plan PI
- City of Modesto

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 2.0-6b. Existing Zoning Districts Stanislaus County

0 500 1,000 Feet

Sources: Stanislaus County Zoning. Map Date: December 13, 2024.

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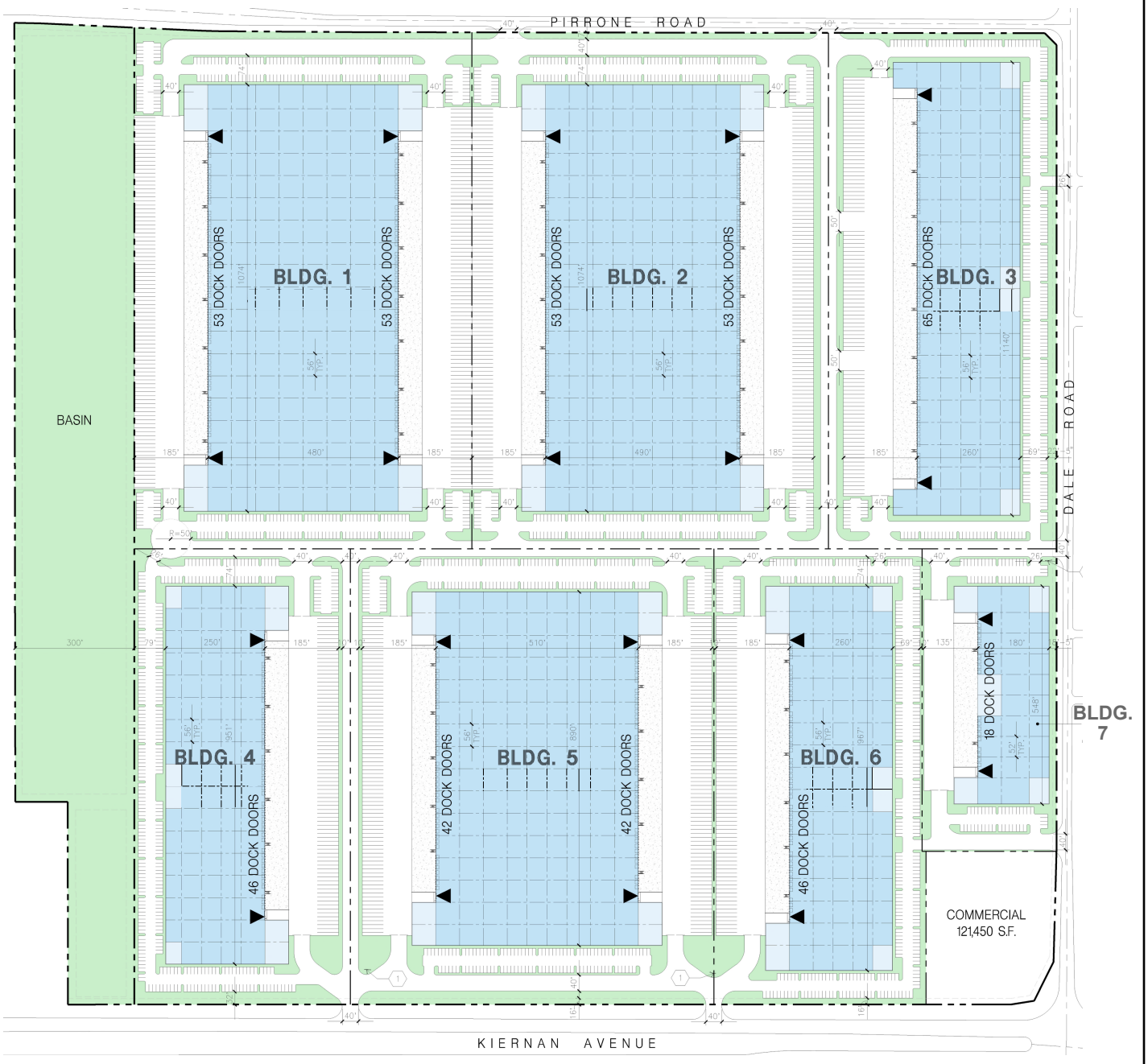

Legend

- Potential Office
- Warehouse
- Landscape
- Drive Thru Door

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 2.0-7. Proposed Tentative Map

0 150 300 Feet

Source: HPA Architecture, 12-2-2025. Map Date: May 12, 2026.

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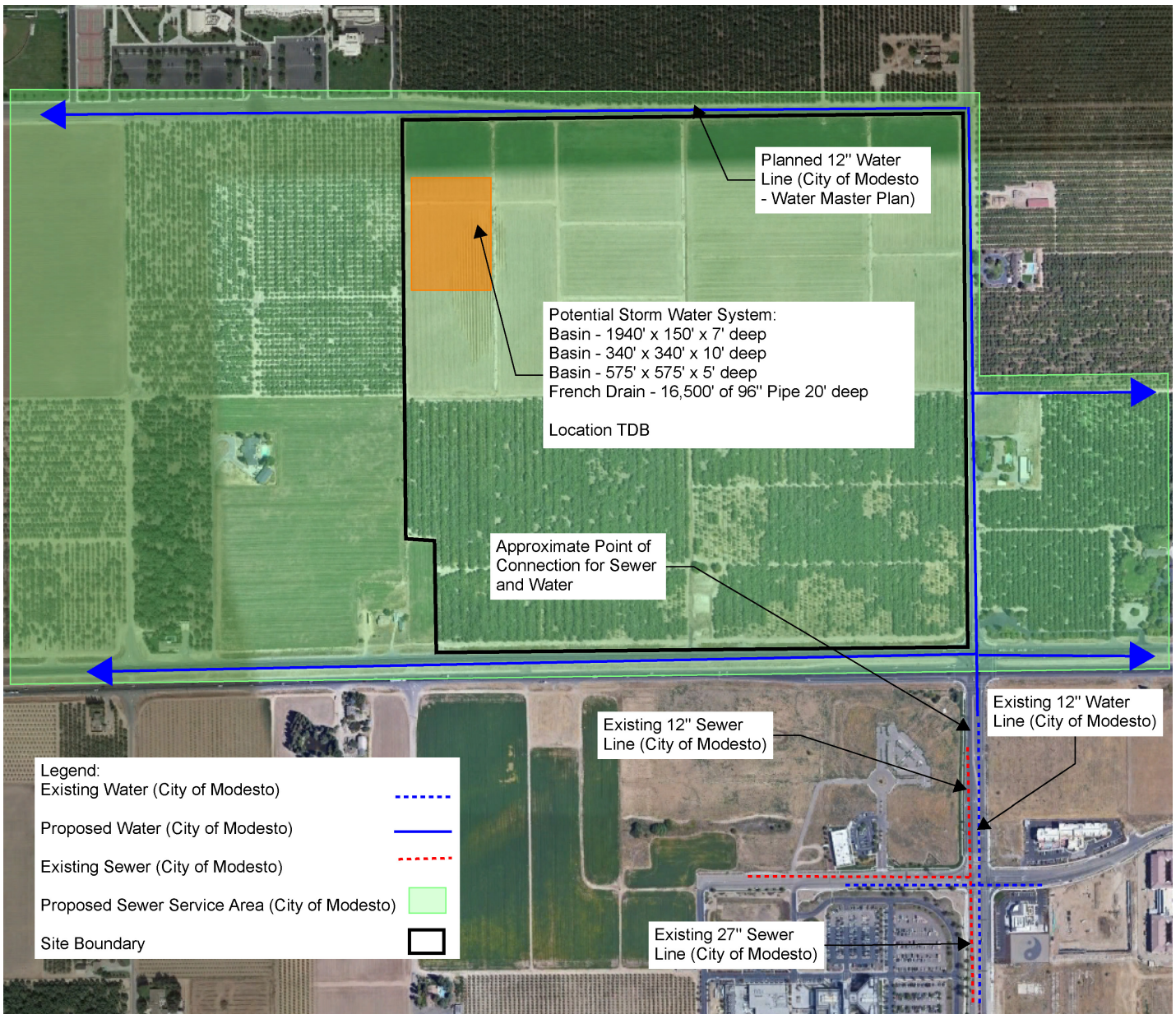

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 2.0-8. Utility Plan

0 250 500 Feet

Source: North Star Engineering Group. Map Date: December 5, 2024.

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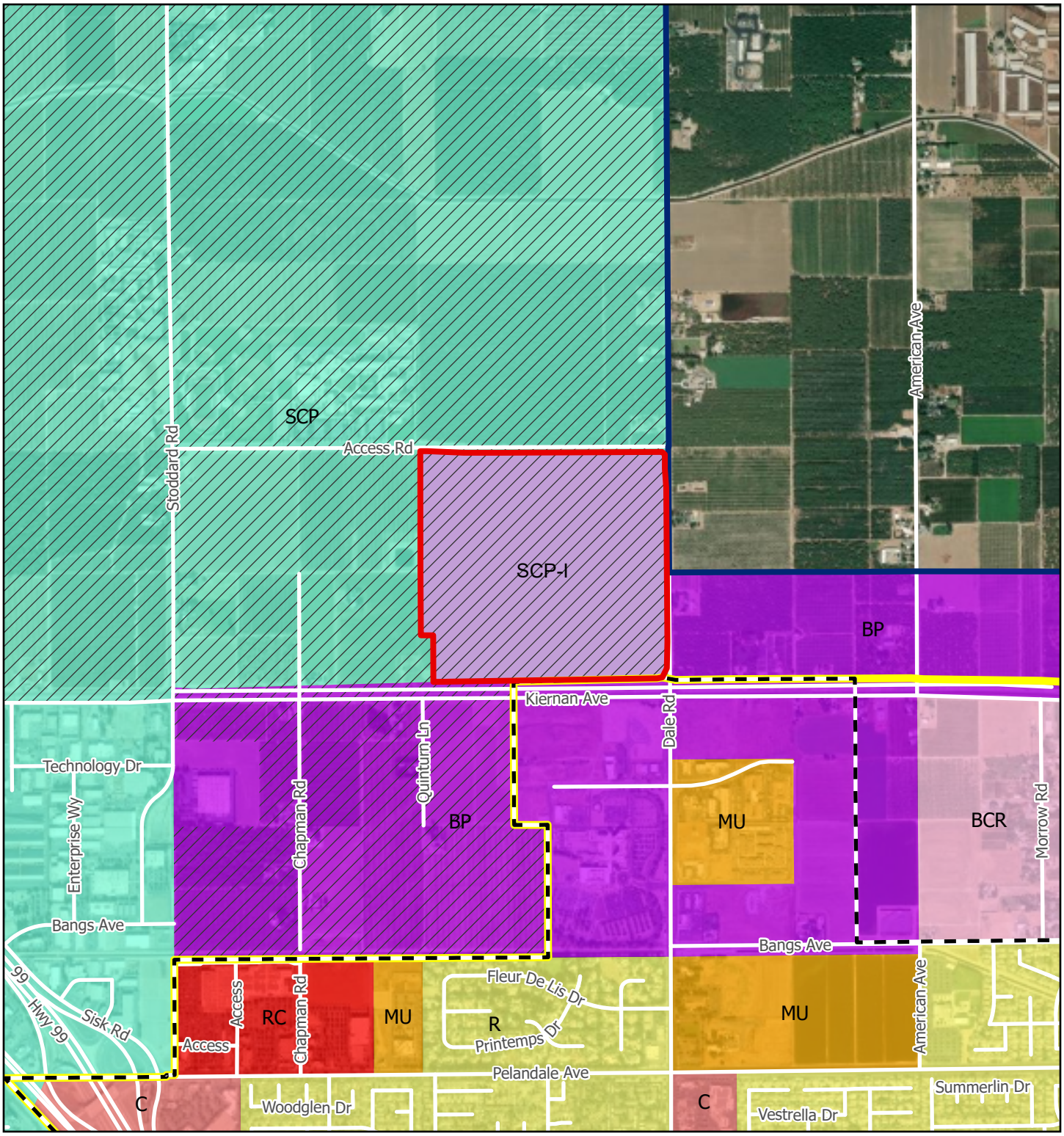

Legend

- Project Parcel
- City of Modesto
- Modesto Sphere of Influence
- Modesto General Plan Planning Area
- Salida Community Plan Area

City of Modesto General Plan

- R - Residential
- MU - Mixed Use
- C - Commercial
- RC - Regional Commercial
- BCR - Business-Commercial-Residential
- BP - Business Park
- SCP - Salida Community Plan
- SCP-I - Salida Community Plan I

Sources: City of Modesto General Plan. Map Date: December 13, 2024.

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 2.0-9.
Proposed General Plan Land Use Designations

0 500 1,000 Feet

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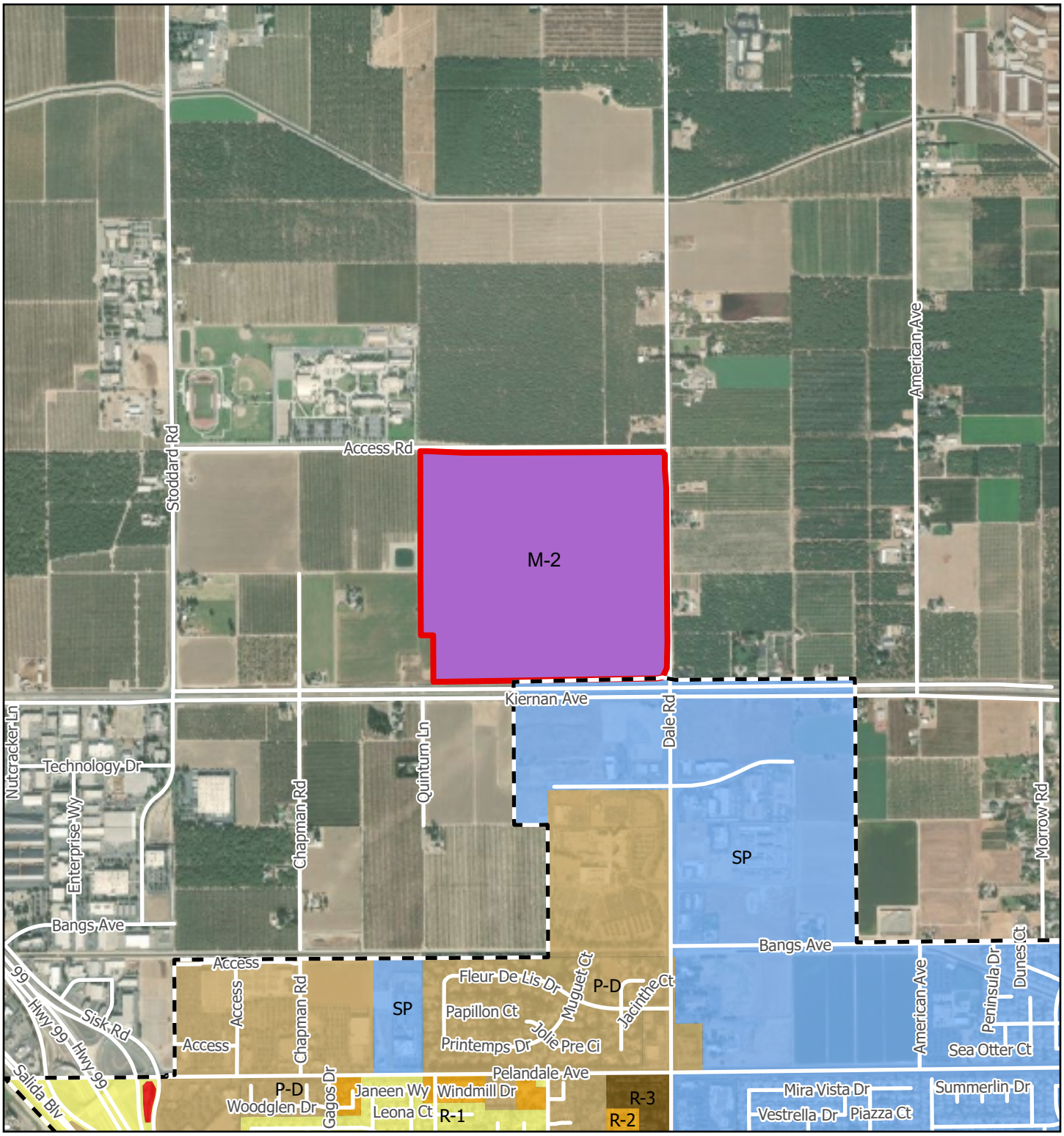

Legend

- Project Parcel
- City of Modesto

City of Modesto Zoning

- R-1 -Low Density Residential
- R-2 - Medium Density Residential
- R-3 - Medium-High Density Residential
- C-3 - Highway Commercial
- P-D - Planned Development
- SP -Specific Plan
- M-2 - Heavy Industrial

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 2.0-10. Proposed Zoning Districts

0 500 1,000 Feet

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Sources: City of Modesto Zoning Map. Map Date: December 13, 2024.

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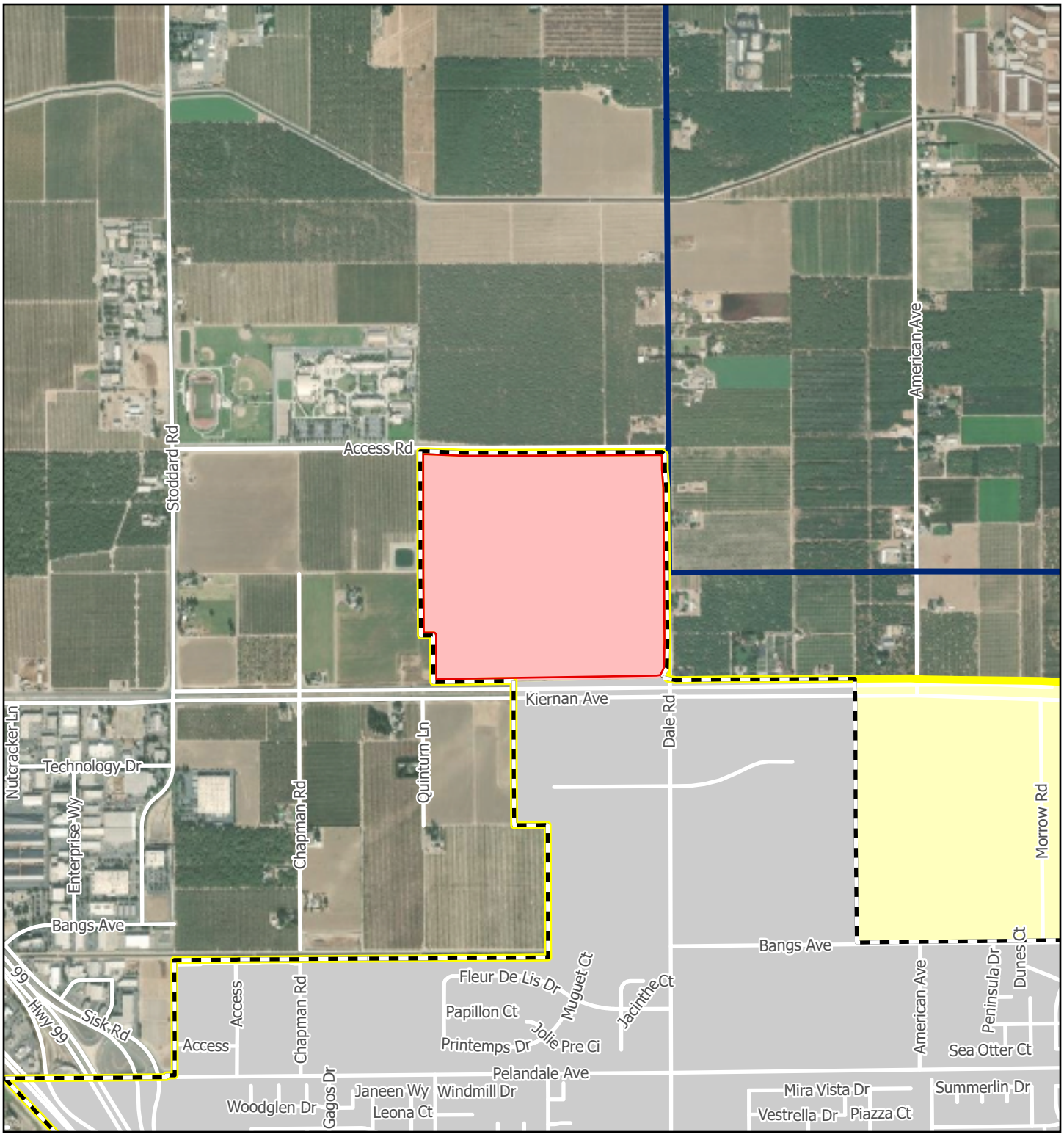

Legend

- Project Parcel
- Existing City of Modesto
- Existing Modesto Sphere of Influence
- Annexation Area
- City of Modesto Boundary with Annexation
- Sphere of Influence with Annexation

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 2.0-11. Annexation Area

0 500 1,000 Feet

Sources: City of Modesto; Stanislaus County. Map Date: December 13, 2024.

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This section provides an overview of the visual character, scenic resources, views, scenic highways, and sources of light and glare that are encountered on the Project site and the vicinity. This section concludes with an evaluation of the impacts and recommendations for mitigating impacts. Information in this section is derived primarily from the California Department of Transportation (Caltrans) Scenic Highways Program website (accessed 2025), the Modesto Urban Area General Plan (UAGP) (City of Modesto, 2019), and the City of Modesto Municipal Code (2025).

There was one Notice of Preparation (NOP) comment received on this topic from Modesto City Schools, Business Services Department. The comment letter requested that the proposed Project's site planning consider aesthetics given there is existing public-school use to the north of the site. The comment also noted that the Project should include perimeter secure fencing for the planned commercial and industrial uses.

The portion of this comment letter related to this topic is addressed within this section and it is noted that the project design will include secure perimeter fencing, landscaping, lighting, and way finding signage. Full NOP comments received are included in Appendix A of this DEIR.

CONCEPTS AND TERMINOLOGY

The aesthetic value of an area is a measure of its visual character and quality, combined with the viewer response to the area. Scenic quality can best be described as the overall impression that an individual viewer retains after driving through, walking through, or flying over an area. Viewer response is a combination of viewer exposure and viewer sensitivity. Viewer exposure is a function of the number of viewers, number of views seen, distance of the viewers, and viewing duration. Viewer sensitivity relates to the extent of the public's concern for a particular viewshed. These terms and criteria are described in detail below.

Visual Character. Natural and artificial landscape features contribute to the visual character of an area or view. Visual character is influenced by geologic, hydrologic, botanical, wildlife, recreational, and urban features. Urban features include those associated with landscape settlements and development, including roads, utilities, structures, earthworks, and the results of other human activities. The perception of visual character can vary significantly seasonally, even hourly, as weather, light, shadow, and elements that compose the viewshed change. The basic components used to describe visual character for most visual assessments are the elements of form, line, color, and texture of the landscape features. The appearance of the landscape is described in terms of the dominance of each of these components.

Visual Quality. Visual quality is evaluated using the well-established approach to visual analysis adopted by the Federal Highway Administration, employing the concepts of vividness, intactness, and unity, which are described below.

- Vividness is the visual power or memorability of landscape components as they combine in striking and distinctive visual patterns.

- Intactness is the visual integrity of the natural and human-built landscape and its freedom from encroaching elements; this factor can be present in well-kept urban and rural landscapes, and in natural settings.

- Unity is the visual coherence and compositional harmony of the landscape considered as a whole; it frequently attests to the careful design of individual components in the landscape.

Visual quality is evaluated based on the relative degree of vividness, intactness, and unity, as modified by visual sensitivity. High-quality views are highly vivid, intact, and exhibit a high degree of visual unity. Low-quality views lack vividness, are not visually intact, and possess a low degree of visual unity.

Viewer Exposure and Sensitivity. The measure of the quality of a view must be tempered by the overall sensitivity of the viewer. Viewer sensitivity or concern is based on the visibility of resources in the landscape, proximity of viewers to the visual resource, elevation of viewers relative to the visual resource, frequency and duration of views, number of viewers, and type and expectations of individuals and viewer groups.

The importance of a view is related, in part, to the position of the viewer to the resource; therefore, visibility and visual dominance of landscape elements depend on their placement within the viewshed. A viewshed is defined as all the surface area visible from a particular location (e.g., an overlook) or sequence of locations (e.g., a roadway or trail). To identify the importance of views of a resource, a viewshed must be broken into distance zones of foreground, middle ground, and background. The closer a resource is to the viewer, the more dominant it is and the greater its importance to the viewer. Although distance zones in a viewshed may vary between different geographic region or types of terrain, the standard foreground zone is 0.25 to 0.5 mile from the viewer, the middle ground zone is from the foreground zone to 3 to 5 miles from the viewer, and the background zone is from the middle ground to infinity.

Visual sensitivity depends on the number and type of viewers and the frequency and duration of views. Visual sensitivity is also modified by viewer activity, awareness, and visual expectations in relation to the number of viewers and viewing duration. For example, visual sensitivity is higher for views seen by people who are driving for pleasure, people engaging in recreational activities such as hiking, biking, or camping, and homeowners. Sensitivity tends to be lower for views seen by people driving to and from work or as part of their work. Commuters and non-recreational travelers have fleeting views and tend to focus on commute traffic, not on surrounding scenery; therefore, they are considered to have low visual sensitivity. Residential viewers typically have extended viewing periods and are concerned about changes in the views from their homes; therefore, they are considered to have high visual sensitivity. Viewers using recreation trails and areas, scenic highways, and scenic overlooks are usually assessed as having high visual sensitivity.

Judgments of visual quality and viewer response must be made based on a regional frame of reference. The same landform or visual resource appearing in different geographic areas could have a different degree of visual quality and sensitivity in each setting. For example, a small hill may be a significant visual element on a flat landscape but have little significance in mountainous terrain.

Scenic Highway Corridor. The area outside of a highway right-of-way that is visible to people traveling on the highway.

Scenic Highway/Scenic Route. A highway, road, drive, or street that, in addition to its transportation function, provides opportunities for the enjoyment of natural and human-made scenic resources and access or direct views to areas or scenes of exceptional beauty (including those of historic or cultural interest). The aesthetic values of scenic routes often are protected and enhanced by regulations governing the development of property or the placement of outdoor advertising. Until the mid-1980's, general plans in California were required to include a Scenic Highways Element.

View Corridor. A view corridor is a highway, road, trail, or other linear feature that offers travelers a vista of scenic areas within a city or county.

3.1.1 ENVIRONMENTAL SETTING

LOCAL VISUAL AND SCENIC RESOURCES

The region surrounding Modesto is visually characterized by the urban, agriculturally, and industrially based elements that are seen along the State Route (SR) 99 and Southern Pacific Railroad (SPRR) routes that run northwest to southeast. The landform in the planning area is naturally quite flat, but parts of it have been leveled for agricultural production as well. Areas of topographic relief can be found on the valley floor near major waterways in the form of bluffs, terraced floodplains, and remnant channel beds. The floodplains of the Tuolumne and Stanislaus Rivers have such features and are natural greenbelts within the Modesto urban area.

Regionally, the planning area is bounded by the Sierra Nevada to the east and the Coast Ranges to the west. The flatness and openness of the terrain in the planning area allows for expansive views of these mountain ranges in the distance when atmospheric haze is at a minimum.

Agricultural land and associated infrastructure give the city a scenic character that is rural in nature. Orchards, row crops, vineyards, cleared fields, hay bales, farm structures, farming and ranching equipment (such as tractors), and farmhouses are some of the features that lend to the rural agricultural nature of the area. Islands of urban development bordering the agricultural areas provide contrast to this rural character. Often, agricultural, and urban areas have abrupt boundaries, lacking transition from one to the other and each beginning where the other ends.

Like many Central Valley cities along SR99 and the UPRR route that have a long history of agricultural and industrial activities, Modesto has a classic gridded street network in its urban city center / Downtown planning area, surrounded by old, established neighborhoods and mature trees and landscaping. Agriculture- and industry-based buildings such as silos, warehouses, and factory buildings remain visually prominent and contribute to the overall visual quality of the region. Recent development, including big-box and chain commercial shopping areas that are common to new development throughout the state, is also common on the outskirts of Modesto.

SCENIC HIGHWAYS AND CORRIDORS

Scenic Highways

A scenic highway is defined by Caltrans as a public highway that traverses an area of outstanding scenic quality, containing striking views, flora, geology, or other unique natural attributes. A highway may be designated scenic depending upon how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view.

Only one highway section in Stanislaus County is listed as a Designated Scenic Highway by the Caltrans Scenic Highway Mapping System: the segment of Interstate 5 running through the western portion of the County. The City of Modesto, the General Plan Planning Area, and the Project site are not visible from this roadway segment.

Scenic Corridors/Routes

A scenic corridor is the view from the road that may include a distant panorama and/or the immediate roadside area. A scenic corridor encompasses the outstanding natural features and landscapes that are considered scenic. It is the visual quality of the man-made or natural environments within a scenic corridor that are responsible for its scenic value. Commonly, the physical limits of a scenic corridor are broken down into foreground views (zero to one quarter mile) and distant views (over one quarter mile). In addition to distinct foreground and distant views, the visual quality of a scenic corridor is defined by unique features, which include:

- Focal points - prominent natural or man-made features which immediately catch the eye.
- Transition areas - locations where the visual environment changes dramatically.
- Gateways - locations which mark the entrance to a community or geographic area.

The City of Modesto has not designated any scenic corridors or viewsheds.

Scenic Water Resources

The Tuolumne River runs along the southern edge of Modesto; the Stanislaus River runs parallel to the northern boundary of the Modesto urban area. Dry Creek, a tributary to the Tuolumne River, runs into the Tuolumne River from the northeast, in the southeast of Modesto. The Project site is not visible from a Scenic Water Resource segment.

PROJECT SITE

The proposed Project site consists of approximately 145 acres of agricultural land. Figures 2.0-1 and 2.0-2 in Chapter 2.0, Project Description, illustrate the regional location and Project vicinity.

The Project site is flat. As a result of site disturbance associated with agricultural operations, limited natural scenic areas can be found within the Project site. The Project site contains active cropland and orchard operations; consistent with agricultural operations, there are no artificial light sources

on-site. Nearby uses include agricultural lands and rural residential uses in the general vicinity, and Joseph A. Gregori High School, located northwest of the Project site.

The unique or distinguishing visual or aesthetic characteristics of the Project site include the openness of the undeveloped agricultural land, which offers an expansive view of cropland. The undeveloped agricultural land can provide visual relief to a passerby/viewer from common manmade structures and visual obstructions found in an urban environment. The Project site's aesthetic value can be attributed to its openness and undeveloped nature, which contrasts the developed portion of Modesto to the south and Joseph A. Gregori High School to the northwest.

Throughout the year, the land, used for agriculture, may evolve from an environment that appears with vegetation (green farmland) to an environment that appears barren (tilled soil). Agricultural land in California's Great Central Valley is accepted as an important visual resource.

3.1.2 REGULATORY SETTING

FEDERAL

No federal regulations related to visual resources are relevant to the Project area.

STATE

Nighttime Sky – Title 24, California Code of Regulations, Part 6: Outdoor Lighting Standards, 2025

The California Energy Commission (CEC) administers the California Energy Code and implements California Code of Regulations, Title 24, Part 6. The statute and Title 24 require energy efficiency of outdoor lighting for non-residential new development. The Title 24 standards serve to improve outdoor lighting quality by reducing impacts of light pollution, light trespass, and glare. The standards regulate characteristics such as maximum power and brightness, shielding, and sensor controls to turn lighting on and off. Exterior lighting allowances vary by Lighting Zones (LZ). The lowest illumination levels are encouraged in LZ0 (very low) and increasingly more power is allowed in LZ1 (low), LZ2 (moderate), LZ3 (moderately high), and LZ4 (high). The Statewide default location for each LZ is as follows:

- LZ0: undeveloped areas of government designated parks, recreation areas, and wildlife preserves.
- LZ1: rural areas, as defined by the 2010 U.S. Census.
- LZ2: Urban clusters, as defined by the 2020 U.S. Census.
- LZ3: Urban areas, as defined by the 2020 U.S. Census.
- LZ4: No statewide default location. Special district created by local government.

California Department of Transportation Scenic Highway Program

California's Scenic Highway Program was created by the Legislature in 1963 to preserve and protect scenic highway corridors from change, which would diminish the aesthetic value of lands adjacent

to highways. The State laws governing the Scenic Highway Program are found in the Streets and Highways Code, Section 260 et seq. As previously described, there are no scenic highways in the City of Modesto's General Plan Planning Area or with views of the Planning Area (including the Project site).

There are no state-designated scenic highways in Modesto or in the Modesto planning area as per Caltrans.

LOCAL

City of Modesto Urban Area General Plan

A discrete reference number is assigned to each policy to facilitate its identification in the City of Modesto Urban Area General Plan Program EIR (e.g., policies are designated as VR-*X,* where *X* is the discrete number).

- Apply neighborhood Compatibility Guidelines, Design Guidelines for Commercial & Industrial Development, and other applicable development guidelines, as appropriate to new construction, additions to existing structures, replacement of existing buildings / land uses, and other (non-residential) development. (UAGP Policies III.G.4; III.H.3)
- Visual corridors of the river will be protected and enhanced. (UAGP Policy VII-B.7[a])
- Visual corridors and access points on the riverfront will be recreated through redevelopment. (UAGP Policy VII-B.7[b])

City of Modesto Municipal Code

Modesto Municipal Code 10-1.505 outlines the City's Design Review Guidelines. In reviewing any proposed development, the Board, Commission, Council or Director may utilize design review guidelines as may be adopted from time to time by the Board, Commission or Council.

City of Modesto Commercial & Industrial Design Guidelines

Commercial & Industrial Design Guidelines are intended to inform project designers, decision makers and the public of the City's expectations and preferences for the qualities to be incorporated in the design of new commercial and industrial development. The effective application of these guidelines is intended to result in development projects that respond to the unique characteristics of their individual sites, but that also fit into the wider context of the City.

OVERALL GOALS FOR THE QUALITY AND CHARACTER OF COMMERCIAL AND INDUSTRIAL DEVELOPMENT

How the built environment appears in relation to the surrounding landscape, and the quality of building and site design are key to continuing and advancing the goals of economic vitality and job growth in Modesto. To achieve these goals, the following objectives have been developed to assist designers and developers in understanding the City's preferences for design quality in commercial and industrial development.

All commercial and industrial development should be designed to accomplish the following:

A. Help keep Modesto architecturally distinctive; do not let it become "anywhere USA."

1. Maintain a high quality of craftsmanship in development through use of building styles, design elements, and materials that are found in the architectural vernacular of Modesto.
2. Integrate local cultural and historical themes into building and site design where appropriate.
3. Enhance and bring greater attention to gateways and key corridors to enhance the overall city image, beautify its entrances, visual corridors, and vistas to attract visitors and improve the overall experience for citizens.
4. Design for surrounding context and scale of urban form and land uses.
5. Require design excellence for infill and redevelopment sites.
6. Minimize the use of "stock" plans and design in corporate and franchise architecture.

B. Design for the pedestrian scale in appropriate areas.

1. Encourage pedestrian oriented buildings and site planning in commercial development.
2. Incorporate design elements that respond to, and take advantage of, environmental conditions such as wind, sun, shade, etc. to improve the pedestrian experience, and provide an enjoyable pedestrian experience.
3. Encourage an appropriate scale of building height to street width in commercial areas. Minimize parking between buildings and the street.
4. Respect the natural environment by protecting natural resources and integrating the natural environment and open space into building and site planning, wherever possible.
5. Continue and improve streetscape landscaping.
6. Control outdoor lighting to provide necessary security, but not create spillage onto adjacent properties or interfere with views of night skies.

3.1.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed Project will have a significant impact on aesthetics if it will:

- Have a substantial adverse effect on a scenic vista.
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.
- In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings. (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with the applicable zoning and other regulations governing scenic quality; and/or

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

IMPACTS AND MITIGATION MEASURES

Impact 3.1-1: Project implementation would not have a substantial adverse effect on a scenic vista (Less than Significant)

The proposed Project would convert the 145-acre Project site from its existing use as primarily agricultural land to development with industrial uses (building and parking areas). There are no designated scenic vistas in the vicinity of the proposed Project area. Therefore, implementation of the proposed Project would not result in an impact on scenic vistas. Therefore, this impact is considered ***less than significant***.

Impact 3.1-2: Project implementation would not substantially damage scenic resources within a state scenic highway (Less than Significant)

There are no adopted State scenic highways in the City of Modesto. Only one section of Interstate 5 in Stanislaus County is listed as a Designated Scenic Highway by the Caltrans Scenic Highway Mapping System. However, this officially designated scenic highway does not provide views of the Project site or immediate surrounding areas, and there are no sections of highway in the Modesto vicinity eligible for Scenic Highway designation. Given that no adopted State scenic highways are located within the vicinity of the proposed Project, and no scenic highways provide views of the Project site, impacts to scenic resources within a State scenic highway would be ***less than significant***.

Impact 3.1-3: Project implementation would substantially degrade the existing visual character or quality of public views of the site and its surroundings in a non-urbanized area (Public views are those that are experienced from publicly accessible vantage point) (Significant and Unavoidable)

As described in California Public Resources Code ("PRC") Section 21094.5, an "Urban Area" includes either an incorporated city or an unincorporated area that is surrounded by one or more incorporated cities that meets both of the following criteria:

> (A) The population of the unincorporated area and the population of the surrounding incorporated cities equal a population of 100,000 or more.
>
> (B) The population density of the unincorporated area is equal to, or greater than, the population density of the surrounding cities.

As described in the most recent Department of Finance E-5 Population and Housing Estimates for Cities and Counties (2025) the City of Modesto has an estimated Population 219,765, and the unincorporated portions of Stanislaus County had a population of 109,752. The proposed Project site is currently within an unincorporated portion of Stanislaus County and within Salida which is a

census-designated place (CDP). According to the U.S. Census 2020, Salida has a population of 13,886. As such the project area is considered non-urban for the purposes of this analysis.

Given the flat topography of the city, views within the core of the city are limited to the built environment. Views along the periphery can be more expansive with fewer developed features blocking views of surrounding open space, and agricultural fields from area roadways. The Project site is located beyond the existing urbanized areas of the city within the unincorporated areas of the County and is visible from the periphery of the existing city limits. The views from the Project site are limited to neighboring agricultural fields and the school site located to the northwest.

The proposed Project would convert the Project site from its existing use as primarily agricultural land for development of industrial type uses (building and parking areas). Impacts related to a change in visual character are subjective and difficult to quantify. People have different reactions to the visual quality of a project or a project feature, and what is considered "attractive" to one viewer may be considered "unattractive" to other viewers. The agricultural lands on the Project provide visual relief from urban and suburban developments and help to define the character of a region. The loss of agricultural land can have an adverse impact on the overall visual character and quality of a region.

As described above, Project implementation would introduce industrial uses, as well as supporting infrastructure, into an area that is currently undeveloped and is occupied by agricultural uses. The City's adopted Commercial & Industrial Development Design Guidelines would reduce direct impacts on visual resources by incorporating policies that encourage cohesive project designs. These standards include specifications for exterior lighting, landscaping, and architectural design and compatibility. Implementation of the design standards would ensure quality design throughout the Project site, and result in a Project that would be internally cohesive while maintaining aesthetics like other developed uses within the city.

Nevertheless, the loss of the visual appearance of the existing 145-acre agricultural land on the site will change the visual character of the Project site in perpetuity, including visual changes from public viewpoints along local roadways. Compliance with the requirements within the General Plan and Zoning Code and Commercial & Industrial Development Design Guidelines would reduce visual impacts to the greatest extent feasible; however, the proposed Project would permanently convert the agricultural uses to urbanized uses. This is considered a ***significant and unavoidable*** impact. There is no additional feasible mitigation available that would reduce this impact to a less-than-significant level.

Impact 3.1-4: Project implementation, with mitigation, would not result in light and glare which would adversely affect day or nighttime views in the area (Less than Significant with Mitigation)

Implementation of the proposed Project would introduce new sources of light and glare into the Project site. New sources of glare would occur primarily from the windshields of vehicles travelling to and from the Project site and from vehicles parked at the site. There is also the potential for reflective building materials and windows to result in increases in daytime glare. A detailed lighting

plan has not been prepared for the proposed Project, but for the purposes of this analysis, it has been assumed that nighttime street lighting, exterior lighting around the warehouses and buildings, and safety lighting will be installed throughout areas of the Project site. It is assumed that security lighting will be installed within the various parking areas surrounding the warehouses and buildings. Therefore, light and glare could adversely affect day or nighttime views in the area.

Future development would create new sources of light that is consistent with urban development. Existing development standards for light fixtures would apply to the proposed Project, including site design of new development to require adequate shielding of light fixtures to prevent light spillage. Additionally, lighting regulations in the City of Modesto Municipal Code are included within Title 4 (Public Welfare, Safety and Health), Title 9 (Building Regulations), and Title 10 (Zoning Regulations).

Modesto's Commercial & Industrial Design Guidelines as well as general lighting standards of the City Municipal Code contain standards and provisions related to exterior lighting and emergency lighting for development projects.

Without a detailed lighting plan, increases of light spillover and nighttime lighting to adjacent properties is a potentially significant impact. Implementation of Mitigation Measure 3.1-1 would reduce potential impacts associated with nighttime lighting and light spillage onto adjacent properties to a ***less than significant*** level.

MITIGATION MEASURE(S)

Mitigation Measure 3.1-1*: The approved site plan shall conform with the most recent version of the California Building Code (California Code of Regulations, Title 24, Part 11) adopted by the City of Modesto at the time of site plan approval, including outdoor lighting requirements designed to minimize the effects of light pollution.*

Additionally, the approved site plan shall comply with the applicable provisions of the Commercial and Industrial Design Guidelines pertaining to lighting, including standards which require exterior lighting to be shielded and directed away from adjoining properties and public rights-of-way. Compliance shall be documented in a lighting plan or other documentation acceptable to the City.

CUMULATIVE IMPACTS

The cumulative setting for aesthetics is the City of Modesto and surrounding areas of Stanislaus County.

Impact 3.1-5: The proposed Project, in combination with other cumulative development, would not result in substantial adverse effects on scenic vistas or damage scenic resources within a state scenic highway (Less than Significant and Less than Cumulatively Considerable)

Under cumulative conditions, the City of and surrounding areas will continue to build out, adding to the urban landscape. As new buildings are constructed, they may obstruct views of the Sierra Nevada, Coastal Mountain Range, or agricultural areas in unincorporated areas of the County.

As described under Impact 3.1-1, there are no designated scenic vistas in the vicinity of the proposed Project area. There are no adopted State scenic highways in the City of Modesto. Only one section of Interstate 5 in Stanislaus County is listed as a Designated Scenic Highway by the Caltrans Scenic Highway Mapping System. However, this officially designated scenic highway does not provide views of the Project site or immediate surrounding areas, and there are no sections of highway in the Modesto vicinity eligible for Scenic Highway designation. Therefore, implementation of the proposed Project would not result in an impact to scenic vistas or scenic highways. This impact is considered less than significant.

Therefore, the proposed Project would have a ***less than significant*** and ***less than cumulatively considerable*** impact relative to this topic.

Impact 3.1-6: The proposed Project, in combination with other cumulative development, could substantially degrade the existing visual character or quality of public views of the site and its surroundings (Significant and Unavoidable and Cumulatively Considerable)

Under cumulative conditions, buildout of the General Plan for Modesto and the surrounding jurisdictions could result in changes to the visual character and quality of the City through development of undeveloped areas and/or changes to the character of existing communities. To reduce the visual impacts of urban development, development within the City is required to be consistent with the General Plan and the Zoning Ordinance, which include development standards. These standards include specifications for building height, massing, and orientation, exterior lighting standards, and landscaping standards. Following the City's design requirements will produce urban developments that will be internally cohesive, while maintaining an aesthetic feel like that of the surrounding uses.

The loss of the visual appearance of agricultural land within the City limits will change the visual character of the area. Compliance with the requirements within the General Plan and Zoning Code would reduce visual impacts to the greatest extent feasible, however the loss of agricultural land and the visual relief provided by these lands as described under impact 3.1-3 is considered a significant and unavoidable impact.

As such, the cumulative loss of agricultural resources from development anticipated under the General Plan and proposed Project would have a ***significant and unavoidable*** and ***cumulatively considerable*** impact on aesthetics and visual character.

Impact 3.1-7: The proposed Project, in combination with other cumulative development, would not result in light and glare impacts. (Less than Significant and Less than Cumulatively Considerable)

Existing developed areas in the City and surrounding areas currently generate light and glare, and all new developments that would be facilitated by the General Plan would result in increased light and glare.

As discussed under Impact 3.1-4, future development would create new sources of light consistent with urban development. All new developments would be consistent with existing development standards for light fixtures, including requirements for adequate shielding of light fixtures to prevent light spillage. The City of Modesto Municipal Code establishes lighting regulations for new development.

Modesto's Commercial & Industrial Design Guidelines as well as general lighting standards of the City Municipal Code contain standards and provisions related to exterior lighting and emergency lighting for development projects.

As described under Impact 3.1-4, without a detailed lighting plan, increases of light spillover and nighttime lighting to adjacent properties have a potentially significant impact. Implementation of Mitigation Measure 3.1-1 would reduce potential impacts associated with nighttime lighting and light spillage onto adjacent properties to a *less than significant* by designing outdoor lighting to minimize the effects of light pollution, and requiring lighting standards which require exterior lighting to be shielded and directed away from adjoining properties and public rights-of-way.

All future projects within Modesto would be required to implement existing City regulations aimed at reducing light and glare impacts. All development within the City is regulated by the Municipal Code. Compliance with existing regulations and General Plan policies would ensure that light and glare generated by cumulative development would be minimized. Compliance with existing regulations and policies would ensure that cumulative development within the City would result in ***less-than-significant*** and ***less than cumulatively considerable*** cumulative impacts associated with increased light and glare.

This section provides an overview of the agricultural resources in Stanislaus County, the City of Modesto, and the Project site including agricultural capability of the soils on the Project site, and existing site conditions. This section concludes with an evaluation of the impacts related to agricultural resources and recommendations for mitigating impacts as needed. Information in this section is derived primarily from the *California Important Farmlands Map* (California Department of Conservation, 2020), the *Stanislaus County Agricultural Report* (Stanislaus County Agricultural Report, 2023), and the Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS, 2019, accessed April 8, 2025).

Comments were received during the public review period or scoping meeting for the Notice of Preparation regarding this topic from the following individuals and organizations:

- Stanislaus Local Agency Formation Commission (LAFCO) (March 27, 2025).
- Stanislaus County Environmental Review Committee (ERC) (March 27, 2025).
- Leonard Powell (resident) (March 19, 2025).
- Anita Young (resident) (March 24, 2025); and
- Garry Pearson (resident) (March 27, 2025).

The portion of the comment letters related to this topic are addressed within this section Full comments received are included in Appendix A of this DEIR.

3.2.1 ENVIRONMENTAL SETTING

STANISLAUS COUNTY AGRICULTURE

Modesto and its General Plan Planning Area are located on prime farmland and is surrounded by active agricultural operations.

Stanislaus County occupies a central location in California's vast agricultural heartland, the San Joaquin Valley. The County's Agricultural Commissioner's most recent published Agricultural Report (2023) contains the following information relating to agriculture in the County.

Agricultural Value

Stanislaus County has a total land area of 1,515 square miles, with total acreage for harvesting of 575,880 acres. The gross value of agricultural production in Stanislaus County for 2023 was $3,366,082,000, which represents a 10 percent decrease from 2022 when gross production value totaled $3,726,482,000. Table 3.2-1 lists the top ten commodities in Stanislaus in 2022 and 2023.

TABLE 3.2-1: SUMMARY COMPARISON OF CROP VALUES

PRODUCT TYPE	*2023 VALUE IN DOLLARS*	*2022 VALUE IN DOLLARS*
Almonds, All	$813,444,000	$752,971,000
Milk, All	$761,529,000	$1,130,572,000
Poultry, All	$399,855,000	$383,168,000
Cattle and Calves, All	$208,749,000	$192,802,000
Fruit and Nut Nursery Stock	$146,328,000	$175,035,000
Silage, All	$121,373,000	$173,025,000
Tomatoes, All	$107,111,000	$53,478,000
Pollination, Almond	$83,636,000	$87,401,000
Walnuts	$55,509,000	$42,729,000
Eggs, All	$54,335,000	$84,198,000

SOURCE: STANISLAUS COUNTY AGRICULTURAL REPORT, 2023.

AGRICULTURAL CAPABILITY

The California Department of Conservation Farmland Mapping and Monitoring Program (FMMP) identifies lands that have agriculture value and maintains a statewide map of these lands called the Important Farmlands Inventory (IFI). IFI classifies land based upon the productive capabilities of the land, rather than the mere presence of ideal soil conditions.

The suitability of soil for agricultural use is just one factor for determining the productive capabilities of land. Suitability is determined based on many characteristics, including fertility, slope, texture, drainage, depth, and salt content. A variety of classification systems have been devised by the State to categorize soil capabilities. The two most widely used systems are the Soil Capability Classification System and the Storie Index. The Capability Classification System classifies soils from Class I to Class VIII based on their ability to support agriculture, with Class I being the highest quality soil. The Storie Index considers other factors such as slope and texture to arrive at a rating. The IFI is in part based upon both classification systems.

Soil Capability Classification System

The Soil Capability Classification System takes into consideration soil limitations, the risk of damage when soils are used, and the way in which soils respond to treatment. Capability classes range from Class I soils, which have few limitations for agriculture, to Class VIII soils that are unsuitable for agriculture. As the rating of the capability classification increases, yields and profits are more difficult to obtain. A general description of soil classifications, as defined by the NRCS, is provided in Table 3.2-2 below.

TABLE 3.2-2: SOIL CAPABILITY CLASSIFICATION

CLASS	*DEFINITION*
I	Soils have slight limitations that restrict their use.
II	Soils have moderate limitations that restrict choice plants or that require moderate conservation practices.
III	Soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.
IV	Soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

CLASS	DEFINITION
V	Soils are not likely to erode but have other limitations; impractical to remove that limits their use largely to pasture or range, woodland, or wildlife habitat.
VI	Soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife habitat.
VII	Soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland, or wildlife habitat.
VIII	Soils and landforms have limitations that preclude their use for commercial plans and restrict their use to recreation, wildlife habitat, water supply, or aesthetic purposes.

SOURCE: USDA SOIL CONSERVATION SERVICE.

Storie Index Rating System

The Storie Index Rating system ranks soil characteristics according to their suitability for agriculture from Grade 1 soils (80 to 100 rating), which have few or no limitations for agricultural production, to Grade 6 soils (less than 10) which are not suitable for agriculture. Under this system, soils deemed less than prime can function as prime soils when limitations such as poor drainage, slopes, or soil nutrient deficiencies are partially or entirely removed. The six grades, ranges in index rating, and definition of the grades, as defined by the NRCS, are provided below in Table 3.2-3.

TABLE 3.2-3: STORIE INDEX RATING SYSTEM

GRADE	INDEX RATING	DEFINITION
1	80 – 100	Few limitations that restrict their use for crops
2	60 – 80	Suitable for most crops, but have minor limitations that narrow the choice of crops and have a few special management needs
3	40 – 60	Suited to a few crops or to special crops and require special management
4	20 – 40	If used for crops, severely limited and require special management
5	10 – 20	Not suited for cultivated crops, but can be used for pasture and range
6	Less than 10	Soil and land types generally not suited to farming

SOURCE: USDA SOIL CONSERVATION SERVICE, SOIL SURVEY, CALIFORNIA, 1992.

In addition to soil suitability, other factors for determining the agricultural value of land include whether soils are irrigated, the depth of soil, water-holding capacity, and physical and chemical characteristics. Areas considered to have the greatest agricultural potential are designated as Prime Farmland or Farmland of Statewide Importance.

Important Farmlands

The FMMP is a farmland classification system administered by the California Department of Conservation. Important farmland maps are based on the Land Inventory and Monitoring criteria, which classify a land's suitability for agricultural production based on both the physical and chemical characteristics of soils, and the actual land use. The system maps five categories of agricultural land, which include important farmlands (prime farmland, farmland of statewide importance, unique farmland, farmland of local importance, and grazing land), as well as three categories of non-agricultural land, which include urban and built-up land, other land, and water area.

Existing Physical Conditions in the City of Modesto and Stanislaus County

Agriculture is a leading industry in Stanislaus County; the gross value of agricultural production in Stanislaus County for 2023 was $3,366,082,000, according to the most recent published Agricultural Report (2023) for the County, as previously described. Stanislaus County consistently ranks among the top ten most agriculturally productive counties in California, based on the value of agricultural products sold.[1] Stanislaus County's flat land, excellent soil quality, favorable climate, and availability of water favor agriculture. In addition, the region possesses low-cost power and a good transportation system.

Modesto (both the present community and the City's General Plan Planning Area) is located on prime farmland and is surrounded by active agricultural operations. The conditions for agricultural production on lands west and north of Modesto are unique: The soil quality is excellent, water rights are secure, water quality is high, and there are few drainage problems. Such conditions allow the production of orchard and vine crops, including almonds, walnuts, grapes, and peaches, which require well-drained soil and irrigation.

Project Site Farmland Characteristics

The State of California Department of Conservation FMMP and Stanislaus County GIS data were used to illustrate the farmland characteristics for the Project site. Farmlands on the Project site are identified in Figure 3.2-1. As shown on Figure 3.2-1, the entire site (approximately 145 acres) is Prime Farmland.

Prime Farmland is farmland with the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

Soils and Farmland Characteristics

The NRCS describes these soils as follows within the Project site area as shown on Figure 3.2-2.

TABLE 3.2-4: PROJECT SOILS

NAME	*ACRES IN PROJECT SITE*
Hanford fine sandy loam, moderately deep over silt, 0-1% slopes	119.6
Dinuba fine sandy loam, 0-1% slope	8.5
Hanford sandy loam, 0-3 % slopes	16.2

SOURCE: USA SOILS DATABASE, ACCESSED APRIL 8, 2025; STANISLAUS COUNTY GIS: MAXAR IMAGERY 9/23/2023.

[1] California Department of Agriculture. 2024. Nine California Counties Make Top-10 List for Ag Sales in the U.S. Available: https://plantingseedsblog.cdfa.ca.gov/wordpress/?p=27335

Dinuba Series: These soils are imperfectly drained and moderately coarse-textured. They are very gently sloping to level. These soils are located north and northwest of Modesto. They are cultivated, primarily for irrigated pasture and grain and vine crops.

Hanford Series: These soils are well-drained and moderately coarse-textured. They have smooth, very gentle slopes. These soils are found along the Stanislaus and Tuolumne Rivers and on broad alluvial fans in the Modesto vicinity. They are important for a wide variety of irrigated orchards and field and truck crops.

EXISTING AGRICULTURE USES AND OPERATIONS

The Project site consists of active agricultural uses, including cropland (row-crops) and orchard operations. The agricultural lands on the Project site have been used historically for intensive agricultural purposes.

Surrounding Land Uses

The Project site is primarily bounded by land within the County to the north, east and west that include agricultural uses and operations. A high school (Joseph A. Gregori High School) is located northwest of the Project site. Uses south of the Project site, within the City of Modesto, include Kaiser Permanente Modesto Medical Center and similar business park uses.

Figure 2.0-4 in Chapter 2.0, Project Description, provides an aerial view of the site.

3.2.2 REGULATORY SETTING

FEDERAL

Farmland Protection Policy Act

The Farmland Protection Policy Act (FPPA) is intended to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland into non-agricultural uses. It ensures that, to the extent practicable, federal programs are compatible with state and local units of government as well as private programs and policies to protect farmland. Projects are subject to FPPA requirements if they may irreversibly convert farmland (directly or indirectly) to non-agricultural use and are completed by a federal agency or with assistance from a federal agency. To the FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements does not have to be currently used for crop production. In fact, the land can be forest land, pastureland, cropland, or other land, but does not include water bodies or land developed for urban land uses (i.e., residential, commercial, or industrial uses).

The NRCS administers the Farmland Protection Program. NRCS uses a land evaluation and site assessment (LESA) system to establish a farmland conversion impact rating score on proposed sites of federally funded and assisted projects. This score is used as an indicator for the project sponsor to consider alternative sites if the potential adverse impacts on the farmland exceed the recommended allowable level. The assessment is completed on form AD-1006, Farmland

Conversion Impact Rating. The sponsoring agency completes the site assessment portion of the AD-1006, which assesses non-soil related criteria such as the potential for impact on the local agricultural economy if the land is converted to non-farm use and compatibility with existing agricultural use.

The Project will not be developed by a federal agency, or with assistance from a federal agency. Therefore, the Project will not be subject to the FPPA.

STATE

Farmland Security Zones

In 1998 the state legislature established the Farmland Security Zone (FSZ) program. FSZs are like Williamson Act contracts, in that the intention is to protect farmland from conversion. The main difference, however, is that the FSZ must be designated as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance. The term of the contract is a minimum of 20 years. The property owners are offered an incentive of greater property tax reductions when compared to the Williamson Act contract tax incentives; the incentives were developed to encourage conservation of prime farmland through FSZs. The non-renewal and cancellation procedures are like those for Williamson Act contracts.

The Project site and the adjacent parcels are not within the FSZ program.

Williamson Act

The California Land Conservation Act of 1965, commonly known as the Williamson Act, was established based on numerous State legislative findings regarding the importance of agricultural lands in an urbanizing society. Policies emanating from those findings include those that discourage premature and unnecessary conversion of agricultural land to urban uses and discourage discontinuous urban development patterns, which unnecessarily increase the costs of community services to community residents.

The Williamson Act authorizes each County to establish an agricultural preserve. Land that is within the agricultural preserve is eligible to be placed under a contract between the property owner and County that would restrict the use of the land to agriculture in exchange for a tax assessment that is based on the yearly production yield. The contracts have a 10-year term that is automatically renewed each year, unless the property owner requests a non-renewal or the contract is cancelled. If the contract is cancelled the property owner is assessed a fee of up to 12.5 percent of the property value.

The Project site is not under a Williamson Act contract. Parcels that are located adjacent to the western portion of the Project site include parcels that are under a current contract and a non-renewal contract.

California Government Code Section 56064

This section of the Government Codes defines "Prime agricultural land" as follows:

- Prime agricultural land means an area of land, whether a single parcel or contiguous parcel, which has not been developed for a use other than an agricultural use and that meets any of the following qualifications:
    - Land that qualifies, if irrigated, for rating as Class I or Class II in the USDA Natural Resources Conservation Service land use capability classification, whether or not land is actually irrigated, provided that irrigation is feasible.
    - Land that qualifies for rating 80 through 100 Storie Index Rating.
    - Land that supports livestock used for the production of food and fiber and that has an annual carrying capacity equivalent to at least one animal unit per acre as defined by the United States Department of Agriculture in the National Range and Pasture Handbook, Revision 1, December 2003.
    - Land planted with fruit or nut-bearing trees, vines, bushes, or crops that have a nonbearing period of less than five years and that will re-turn during the commercial bearing period on an annual basis from the production of unprocessed agricultural plant production not less than four hundred dollars ($400) per acre.
    - Land that has returned from the production of unprocessed agricultural plant products an annual gross value of not less than four hundred dollars ($400) per acre for three of the previous five calendar years.

As described previously, the entire Project site is considered Prime agricultural land.

LOCAL

A discrete reference number is assigned to each local policy to facilitate its identification elsewhere in this document as well at the General Plans Program EIR (e.g., policies are designated as AL-*X,* where *X* is the discrete number).

Stanislaus Local Agency Formation Commission Policies

The Stanislaus LAFCo is responsible for coordinating orderly amendments to local jurisdictional boundaries, including annexations. The Cortese-Knox-Hertzberg Local Government Reorganization Act (Government Code Section 56000 et seq.) empowers each LAFCo to consider the incorporation of new cities, the annexation of lands to existing cities and special districts, and other changes to city and district boundaries. Through its responsibilities to govern the approval of annexations and the establishment of spheres of influence, the LAFCo considers soil quality and the availability of irrigation water when assessing the impacts of annexation on agricultural land in accordance with the General Plan Agricultural Element.

> **AL-1:** LAFCo policies direct that the development or use of land for uses other than open space will be guided away from existing prime agricultural lands, unless such action would not promote the planned, orderly, efficient development of an area (Government Code 56377).

AL-2: "LAFCo policy requires that proposals for annexation and/or sphere of influence expansion be subject to a Plan for Agricultural Preservation. The Plan for Agricultural Preservation must specify the method or strategy proposed to minimize the loss of agricultural lands. The policy then provides a menu of commonly used strategies that are encouraged. Purchase of conservation easement, payment of in-lieu fees or municipal adoption of an urban growth boundary are examples of these commonly- used strategies, and other methods may also prove viable on a case-by-case basis."

Stanislaus County General Plan

The Stanislaus County General Plan (County General Plan) has the following applicable policies.

LAND USE ELEMENT

AL-3: Agriculture, as the primary industry of the County, shall be promoted and protected. (County General Plan, Land Use Element, Goal 3, Policy 17)

AL-4: Whenever an application is to be considered which includes property within the sphere of influence of a city or special district (e.g., sewer, water, community services) or areas of specific designation created by agreement between County and City, the following procedures should be followed:

1. Development, other than agricultural uses and churches, which requires discretionary approval shall be referred to that city for preliminary approval. The project shall not be approved by the County unless written communication is received from the city memorializing their approval. If approved by the city, the city should specify what conditions are necessary to ensure that development will comply with city development standards. Requested conditions for such things as sewer service in an area where none is available shall not be imposed. Approval from a city does not preclude the County decision-making body from exercising discretion, and it may either approve or deny the project.
2. Agricultural uses and churches which require discretionary approval should be referred to that city for comment. The County Planning Commission and Board of Supervisors shall consider the responses of the cities in the permit process. If the County finds that a project is inconsistent with the city's general plan designation, it shall not be approved. Agricultural use and churches shall not be considered inconsistent if the only inconsistency is with a statement that a development within the urban transition area or sphere of influence shall be discouraged (or similar sweeping statement). The city shall be asked to respond to the following questions:
    A. Is the proposed project inconsistent with the land use designation on the city's general plan? If so, please include a copy of the map (or that portion which includes the subject property) and the text describing

uses permitted for the general plan designation. All findings of inconsistency must include supporting documentation.

B. If the project is approved, specifically what type of conditions would be necessary to ensure the development will comply with city development standards such as street improvements, setbacks and landscaping? (County General Plan, Land Use Element, Spheres of Influence Policy)

AGRICULTURAL ELEMENT

AL-5: The County shall continue to implement its Right-to-Farm Ordinance. (County General Plan, Agricultural Element, Policy 1.9, Implementation Measure 1)

AL-6: The County shall protect agricultural operations from conflicts with non-agricultural uses by requiring buffers between proposed non-agricultural uses and adjacent agricultural operations. (County General Plan, Agricultural Element, Policy 1.10)

AL-7: The County shall require buffers and setbacks for all discretionary projects introducing or expanding non-agricultural uses in or adjacent to an agricultural area consistent with the guidelines presented in Appendix "A" of the Agricultural Element. (County General Plan, Agricultural Element, Policy 1.10, Implementation Measure 1)

AL-8: To reduce development pressures on agricultural lands, higher density development and infilling shall be encouraged (County General Plan, Agricultural Element, Policy 2.4)

AL-9: The County recognizes the desire of cities and unincorporated communities to grow and prosper and shall not oppose reasonable requests consistent with city and county agreements to expand, providing the resultant growth minimizes impacts to adjacent agricultural land. (County General Plan, Agricultural Element, Policy 2.11)

AL-10: In recognition that unincorporated land within sphere of influence of cities or community services districts and sanitary districts serving unincorporated communities ultimately will be urbanized, the County shall cooperate with cities and unincorporated communities in managing development in sphere of influence areas. (County General Plan, Agricultural Element, Policy 2.13)

AL-11: The County shall work cooperatively with the nine cities within the County and to encourage them to adopt agricultural conservation policies or ordinances which are consistent with County policies or ordinances in order to undertake an integrated, comprehensive Countywide approach to farmland conservation. It is the ultimate goal of the County to have all nine cities participate in or adopt an agricultural mitigation ordinance that is the same as or substantially similar. (County General Plan, Agricultural Element, Policy 2.17)

City of Modesto General Plan

The City's Urban Area General Plan (UAGP) provides the following policies related to agricultural land.

BASELINE DEVELOPED AREA

AL-12: If a subsequent project is within the Baseline Developed Area or Downtown Area as identified on the Urban Area General Plan Growth Strategy Diagram [Figure II-1], consider the project to have minimal effect on the conversion of agricultural lands, and no mitigation for that impact will be required. (UAGP Policy VII.D.3[a])

AL-13: Facilitate infill development through active leadership and strategic provision of infrastructure and services, and supporting land uses. Provide incentives for infill development, redevelopment and growth in existing urbanized areas to enhance community character, optimize infrastructure investments, support increased transit use, promote non-motorized transportation, increase housing diversity and enhance commercial viability. Structure fee programs so that infill development is "priced" according to its relative infrastructure efficiencies and the community-wide benefits to be realized. (UAGP Policy III.B.1)

AL-14: To maximize economic and social benefits, and resource efficiencies, prioritize and focus new development within the existing City limits. This will strengthen existing neighborhoods and maximize efficiencies of utility and infrastructure systems. New development should be accessible via all modes of transportation, both motorized and non-motorized, with an emphasis on availability of public services. (UAGP Policy III.B.2)

AL-15: Implement higher density, mixed-use development to create a balanced, vibrant downtown and active neighborhood centers by streamlining development processing, offering public parking for projects with parking structures (in lieu of the provision of private parking), reducing fees and providing for deferral of fees. (UAGP Policy III.F.1)

PLANNED URBANIZING AREA

1) **AL-16:** Do not annex agricultural land unless urban development consistent with the General Plan has been approved by the City. (UAGP Policy VII.D.4[a])
2) **AL-17:** Support the continuation of agricultural uses on lands designated for urban uses until urban development is imminent. (UAGP Policy VII.D.4[b])
3) **AL-18:** Encourage the County to retain agricultural uses on land surrounding the General Plan area and on lands within the General Plan area pending their annexation to the city or development by mutual agreement with the County. (UAGP Policy VII.D.4[c])
4) **AL-19:** Where necessary to promote planned City growth, encourage development of those agricultural lands that are already compromised by adjacent urban development or contain property required for the extension of infrastructure or other public facilities, before considering urban development

on agricultural lands that are not subject to such urban pressures. (UAGP Policy VII.D.4[d])

5) **AL-20:** For any subsequent project that is adjacent to an existing agricultural use, the project proponent may incorporate measures to reduce the potential for conflicts with the agricultural use. Potential measures to be implemented may include the following:

6) Include a buffer zone of sufficient width between the proposed residences and the agricultural use.
7) Inform residents about the possible exposure to agricultural chemicals. (UAGP Policy VII.D.4[e])

AL-21: Require development projects to comply with current LAFCo policy(ies) regarding preservation of agricultural resources. (UAGP Policy VII.D.4[f])

Stanislaus LAFCo Agricultural Preservation Policy (Policy 22)

One of LAFCo's main charges is to protect and promote agriculture. The Commission amended the Agricultural Preservation Policy on March 27, 2019. The Policy requires applicants to prepare a "Plan for Agricultural Preservation" for annexation proposals that will impact agricultural lands. The Plan must include information such as the proposal's direct and indirect impacts on agricultural resources, the availability of other lands in the City's existing boundaries, and relevant General Plan policies. The Plan must also specify the method or strategy proposed to minimize the loss of agricultural lands. The information provided in the Plan should be consistent with the project's CEQA document prepared by the City.

Stanislaus County Farmland Mitigation Program

The purpose of the Farmland Mitigation Program (FMP) is to aid in mitigating the loss of farmland resulting from residential development in the unincorporated areas of Stanislaus County by requiring the permanent protection of farmland based on a 1:1 ratio to the amount of farmland converted. The FMP is designed to utilize agricultural conservation easements granted in perpetuity as a means of minimizing the loss of farmland. The intent of the FMP guidelines[2] is to establish standards for the acquisition and long-term oversight of agricultural conservation easements purchased in accordance with the FMP. These guidelines apply to any development project requiring a General Plan or Community Plan amendment from 'Agriculture' to a residential land use designation of the Stanislaus County General Plan. The guidelines provide that the acreage requiring mitigation shall be equal to the overall size of the legal parcel subject to the General Plan land use designation amendment and not the portion of parcel being developed.

Stanislaus County Right-to-Farm Ordinance

The County's Right-to-Farm Ordinance prevents conflicts between urban and agricultural uses that may adversely affect ongoing agricultural operations. The idea of right-to-farm ordinances is to protect farmers from nuisance suits that may arise when new development (particularly residential

[2] https://www.stancounty.com/planning/pl/documents/gp/vii-b-farmland-mitigation-program-guideline.pdf

development) encroaches into existing and ongoing agricultural areas. The County's ordinance requires disclosure to home buyers in farming areas that they are subject to noise, dust, odors, and other impacts of commercial agricultural operations. The ordinance also provides a voluntary agricultural grievance procedure as an alternative to court proceedings.

The County's right-to-farm ordinance is summarized in Section 9.32.050 of the County Code. According to the Code, for all discretionary approvals of parcel maps or subdivision maps involving agricultural land, or real property located adjacent to agricultural land, the County Department of Planning and Community Development shall include as a condition of approval that the final recorded map shall contain the following statement:

> *All persons purchasing lots within the boundaries of this approved map should be prepared to accept the inconveniences associated with agricultural operations, such as noise, odors, flies, dust or fumes. Stanislaus County has determined that such inconveniences shall not be considered to be a nuisance if agricultural operations are consistent with accepted customs and standards.*

3.2.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed Project will have a significant impact on agricultural resources if it will:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Important Farmlands), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.
- Conflict with existing zoning for agricultural use, or a Williamson Act contract.
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 1222(g)) or timberland (as defined in Public Resources Code section 4526).
- Result in the loss of forest land or conversion of forest land to non-forest use.
- 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.

Regarding the third and fourth issues above, there are no forest resources located on the project site, or within the City of Modesto. There are also no parcels that are currently zoned as forest land, timber, or timber production. Therefore, implementation of the proposed Project would have ***no impact*** on forest land, timber, or timber production and this impact will not be discussed or addressed further in this EIR.

IMPACTS AND MITIGATION MEASURES

Impact 3.2-1: The proposed Project would result in the conversion of Farmlands, including Prime Farmland and Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural uses (Significant and Unavoidable)

Development of the proposed Project would result in the permanent conversion of approximately 145 acres of Prime Farmland, as shown on Figure 3.2-1, to urban land. The loss of Important Farmland as classified under the FMMP is considered a potentially significant environmental impact.

The Stanislaus County Farmland Mitigation Program Guidelines Farmland Mitigation Program (FMP) is to aid in mitigating the loss of farmland resulting from residential development in the unincorporated areas of Stanislaus County by requiring the permanent protection of farmland based on a 1:1 ratio to the amount of farmland converted. The FMP is designed to utilize agricultural conservation easements granted in perpetuity as a means of minimizing the loss of farmland. Although this policy is intended for conversions of land from agricultural to residential it serves as a basis for determining appropriate mitigation strategies for the proposed Project.

UAGP policies AL-12 through AL-21 serve to minimize direct impacts to agricultural resources by promoting continued agricultural activities on developable parcels, thoughtful and deliberate annexation and development processes & requirements, promoting new development at increased densities to occur within the existing City, and by supporting LAFCo's policy (Policy 22) to require that annexation projects preserve agricultural land that is of equal or better quality elsewhere in the County. The Stanislaus LAFCo Agricultural Preservation policy requires that projects provide "agricultural mitigation land" on a 1:1 basis for each acre of land converted in perpetuity. Policy 22 describes the agricultural mitigation easements or offsets that shall not be required (per LAFCO) for any annexations of land for commercial or industrial development. Although this policy is intended for conversions of land from agricultural to residential it serves as a basis for determining mitigation strategies for the proposed Project to represent the feasibility mitigation requirements.

In compliance with the mitigation standards and requirements described in the Stanislaus LAFCo Agricultural Preservation policies, and supported by the Modesto General Plan Chapter VII, Section D (Agriculture Resource Policies), the project will support, and fully fund, the acquisition of prime agricultural land at a ratio of 1:1. per Mitigation Measure 3.2-1

However, even with the preservation efforts to mitigate agricultural land losses through 1:1 mitigation strategies, there would be a net loss of agricultural lands within the county as the Project would convert these lands to non-agricultural uses. As such, because areas of Farmland as described above, would be permanently converted to non-agricultural uses, the resulting impact(s) are found to be ***significant and unavoidable***. Mitigation Measure 3.2-1 below would require a 1:1 mitigation of these lands; however, even with mitigation, these lands would be ultimately converted by the Project.

MITIGATION MEASURE(S)

Mitigation Measure 3.2-1: *Prior to the issuance of grading permits, the Project applicant shall secure permanent protection of offsite farmland based on a 1:1 ratio to the amount of gross Farmland converted because of development. The acreage requiring agricultural mitigation shall be equal to the site dedicated to developed uses for lands designated as Prime Farmland. Permanent preservation shall consist of the purchase of agricultural conservation easements granted in perpetuity from willing seller(s), enforceable deed restrictions, purchase of banked mitigation credits, or other conservation mechanisms acceptable to the City and LAFCo.*

The permanent protection of farmland shall be accomplished by either: (1) the landowner/developer working directly with an established farmland trust or similar organization, and providing certification satisfactory to the City and LAFCo that such lands have been permanently preserved at the specified ratio; or (2) working with a qualified land trust or similar organization, to establish a fee for agricultural land conservation easements.

Impact 3.2-2: The proposed Project would not conflict with existing zoning for agricultural use, or Williamson Act Contracts (No Impact)

WILLIAMSON ACT

There are no Williamson Act contracts on parcels within the Project area, which are proposed for annexation and development. As such, there are no conflicts between the proposed Project and Williamson Act contracts. For these reasons, implementation of the proposed Project would have ***no impact*** relative to this topic.

EXISTING ZONING

As described in the Project Description (Chapter 2.0), the Project site is located outside the Modesto city limits, and the City of Modesto has not zoned the Project site. The Stanislaus County Zoning Ordinance (Chapter 21.66 of the County Code) designates the project site for Salida Community Plan (SCP) zoning District. The SCP District is intended to implement the General Plan's stated vision for the development of the Salida Community Plan Amendment Area. There are nine sub-zoning districts for the SCP District, of which the Project site is Salida Community Plan, Industrial/ Business Park (SCP-IBP), and Salida Community Plan, Planned Industrial (SCP-PI). Figures 2.0-6a and 2.0-6b in Chapter 2.0 depict the Stanislaus County and City of Modesto zoning districts for the Project site and the surrounding areas. The City and the County have not zoned the Project site for agricultural use. As such, there is ***no impact*** relative to this environmental topic.

Impact 3.2-3: Project implementation would not involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use (Less than Significant)

As discussed in Impact 3.2-1, future development in accordance with the proposed Project would result in the conversion of Prime farmland to a non-agricultural use. The proposed Project would

allow new developed site uses consistent with the Project Description (Chapter 2.0) that have the potential to conflict with existing agricultural operations. Potential urban/agricultural use conflicts between proposed urban and nearby agricultural uses are expected to be minimal due to the industrial nature of both activities. All existing agricultural operations currently surrounding the Project site would continue to operate, and onsite project uses would not be anticipated to impact surrounding farming operations. Neighboring agricultural lands, including Prime Farmland, are located adjacent to the Project site, as shown on Figure 3.2-1.

The County of Stanislaus recognizes and supports the right to farm agricultural lands in a manner consistent with accepted customs and standards. Residents of property on or near agricultural land should be prepared to accept the inconveniences or discomforts associated with agricultural operations, including but not limited to noise, odors, flies, fumes, dust, the operation of machinery of any kind during any 24-hour period (including aircraft), the storage and disposal of manure, and the application by spraying or otherwise of chemical fertilizers, soil amendments, herbicides and pesticides. Stanislaus County has determined that inconveniences or discomforts associated with such agricultural operations shall not be a nuisance if such operations are consistent with accepted customs and standards. Stanislaus County has established a grievance committee to assist in the resolution of any disputes which might arise between residents of this County regarding agricultural operations.

The County's right-to-farm ordinance is summarized in Section 9.32.050 of the County Code. According to the Code, for all discretionary approvals of parcel maps or subdivision maps involving agricultural land, or real property located adjacent to agricultural land, the County Department of Planning and Community Development shall include as a condition of approval that the final recorded map shall contain the following statement:

> *All persons/businesses purchasing or leasing property within the boundaries of this approved map should be prepared to accept the inconveniences associated with agricultural operations, such as noise, odors, flies, dust or fumes. Stanislaus County has determined that such inconveniences shall not be considered to be a nuisance if agricultural operations are consistent with accepted customs and standards.*

The Project will support and require a condition of approval that the final recorded map contain the statement as well as a right-to-farm notice consistent with the County's real estate disclosure statement requirements included in Section 9.32.050 of the County Code.

Additionally, the Modesto General Plan includes Policies related to the continued operation of agricultural uses including Policy AL-17 which supports the continuation of agricultural uses on land designated for urban uses until urban development is imminent. (UAGP Policy VII-D.4[b]), and Policy AL-18 that encourages the County to retain agricultural uses on land surrounding the General Plan area and on land within the General Plan area pending their annexation to the city or development by mutual agreement with the County. (UAGP Policy VII-D.4[c]).

Development in areas within the Project site may involve other changes in the existing environment that could result in the conversion of farmland. However, as mentioned previously, the proposed

Project includes adherence to LAFCo policies and mitigation requirements as described under Impact 3.2-1, which would reduce the impact of development resulting in the conversion of existing farmland. Additionally, the Modesto General Plan policies AL-12 through AL-21 serve to minimize direct impacts to agricultural resources by promoting continued agricultural activities on developable parcels, thoughtful and deliberate annexation and development processes and requirements, and by supporting LAFCo's policy to require that annexation projects preserve agricultural land that is of equal or better quality elsewhere in the County. No other impacts would be anticipated and therefore, the proposed General Plan would result in a ***less than significant*** impact involving other changes in the existing environment that could result in the conversion of farmland beyond those impacts discussed previously.

CUMULATIVE IMPACTS

The cumulative setting for the loss of agricultural land includes areas with Modesto and areas of agricultural lands within Stanislaus County.

Impact 3.2-4: Cumulative Impacts Related to Agricultural Resources (Significant and Unavoidable and Cumulatively Considerable)

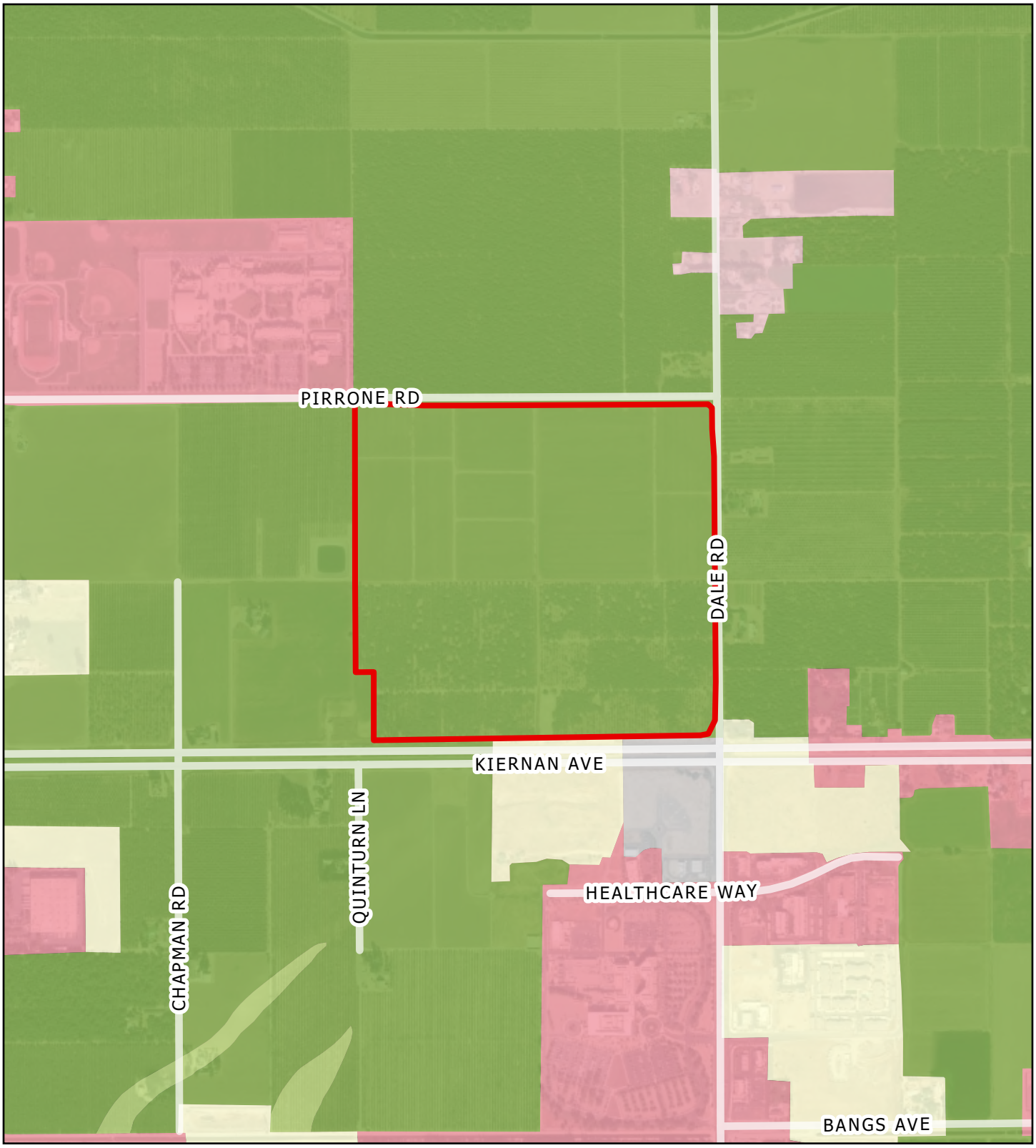
A significant cumulative impact could occur if the proposed Project, in conjunction with other foreseeable projects in the area, results in indirect impacts that exert pressure on agricultural lands to convert to non-agricultural use. Such indirect impacts can include the division of large tracts of continuous agricultural land into smaller, less agriculturally viable tracts; the presence of incompatible uses adjacent to existing agricultural operations that could lead to the restriction of chemical use and/or complaints regarding noise, dust, and odors; increases in land values and taxes that exert pressure on agricultural landowners to convert to urban uses; and loss of agricultural support infrastructure, such as processing facilities. In addition, urban growth may increasingly compete with agriculture for the use of water resources and may conflict with operational use of area roadways.

Modesto is surrounded by agricultural land. The conversion of agricultural land to urban uses is a potentially significant cumulative impact.

The proposed Project is currently outside the City's Sphere of Influence (SOI) and is proposed for SOI amendment and annexation as described in the Project Description (Chapter 2.0). The site is planned for urban development although it is currently being farmed. As described under Impact 3.2-1, the proposed Project would result in the conversion of Important Farmlands into non-agricultural uses. Further, development of the proposed Project may encourage or promote other areas to develop, further removing Important Farmland from production. As such, the cumulative loss of Important Farmland from developments anticipated under the General Plan would have a ***significant and unavoidable*** and ***cumulatively considerable*** impact on agricultural resources.

MITIGATION MEASURE(S)

*Implement **Mitigation Measure 3.2-1.***



Legend

- Project Area (144.3 acres)
- Prime Farmland
- Farmland of Statewide Importance
- Grazing Land
- Vacant or Disturbed Land
- Rural Residential Land
- Urban and Built-Up Land

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 3.2-1. Important Farmlands

0 250 500 Feet

Sources: California Department of Conservation Farmland Mapping and Monitoring Program, Stanislaus County, 2020; Stanislaus County GIS: MAXAR Imagery 9/23/2023. Map Date: April 8, 2025.

De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm

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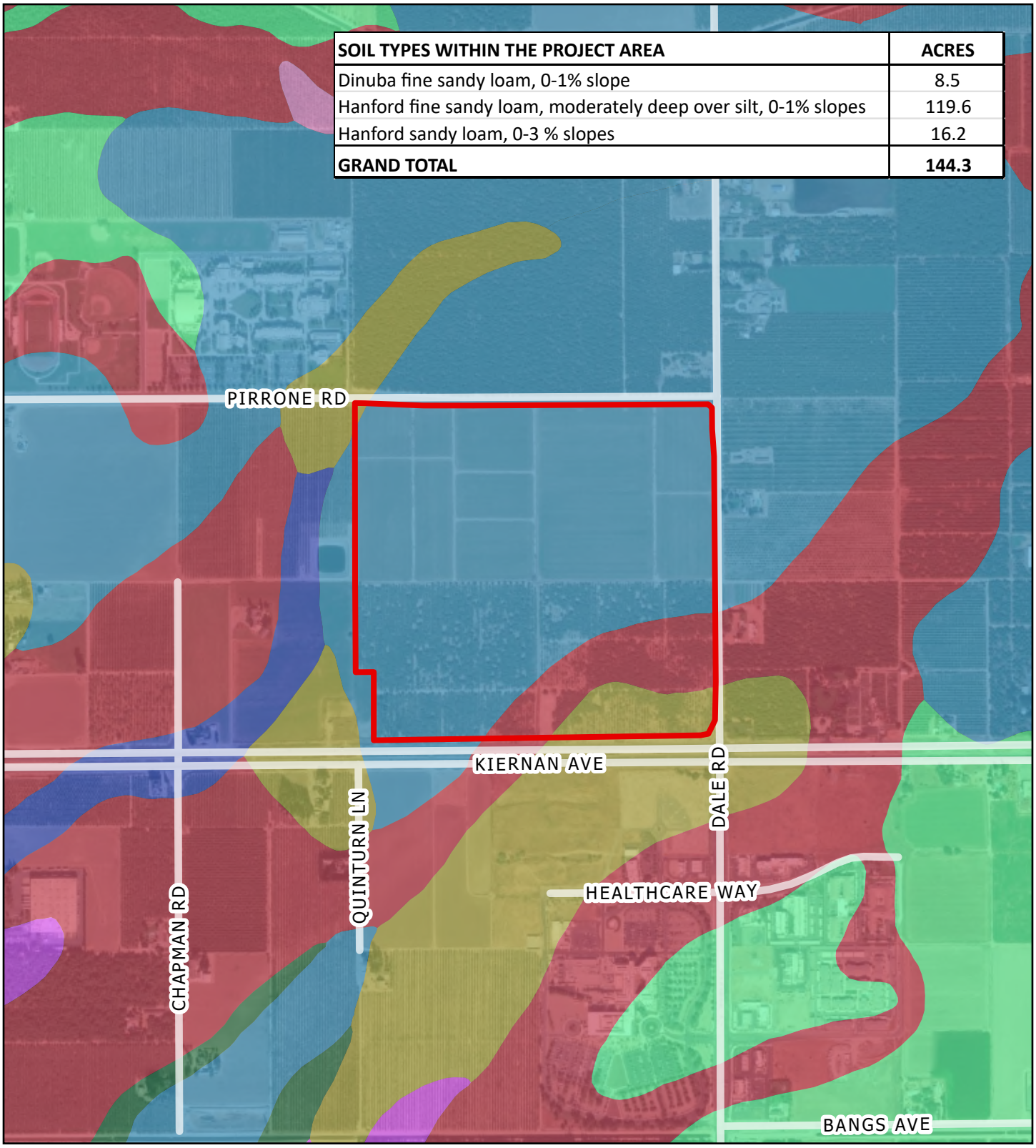
SOIL TYPES WITHIN THE PROJECT AREA	ACRES
Dinuba fine sandy loam, 0-1% slope	8.5
Hanford fine sandy loam, moderately deep over silt, 0-1% slopes	119.6
Hanford sandy loam, 0-3 % slopes	16.2
GRAND TOTAL	**144.3**



Legend

- Project Area (144.3 acres)

Soil Type (Percent Slope)

- Dinuba fine sandy loam (0-1%)
- Dinuba sandy loam (0-1%)
- Hanford fine sandy loam, deep to moderately deep over silt (0-1%)
- Hanford sandy loam (0-3%)
- Hanford sandy loam, deep to moderately deep over silt (0-1%)
- Oakdale sandy loam (0-3%)
- Tujunga loamy sand (0-3%)
- Tujunga sand (0-3%)

SCANNELL DEVELOPMENT PROJECT
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Figure 3.2-2. Soils Map

0 250 500 Feet

Sources: USA Soils Database, accessed April 8, 2025; Stanislaus County GIS: MAXAR Imagery 9/23/2023. Map Date: April 8, 2025.

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This section describes the regional air quality, current attainment status of the air basin, local sensitive receptors, emission sources, and impacts that are likely to result from Project implementation. The analysis contained in this section is intended to be at a project level, and covers impacts associated with the conversion of the entire site to urban uses. Following this discussion is an assessment of consistency of the proposed Project with applicable policies and local plans. The Greenhouse Gases, Climate Change, and Energy analysis is in a separate section of this document (see Section 3.7: Greenhouse Gases, Climate Change and Energy). This air quality section is based in part on the following guidance documents: *Air Quality and Land Use Handbook: A Community Health Perspective* (California Air Resources Board [CARB], 2007), *Guide for Assessing and Mitigation Air Quality Impacts* (San Joaquin Valley Air Pollution Control District [SJVAPCD], 2002), *Guidance for Assessing and Mitigating Air Quality Impacts - 2015* (SJVAPCD, 2015), and CalEEMod (v.2022.1).

Comments were received during the public review period or scoping meeting for the Notice of Preparation regarding this topic from the following individuals and organizations:

- Anita Young (resident) (March 24, 2025);
- San Joaquin Valley Air Pollution Control District (SJVAPCD) (March 25, 2025);
- Stanislaus County Environmental Review Committee (March 27, 2025); and
- Alaura McGuire, acting as legal counsel for the Stanislaus County Residents for Responsible Development (March 27, 2025)

Each of the comments is addressed within this section. Full comments received are included in Appendix A.

3.3.1 ENVIRONMENTAL SETTING

SAN JOAQUIN VALLEY AIR BASIN

The City of Modesto (City) is in the northern portion of the San Joaquin Valley Air Basin (SJVAB). The SJVAB consists of eight counties: Fresno, Kern (western and central), Kings, Tulare, Madera, Merced, San Joaquin, and Stanislaus. Air pollution from significant activities in the SJVAB includes a variety of industrial-based sources as well as on- and off-road mobile sources. These sources, coupled with geographical and meteorological conditions unique to the area, stimulate the formation of unhealthy air.

The SJVAB is approximately 250 miles long and an average of 35 miles wide. It is bordered by the Sierra Nevada in the east, the Coast Ranges in the west, and the Tehachapi mountains in the south. There is a slight downward elevation gradient from Bakersfield in the southeast end (408 feet elevation) to sea level at the northwest end where the valley opens to the San Francisco Bay at the Carquinez Straits. At its northern end is the Sacramento Valley, which comprises the northern half of California's Central Valley. The bowl-shaped topography inhibits movement of pollutants out of the valley (SJVAPCD, 2015).

Climate

The SJVAB is in a Mediterranean climate zone and is influenced by a subtropical high-pressure cell most of the year. Mediterranean climates are characterized by sparse rainfall, which occurs mainly in winter. Summers are hot and dry. Summertime maximum temperatures often exceed 100°F in the valley.

The subtropical high-pressure cell is strongest during spring, summer, and fall and produces subsiding air, which can result in temperature inversions in the valley. A temperature inversion can act like a lid, inhibiting vertical mixing of the air mass at the surface. Any emissions of pollutants can be trapped below the inversion. Most of the surrounding mountains are above the normal height of summer inversions (1,500 to 3,000 feet).

Winter-time high pressure events can often last many weeks, with surface temperatures often lowering to 30F. During these events, fog can be present and inversions are extremely strong. These wintertime inversions can inhibit vertical mixing of pollutants to a few hundred feet (SJVAPCD, 2015).

Wind Patterns

Wind speed and direction play an important role in dispersion and transport of air pollutants. Wind at the surface and aloft can disperse pollution by mixing and transporting it to other locations.

Especially in summer, winds in the San Joaquin Valley most frequently blow from the northwest. The region's topographic features restrict air movement and channel the air mass towards the southeastern end of the valley. Marine air can flow into the basin from the San Joaquin River Delta and over Altamont Pass and Pacheco Pass, where it can flow along the axis of the valley, over the Tehachapi pass, into the Southeast Desert Air Basin. This wind pattern contributes to transporting pollutants from the Sacramento Valley and the Bay Area into the SJVAB. Approximately 27 percent of the total emissions in the northern portion, 11 percent of total emissions in the central region, and 7 percent of total emissions in the south valley of the SJVAB are attributed to air pollution transported from these two areas. The Coastal Range is a barrier to air movement to the west, and the high Sierra Nevada range is a significant barrier to the east (the highest peaks in the southern Sierra Nevada reach almost halfway through the Earth's atmosphere). Many days in the winter are marked by stagnation events where winds are very weak. Transport of pollutants during winter can be very limited. A secondary but significant summer wind pattern is from the southeast and can be associated with nighttime drainage winds, prefrontal conditions, and summer monsoons.

Two significant diurnal wind cycles that occur frequently in the valley are the sea breeze and mountain-valley upslope and drainage flows. The sea breeze can accentuate the northwest wind flow, especially on summer afternoons. Nighttime drainage flows can accentuate the southeast movement of air down the valley. In the mountains during periods of weak synoptic scale winds, winds tend to be upslope during the day and downslope at night. Nighttime and drainage flows are especially pronounced during the winter when flow from the easterly direction is enhanced by nighttime cooling in the Sierra Nevada. Eddies can form in the valley wind flow and can recirculate a polluted air mass for an extended period.

Temperature

Solar radiation and temperature are particularly important in the chemistry of ozone formation. The SJVAB averages over 260 sunny days per year. Photochemical air pollution (primarily ozone) is produced by the atmospheric reaction of organic substances (such as volatile organic compounds) and nitrogen dioxide under the influence of sunlight. Ozone concentrations are very dependent on the amount of solar radiation, especially during late spring, summer, and early fall. Ozone levels typically peak in the afternoon. After the sun goes down, the chemical reaction between nitrous oxide and ozone begins to dominate. This reaction tends to scavenge and remove the ozone in the metropolitan areas through the early morning hours, resulting in the lowest ozone levels, possibly reaching zero at sunrise in areas with high nitrogen oxides emissions. At sunrise, nitrogen oxides tend to peak, partly due to low levels of ozone currently and due to the morning commuter vehicle emissions of nitrogen oxides.

Generally, the higher the temperature, the more ozone is formed, since reaction rates increase with temperature. However, extremely hot temperatures can "lift" or "break" the inversion layer. Typically, if the inversion layer does not lift to allow the buildup of contaminants to be dispersed, the ozone levels will peak in the late afternoon. If the inversion layer breaks and the resultant afternoon winds occur, the ozone will peak in the early afternoon and decrease in the late afternoon as the contaminants are dispersed or transported out of the SJVAB.

Ozone levels are low during winter periods when there is much less sunlight to drive the photochemical reaction (SJVAPCD, 2015).

Precipitation, Humidity, and Fog

Precipitation and fog may reduce or limit some pollutant concentrations. Ozone needs sunlight for its formation, and clouds and fog can block the required solar radiation. Wet fogs can cleanse the air during winter as moisture collects on particles and deposits them on the ground. Atmospheric moisture can also increase pollution levels. In fogs with less water content, the moisture acts to form secondary ammonium nitrate particulate matter. The winds and unstable air conditions experienced during the passage of winter storms result in periods of low pollutant concentrations and excellent visibility. Between winter storms, high pressure and light winds allow cold moist air to pool on the SJVAB floor. This creates strong low-level temperature inversions and very stable air conditions, which can lead to tule fog. Wintertime conditions favorable to fog formation are also conditions favorable to high concentrations of particulate matter (PM), including PM that have a diameter of less than 2.5 micrometers ($PM_{2.5}$) and 10 micrometers PM_{10} (SJVAPCD, 2015).

Inversions

The vertical dispersion of air pollutants in the San Joaquin Valley can be limited by persistent temperature inversions. Air temperature in the lowest layer of the atmosphere typically decreases with altitude. A reversal of this atmospheric state, where the air temperature increases with height, is termed an inversion. The height of the base of the inversion is known as the "mixing height." This is the level to which pollutants can mix vertically. Mixing of air is minimized above and below the

inversion base. The inversion base represents an abrupt density change where little air movement occurs.

Inversion layers are significant in determining pollutant concentrations. Concentration levels can be related to the amount of mixing space below the inversion. Temperature inversions that occur on the summer days are usually 2,000 to 2,500 feet above the valley floor. In winter months, overnight inversions occur 500 to 1,500 feet above the valley floor (SJVAPCD, 2015).

CRITERIA POLLUTANTS

All criteria pollutants can have human health and environmental effects at certain concentrations. The United States Environmental Protection Agency (U.S. EPA) uses six "criteria pollutants" as indicators of air quality and has established for each of them a maximum concentration above which adverse effects on human health may occur. These threshold concentrations are called National Ambient Air Quality Standards (NAAQS). In addition, California establishes ambient air quality standards, called California Ambient Air Quality Standards (CAAQS). California law does not require that the CAAQS be met by a specified date as is the case with NAAQS.

The ambient air quality standards for the six criteria pollutants (as shown in Table 3.3-1) are set to protect public health and the environment within an adequate margin of safety (as provided under Section 109 of the Federal Clean Air Act [FCAA]; 42 U.S.C., § 7409. Epidemiological, controlled human exposure, and toxicology studies evaluate potential health and environmental effects of criteria pollutants, and form the scientific basis for new and revised ambient air quality standards. Principal characteristics and possible health and environmental effects from exposure to the six primary criteria pollutants generated by the Project are discussed below.

Ozone (O_3) is a photochemical oxidant and the major component of smog. While O_3 in the upper atmosphere is beneficial to life by shielding the earth from harmful ultraviolet radiation from the sun, high concentrations of O_3 at ground level are a major health and environmental concern. O_3 is not emitted directly into the air but is formed through complex chemical reactions between precursor emissions of volatile organic compounds (VOCs) and oxides of nitrogen (NO_x) in the presence of sunlight. These reactions are stimulated by sunlight and temperature so that peak O_3 levels occur typically during the warmer times of the year. Both VOCs and NO_x are emitted by transportation and industrial sources. VOCs are emitted from sources as diverse as autos, chemical manufacturing, dry cleaners, paint shops and other sources using solvents.

The reactivity of O_3 causes health problems because it damages lung tissue, reduces lung function, and sensitizes the lungs to other irritants. Scientific evidence indicates that ambient levels of O_3 not only affect people with impaired respiratory systems, such as asthmatics, but affect healthy adults and children as well. Exposure to O_3 for several hours at relatively low concentrations has been found to significantly reduce lung function and induce respiratory inflammation in normal, healthy people during exercise. This decrease in lung function generally is accompanied by symptoms including chest pain, coughing, sneezing and pulmonary congestion.

Studies show associations between short-term ozone exposure and non-accidental mortality, including deaths from respiratory issues. Studies also suggest long-term exposure to ozone may

increase the risk of respiratory-related deaths (U.S. EPA, 2025a). The concentration of ozone at which health effects are observed depends on an individual's sensitivity, level of exertion (i.e., breathing rate), and duration of exposure. Studies show large individual differences in the intensity of symptomatic responses, with one study finding no symptoms to the least responsive individual after a 2-hour exposure to 400 parts per billion of ozone and a 50 percent decrement in forced airway volume in the most responsive individual. Although the results vary, evidence suggests that sensitive populations (e.g., asthmatics) may be affected on days when the 8-hour maximum ozone concentration reaches 80 parts per billion (U.S. EPA, 2025b). The average background level of ozone in California and Nevada is approximately 48.3 parts per billion, which represents approximately 77 percent of the total ozone in the western region of the U.S. (NASA, 2015).

In addition to human health effect, ozone has been tied to crop damage, typically in the form of stunted growth, leaf discoloration, cell damage, and premature death. O_3 can also act as a corrosive and oxidant, resulting in property damage such as the degradation of rubber products and other materials.

Carbon monoxide (CO) is a colorless, odorless, and poisonous gas produced by incomplete burning of carbon in fuels. Carbon monoxide is harmful because it binds to hemoglobin in the blood, reducing the ability of blood to carry oxygen. This interferes with oxygen delivery to the body's organs. The most common effects of CO exposure are fatigue, headaches, confusion, and dizziness due to inadequate oxygen delivery to the brain. For people with cardiovascular disease, short-term CO exposure can further reduce their body's already compromised ability to respond to the increased oxygen demands of exercise, exertion, or stress. Inadequate oxygen delivery to the heart muscle leads to chest pain and decreased exercise tolerance. Unborn babies whose mothers experience high levels of CO exposure during pregnancy are at risk of adverse developmental effects. Exposure to CO at high concentrations can also cause fatigue, headaches, confusion, dizziness, and chest pain. There are no ecological or environmental effects to ambient CO (CARB, 2025c).

Very high levels of CO are not likely to occur outdoors. However, when CO levels are elevated outdoors, they can be of particular concern for people with some types of heart disease. These people already have a reduced ability for getting oxygenated blood to their hearts in situations where the heart needs more oxygen than usual. They are especially vulnerable to the effects of CO when exercising or under increased stress. In these situations, short-term exposure to elevated CO may result in reduced oxygen to the heart accompanied by chest pain, also known as angina. Such acute effects may occur under current ambient conditions for some sensitive individuals, while increases in ambient CO levels increases the risk of such incidences.

Nitrogen Dioxide (NO_2) is a brownish, highly reactive gas that is present in all urban atmospheres. The main effect of increased NO_2 is the increased likelihood of respiratory problems. Under ambient conditions, NO_2 can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections. Nitrogen oxides are an important precursor both to ozone (O_3) and acid rain and may affect both terrestrial and aquatic ecosystems. Longer exposures to elevated concentrations of NO_2 may contribute to the development of asthma and potentially increase susceptibility to respiratory infections. People with asthma, as well as children and the elderly, are generally at greater risk for the health effects of NO_2.

Sulfur dioxide (SO_2) is one of the multiple gaseous oxidized sulfur species and is formed during the combustion of fuels containing sulfur, primarily coal and oil. The largest anthropogenic source of SO_2 emissions in the U.S. is fossil fuel combustion at electric utilities and other industrial facilities. SO_2 is also emitted from certain manufacturing processes and mobile sources, including locomotives, large ships, and construction equipment.

SO_2 affects breathing and may aggravate existing respiratory and cardiovascular disease in high doses. Sensitive populations include asthmatics, individuals with bronchitis or emphysema, children, and the elderly. SO_2 is also a primary contributor to acid deposition, or acid rain, which causes acidification of lakes and streams and can damage trees, crops, historic buildings, and statues. In addition, sulfur compounds in the air contribute to visibility impairment in large parts of the country. This is especially noticeable in national parks. Ambient SO_2 results largely from stationary sources such as coal and oil combustion, steel mills, refineries, pulp and paper mills and from nonferrous smelters.

Short-term exposure to ambient SO_2 has been associated with various adverse health effects. Multiple human clinical studies, epidemiological studies, and toxicological studies support a causal relationship between short-term exposure to ambient SO_2 and respiratory morbidity. The observed health effects include decreased lung function, respiratory symptoms, and increased emergency department visits and hospitalizations for all respiratory causes. These studies further suggest that people with asthma are potentially susceptible or vulnerable to these health effects. In addition, SO_2 reacts with other air pollutants to form sulfate particles, which are constituents of fine particulate matter ($PM_{2.5}$). Inhalation exposure to $PM_{2.5}$ has been associated with various cardiovascular and respiratory health effects (U.S. EPA, 2012). Increased ambient SO_2 levels would lead to increased risk of such effects.

SO_2 emissions that lead to high concentrations of SO_2 in the air generally also lead to the formation of other sulfur oxides (SOx). SOx can react with other compounds in the atmosphere to form small particles. These particles contribute to particulate matter (PM) pollution. Small particles may penetrate deeply into the lungs and in sufficient quantity can contribute to health problems.

Particulate matter (PM) includes dust, dirt, soot, smoke, and liquid droplets directly emitted into the air by sources such as factories, power plants, cars, construction activity, fires, and natural windblown dust. Particles formed in the atmosphere by condensation or the transformation of emitted gases such as SO_2 and VOCs are also considered particulate matter. PM is generally categorized based on the diameter of the particulate matter: PM_{10} is particulate matter 10 micrometers or less in diameter (known as respirable particulate matter), and $PM_{2.5}$ is particulate matter 2.5 micrometers or less in diameter (known as fine particulate matter).

Based on studies of human populations exposed to high concentrations of particles (sometimes in the presence of SO_2) and laboratory studies of animals and humans, there are major effects of concern for human health. These include effects on breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular disease, alterations in the body's defense systems against foreign materials, damage to lung tissue, carcinogenesis, and premature death.

Small particulate pollution causes health impacts even at very low concentrations – indeed, no threshold has been identified below which no damage to health is observed.

Respirable particulate matter (PM_{10}) consists of small particles, less than 10 microns in diameter, of dust, smoke, or droplets of liquid which penetrate the human respiratory system and cause irritation by themselves, or in combination with other gases. PM_{10} is caused primarily by dust from grading and excavation activities, from agricultural activities (as created by soil preparation activities, fertilizer and pesticide spraying, weed burning and animal husbandry), and from motor vehicles, particularly diesel-powered vehicles. PM_{10} causes greater health risk than larger particles, since these fine particles can more easily penetrate the defenses of the human respiratory system.

$PM_{2.5}$ consists of fine particles that are less than 2.5 microns in size. Like PM_{10}, these particles are primarily the result of combustion in motor vehicles, particularly diesel engines, as well as from industrial sources and residential/agricultural activities such as burning. It is also formed through the reaction of other pollutants. As with PM_{10}, these particulates can increase the chance of respiratory disease, and cause lung damage and cancer. In 1997, the U.S. EPA created new federal air quality standards for $PM_{2.5}$.

The major subgroups of the population that appear to be most sensitive to the effects of particulate matter include individuals with chronic obstructive pulmonary or cardiovascular disease or influenza, asthmatics, the elderly, and children. PM_{10} and $PM_{2.5}$ also impact soils and damages materials and is a major cause of visibility impairment.

Numerous studies have linked PM exposure to premature death in people with preexisting heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms. Studies show that every 1 microgram per cubic meter reduction in $PM_{2.5}$ results in a one percent reduction in mortality rate for individuals over 30 years old (Bay Area Air Quality Management District, 2017). Long-term exposures, such as those experienced by people living for many years in areas with high PM levels, have been associated with problems such as reduced lung function and the development of chronic bronchitis – and even premature death. Additionally, depending on its composition, both PM_{10} and $PM_{2.5}$ can also affect water quality and acidity, deplete soil nutrients, damage sensitive forests and crops, affect ecosystem diversity, and contribute to acid rain (U.S. EPA, 2025c).

Lead (Pb) exposure can occur through multiple pathways, including inhalation of air and ingestion of Pb in food, water, soil, or dust. Once taken into the body, lead distributes throughout the body in the blood and is accumulated in the bones. Depending on the level of exposure, lead can adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems, and the cardiovascular system. Lead exposure also affects the oxygen carrying capacity of blood. Excessive Pb exposure can cause seizures, mental retardation, and/or behavioral disorders. Low doses of Pb can lead to central nervous system damage. Studies have also shown that Pb may be a factor in high blood pressure and subsequent heart disease (Tsoi, M.F., 2021).

Lead is persistent in the environment and can be added to soil and sediments through deposition from sources of lead air pollution. Other sources of lead to ecosystems include direct discharge of

waste streams to water bodies and mining. Elevated lead in the environment can result in decreased growth and reproductive rates in plants and animals, and neurological effects in vertebrates.

Lead exposure is typically associated with industrial sources; major sources of lead in the air are ore and metals processing and piston-engine aircraft operating on lead aviation fuel. Other sources are waste incinerators, utilities, and lead-acid battery manufacturers. The highest air concentrations of lead are usually found near lead smelters. As a result of the U.S. EPA's regulatory efforts, including the removal of lead from motor vehicle gasoline, levels of lead in the air decreased by 98 percent between 1980 and 2014 (U.S. EPA, 2025d). Based on this reduction of lead in the air over this period, and since most new developments do not generate an increase in lead exposure, the health impacts of ambient lead levels are not typically monitored by the California Air Resources Board (CARB).

AMBIENT AIR QUALITY STANDARDS

Both the U.S. EPA and the CARB have established ambient air quality standards for common pollutants. These ambient air quality standards represent safe levels of contaminants that avoid specific adverse health effects associated with each pollutant.

The federal and State ambient air quality standards are summarized in Table 3.3-1 for important pollutants. The federal and State ambient standards were developed independently, although both processes were aimed at avoiding health-related effects. As a result, the federal and State standards differ in some cases. In general, the California standards are more stringent. This is particularly true for ozone, $PM_{2.5}$, and PM_{10}. The U.S. EPA signed a final rule for the federal ozone eight-hour standard of 0.070 parts per million (ppm) on October 1, 2015, which was effective as of December 28, 2015 (equivalent to the California state ambient air quality eight-hour standard for ozone).

TABLE 3.3-1: FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS

POLLUTANT	*AVERAGING TIME*	*FEDERAL PRIMARY STANDARD*	*STATE STANDARD*
Ozone	1-Hour 8-Hour	-- 0.070 ppm	0.09 ppm 0.070 ppm
Carbon Monoxide	8-Hour 1-Hour	9.0 ppm 35.0 ppm	9.0 ppm 20.0 ppm
Nitrogen Dioxide	Annual 1-Hour	0.053 ppm 0.100 ppm	0.03 ppm 0.18 ppm
Sulfur Dioxide	Annual 24-Hour 1-Hour	0.03 ppm 0.14 ppm 0.075 ppm	-- 0.04 ppm 0.25 ppm
PM_{10}	Annual 24-Hour	-- 150 ug/m^3	20 ug/m^3 50 ug/m^3
$PM_{2.5}$	Annual 24-Hour	12 ug/m^3 35 ug/m^3	12 ug/m^3 --
Lead	30-Day Avg. 3-Month Avg.	-- 0.15 ug/m^3	1.5 ug/m^3 --

NOTES: PPM = PARTS PER MILLION, UG/M3 = MICROGRAMS PER CUBIC METER

SOURCE: CALIFORNIA AIR RESOURCES BOARD, 2025A.

In 1997, the U.S. EPA adopted new national standards for fine particulate matter diameter 2.5 microns or less ($PM_{2.5}$) for 24-hour and annual averaging periods. The existing PM_{10} standards were retained, but the method and form for determining compliance with the standards were revised.

In addition to the criteria pollutants discussed above, Toxic Air Contaminants (TACs) are another group of pollutants of concern. TACs are injurious in small quantities and are regulated. The identification, regulation, and monitoring of TACs is relatively recent compared to that for criteria pollutants. Unlike criteria pollutants, TACs are regulated based on risk rather than specification of safe levels of contamination.

Existing air quality concerns within Stanislaus County and the entire air basin are related to increases of regional criteria air pollutants (e.g., ozone and particulate matter), exposure to toxic air contaminants, odors, and increases in greenhouse gas emissions contributing to climate change. The primary source of ozone (smog) pollution is motor vehicles, which account for 70 percent of the ozone in the region. Particulate matter is caused by dust, primarily dust generated from construction and grading activities, and smoke emitted from fireplaces, wood-burning stoves, and agricultural burning.

Attainment Status

In accordance with the California Clean Air Act (CCAA), the CARB is required to designate areas of the State as attainment, nonattainment, or unclassified with respect to applicable standards. An "attainment" designation for an area signifies that pollutant concentrations did not violate the applicable standard in that area. A "nonattainment" designation indicates that a pollutant concentration violated the applicable standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria.

Depending on the frequency and severity of pollutants exceeding applicable standards, the nonattainment designation can be further classified as serious nonattainment, severe nonattainment, or extreme nonattainment, with extreme nonattainment being the most severe of the classifications. An "unclassified" designation signifies that the data do not support either an attainment or nonattainment status. The CCAA divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

The U.S. EPA designates areas for ozone, carbon monoxide, and nitrogen dioxide as "does not meet the primary standards," "cannot be classified," or "better than national standards." For sulfur dioxide, areas are designated as "does not meet the primary standards," "does not meet the secondary standards," "cannot be classified," or "better than national standards." However, the CARB terminology of attainment, nonattainment, and unclassified is more frequently used.

Stanislaus County has a State designation Attainment or Unclassified for all criteria pollutants except for ozone, PM_{10}, and $PM_{2.5}$. Stanislaus County has a national designation of either Unclassified or Attainment for all criteria pollutants except for ozone and $PM_{2.5}$. Table 3.3-2 presents the state and national attainment status for Stanislaus County.

TABLE 3.3-2: STATE AND NATIONAL ATTAINMENT STATUS IN STANISLAUS COUNTY

CRITERIA POLLUTANTS	*FEDERAL DESIGNATIONS[A]*	*STATE DESIGNATIONS[B]*
Ozone (O_3) – One Hour	Revoked[F]	Nonattainment/Severe
Ozone (O_3) – Eight Hour	Nonattainment/Extreme[E]	Nonattainment
PM_{10}	Attainment[C]	Nonattainment
$PM_{2.5}$	Nonattainment[D]	Nonattainment
Carbon Monoxide (CO)	Attainment/Unclassified	Attainment/Unclassified
Nitrogen Dioxide (NO_2)	Attainment/Unclassified	Attainment
Sulfur Dioxide (SO_2)	Attainment/Unclassified	Attainment
Lead (Particulate)	No Designation/Classification	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Attainment

[A] SEE 40 CFR PART 81

[B] SEE CCR TITLE 17 SECTIONS 60200-60210

[C] ON SEPTEMBER 25, 2008, EPA REDESIGNATED THE SAN JOAQUIN VALLEY TO ATTAINMENT FOR THE PM10 NATIONAL AMBIENT AIR QUALITY STANDARD (NAAQS) AND APPROVED THE 2007 PM10 MAINTENANCE PLAN.

[D] THE VALLEY IS DESIGNATED NONATTAINMENT FOR THE 1997 PM2.5 NAAQS. EPA DESIGNATED THE VALLEY AS NONATTAINMENT FOR THE 2006 PM2.5 NAAQS ON NOVEMBER 13, 2009 (EFFECTIVE DECEMBER 14, 2009).

[E] THOUGH THE VALLEY WAS INITIALLY CLASSIFIED AS SERIOUS NONATTAINMENT FOR THE 1997 8-HOUR OZONE STANDARD, EPA APPROVED VALLEY RECLASSIFICATION TO EXTREME NONATTAINMENT IN THE FEDERAL REGISTER ON MAY 5, 2010 (EFFECTIVE JUNE 4, 2010).

[F] EFFECTIVE JUNE 15, 2005, THE U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA) REVOKED THE FEDERAL 1-HOUR OZONE STANDARD, INCLUDING ASSOCIATED DESIGNATIONS AND CLASSIFICATIONS. EPA HAD PREVIOUSLY CLASSIFIED THE DISTRICT AS EXTREME NONATTAINMENT FOR THIS STANDARD. EPA APPROVED THE 2004 EXTREME OZONE ATTAINMENT DEMONSTRATION PLAN ON MARCH 8, 2010 (EFFECTIVE APRIL 7, 2010). THE DISTRICT GOVERNING BOARD ADOPTED THE 2023 MAINTENANCE PLAN AND REDESIGNATION REQUEST AND SUBMITTED TO EPA IN JUNE OF 2023. ALTHOUGH THE STANDARD IS REVOKED, ANTI-BACKSLIDING PROVISIONS CAN BE TERMINATED UPON FINAL APPROVAL OF THE MAINTENANCE PLAN FROM EPA.

SOURCE: SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, 2025.

Stanislaus County Air Quality Monitoring

The SJVAPCD and the CARB maintain air quality monitoring sites throughout Stanislaus County that collect data for ozone and $PM_{2.5}$. The closest air quality monitoring station to the Project site is the Modesto 14th Street location. It is important to note that while the State retains the one-hour ozone standard, the federal ozone 1-hour standard was revoked by the U.S. EPA and is no longer applicable for federal standards. Best available data obtained from the monitoring sites between 2021 and 2023 (latest year of data available) is shown in Table 3.3-3, Table 3.3-4, and Table 3.3-5.

TABLE 3.3-3 AMBIENT AIR QUALITY MONITORING DATA SUMMARY (MODESTO 14TH STREET)* - OZONE

YEAR	*DAYS > STANDARD*				*1-HOUR OBSERVATIONS*			*8-HOUR AVERAGES*			
	STATE		*NATIONAL*			*STATE*	*NAT'L*	*STATE*		*NATIONAL*	
	1-HR	*8-HR*	*1-HR*	*8-HR*	*MAX.*	*D.V.[1]*	*D.V.[2]*	*MAX.*	*D.V.[1]*	*MAX.*	*D.V.[2]*
2023	1	NA	0	12	0.099	0.09	*0.098*	0.083	0.075	0.083	0.073
2022	1	NA	0	4	0.113	0.10	*0.098*	0.086	0.077	0.086	0.075
2021	3	NA	0	10	0.106	0.10	*0.098*	0.088	0.082	0.088	0.078

*NOTES: ALL CONCENTRATIONS EXPRESSED IN PARTS PER MILLION. THE NATIONAL 1-HOUR OZONE STANDARD WAS REVOKED IN JUNE 2005 AND IS NO LONGER IN EFFECT. STATISTICS RELATED TO THE REVOKED STANDARD ARE SHOWN IN ITALICS. D.V. [1]= STATE DESIGNATION VALUE. D.V. [2]= NATIONAL DESIGN VALUE. *MODESTO 14TH STREET REPRESENTS THE CLOSEST MONITORING STATION TO THE PROJECT SITE. NA=NOT AVAILABLE.*

SOURCE: CALIFORNIA AIR RESOURCES BOARD (AEROMETRIC DATA ANALYSIS AND MANAGEMENT SYSTEM OR IADAM) AIR POLLUTION SUMMARIES.

TABLE 3.3-4: AMBIENT AIR QUALITY MONITORING DATA SUMMARY (MODESTO 14TH STREET)* – PM_{10}

YEAR	EST. DAYS > STD.		ANNUAL AVERAGE		HIGH 24-HR AVERAGE	
	NAT'L	STATE	NAT'L	STATE	NAT'L	STATE
2023	0.0	*	*24.0*	*	97.4	97.6
2022	0.0	38.4	*31.4*	32.5	88.5	84.1
2021	0.0	60.0	*36.1*	36.9	145.7	144.3

*NOTES: THE NATIONAL ANNUAL AVERAGE PM_{10} STANDARD WAS REVOKED IN DECEMBER 2006 AND IS NO LONGER IN EFFECT. AN EXCEEDANCE IS NOT NECESSARILY A VIOLATION. STATISTICS MAY INCLUDE DATA THAT ARE RELATED TO AN EXCEPTIONAL EVENT. STATE AND NATIONAL STATISTICS MAY DIFFER FOR THE FOLLOWING REASONS: STATE STATISTICS ARE BASED ON CALIFORNIA APPROVED SAMPLERS, WHEREAS NATIONAL STATISTICS ARE BASED ON SAMPLERS USING FEDERAL REFERENCE OR EQUIVALENT METHODS. STATE AND NATIONAL STATISTICS MAY THEREFORE BE BASED ON DIFFERENT SAMPLERS. NATIONAL STATISTICS ARE BASED ON STANDARD CONDITIONS. STATE CRITERIA FOR ENSURING THAT DATA ARE SUFFICIENTLY COMPLETE FOR CALCULATING VALID ANNUAL AVERAGES ARE MORE STRINGENT THAN THE NATIONAL CRITERIA. *THIS DATA REPRESENTS THE HIGHEST VALUES IDENTIFIED WITHIN SAN JOAQUIN VALLEY AS A WHOLE. DATA FOR THE NEAREST MONITORING SITE (MODESTO 14TH STREET), AS WELL AS FOR STANISLAUS COUNTY, HAD INSUFFICIENT DATA.*

SOURCE: CALIFORNIA AIR RESOURCES BOARD (AEROMETRIC DATA ANALYSIS AND MANAGEMENT SYSTEM OR ADAM) AIR POLLUTION SUMMARIES.

TABLE 3.3-5 AMBIENT AIR QUALITY MONITORING DATA SUMMARY (MODESTO 14TH STREET)* - $PM_{2.5}$

YEAR	EST. DAYS > NAT'L '06 STD.	ANNUAL AVERAGE		NAT'L ANN. STD. D.V.[1]	STATE ANNUAL D.V.[2]	NAT'L '06 STD. 98TH PERCENTILE	NAT'L '06 24-HR STD. D.V.[1]	HIGH 24-HOUR AVERAGE	
		NAT'L	STATE					NAT'L	STATE
2023	3.1	10.5	10.5	13.0	15	32.5	37	43.2	43.2
2022	10.5	13.3	*	14.3	15	36.4	54	53.9	53.9
2021	20.4	15.0	15.0	12.4	15	43.1	51	66.8	66.8

*NOTES: ALL CONCENTRATIONS EXPRESSED IN PARTS PER MILLION. STATE AND NATIONAL STATISTICS MAY DIFFER FOR THE FOLLOWING REASONS: STATE STATISTICS ARE BASED ON CALIFORNIA APPROVED SAMPLERS, WHEREAS NATIONAL STATISTICS ARE BASED ON SAMPLERS USING FEDERAL REFERENCE OR EQUIVALENT METHODS. STATE AND NATIONAL STATISTICS MAY THEREFORE BE BASED ON DIFFERENT SAMPLERS. STATE CRITERIA FOR ENSURING THAT DATA ARE SUFFICIENTLY COMPLETE FOR CALCULATING VALID ANNUAL AVERAGES ARE MORE STRINGENT THAN THE NATIONAL CRITERIA. D.V. [1] = STATE DESIGNATION VALUE. D.V. [2]= NATIONAL DESIGN VALUE. *THIS DATA REPRESENTS THE HIGHEST VALUES IDENTIFIED WITHIN STANISLAUS COUNTY AS A WHOLE. DATA FOR THE NEAREST MONITORING SITE (MODESTO 14TH STREET) HAS INSUFFICIENT DATA.*

SOURCE: CALIFORNIA AIR RESOURCES BOARD (AEROMETRIC DATA ANALYSIS AND MANAGEMENT SYSTEM OR IADAM) AIR POLLUTION SUMMARIES.

ODORS

Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals can smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; in fact, an odor that is offensive to one person (e.g., from a fast-food restaurant) may be perfectly acceptable to another.

It is also important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occur with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air.

When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

SENSITIVE RECEPTORS

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardiorespiratory diseases. A sensitive receptor is a location where human populations, especially children, seniors, and sick people, are present and where there is a reasonable expectation of continuous human exposure to pollutants. Examples of sensitive receptors include residences, hospitals, and schools. The closest sensitive receptors to the Project are as follows:

- Joseph A. Gregori High School is located adjacent to the northwestern portion of the Project site;
- Kaiser Permanente Modesto Medical Center is located to the south of the Project site.

3.3.2 REGULATORY SETTING

FEDERAL

Clean Air Act

The FCAA was first signed into law in 1970. In 1977, and again in 1990, the law was substantially amended. The FCAA is the foundation for a national air pollution control effort, and it is composed of the following basic elements: NAAQS for criteria air pollutants, hazardous air pollutant standards, state attainment plans, motor vehicle emissions standards, stationary source emissions standards and permits, acid rain control measures, stratospheric ozone protection, and enforcement provisions.

The U.S. EPA is responsible for administering the FCAA. The FCAA requires the U.S. EPA to set NAAQS for several air pollutants based on human health and welfare criteria. Two types of NAAQS were

established: primary standards, which protect public health (with an adequate margin of safety, including for sensitive populations such as children, the elderly, and individuals suffering from respiratory diseases), and secondary standards, which protect the public welfare from non-health-related adverse effects such as visibility reduction.

NAAQS standards define clean air and represent the maximum amount of pollution that can be present in outdoor air without any harmful effects on people and the environment. Existing violations of the ozone and $PM_{2.5}$ ambient air quality standards indicate that certain individuals exposed to these pollutants may experience certain health effects, including increased incidence of cardiovascular and respiratory ailments.

Although there is some variability among the health effects of the NAAQS pollutants, each has been linked to multiple adverse health effects including, among others, premature death, hospitalizations and emergency department visits for exacerbated chronic disease, and increased symptoms such as coughing and wheezing.

Federal Hazards Air Pollutants Program

The 1977 Clean Air Act Amendments (CAAA) required the U.S. EPA to identify National Emissions Standards for Hazardous Air Pollutants (NESHAPs) to protect the public health and welfare. Hazardous air pollutants include certain VOCs, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals. Under the 1990 CAAA, which expanded the control program for hazardous air pollutants, 189 substances and chemical families were identified as hazardous air pollutants.

Federal Heavy-duty Engines and Vehicles Fuel Efficiency Standards

In 2010, President Obama issued a memorandum directing federal agencies to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, the U.S. EPA and National Highway Traffic Safety Administration (NHTSA) proposed stringent, coordinated federal GHG and fuel economy standards for model year 2017–2025 light-duty vehicles.

STATE

California Clean Air Act

The California Legislature enacted the California Clean Air Act (CCAA) in 1988 to address air quality issues of concern not adequately addressed by the federal Clean Air Act at the time. California's air quality problems were and continue to be some of the most severe in the nation and required additional actions beyond the federal mandates. CARB administers California Ambient Air Quality Standards (CAAQS) for the 10 air pollutants designated in the CCAA. The 10 State air pollutants are the six pollutants subject to federal standards listed above as well as visibility reducing particulates, hydrogen sulfide, sulfates, and vinyl chloride. The U.S. EPA authorized California to adopt its own regulations for motor vehicles and other sources that are more stringent than similar federal regulations implementing the CAA. Generally, the planning requirements of the federal Clean Air

Act are less stringent than the CCAA; therefore, consistency with the CCAA will also demonstrate consistency with the federal Clean Air Act.

CARB Mobile-Source Regulation

The State of California is responsible for controlling emissions from the operation of motor vehicles in the State. Rather than mandating the use of specific technology or the reliance on a specific fuel, the CARB motor vehicle standards specify the allowable grams of pollution per mile driven. In other words, the regulations focus on the reductions needed rather than on the way they are achieved. Towards this end, CARB has adopted regulations that require auto manufacturers to phase in less-polluting vehicles.

California Air Quality Standards

Although NAAQS are determined by the U.S. EPA, states can set standards that are more stringent than the federal standards. As such, California established more stringent ambient air quality standards (i.e. CAAQS), which include the NAAQS as well as visibility reducing particulates, hydrogen sulfide, sulfates, and vinyl chloride. However, both federal and state ambient air quality standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, suspended particulates and lead. In addition, California has created standards for pollutants that are not covered by federal standards. Although there is some variability among the health effects of the CAAQS pollutants, each has been linked to multiple adverse health effects including, among others, premature death, hospitalizations and emergency department visits for exacerbated chronic disease, and increased symptoms such as coughing and wheezing. The existing state and federal primary standards for major pollutants are shown in Table 3.3-1.

Tanner Air Toxics Act

California regulates TACs primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). The Tanner Air Toxics Act sets forth a formal procedure for CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before CARB can designate a substance as a TAC. To date, CARB has identified more than 21 TACs and has adopted U.S. EPA's list of Hazardous Air Pollutants (HAPs) as TACs. Most recently, diesel PM was added to the CARB list of TACs. Once a TAC is identified, CARB then adopts an Airborne Toxics Control Measure (ATCM) for sources that emit that TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate Best Available Control Technologies (BACT) to minimize emissions.

Toxic Air Contaminants Health Effects

A toxic air contaminant (TAC) is defined as an air pollutant that may cause or contribute to an increase in mortality or serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. The California Almanac of Emissions and Air Quality present the relevant concentration and cancer risk data for the 10 TACs that pose the most substantial health risk in California based on available data. The 10 TACs are acetaldehyde, benzene,

1.3-butadiene, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and diesel particulate matter (DPM).

Some studies indicate that DPM poses the greatest health risk among the TACs listed above. A 10-year research program demonstrated that DPM from diesel-fueled engines is a human carcinogen and that chronic (long-term) inhalation exposure to DPM poses a chronic health risk. In addition to increasing the risk of lung cancer, exposure to diesel exhaust can have other health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. Diesel exhaust is a major source of fine particulate pollution as well, and studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems.

DPM differs from other TACs in that it is not a single substance, but a complex mixture of hundreds of substances. Although DPM is emitted by diesel-fueled, internal combustion engines, the composition of the emissions varies, depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present. Unlike the other TACs, however, no ambient monitoring data are available for DPM because no routine measurement method currently exists. The CARB has made preliminary concentration estimates based on a DPM exposure method. This method uses the CARB emissions inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of DPM.

Transportation Control Measures

The State Implementation Plan (SIP) describes the infrastructure (authorities, resources, and programs) California has in place to implement, maintain, and enforce the NAAQS. One aspect of the development process is the consideration of potential control measures as a part of making progress towards clean air goals. While most SIP control measures are aimed at reducing emissions from stationary sources, some are typically also created to address mobile or transportation sources. These are known as transportation control measures (TCMs). TCM strategies are designed to reduce vehicle miles traveled and trips, or vehicle idling and associated air pollution. These goals are achieved by developing attractive and convenient alternatives to single-occupant vehicle use. Examples of TCMs include ridesharing programs, transportation infrastructure improvements such as adding bicycle and carpool lanes, and expansion of public transit.

Omnibus Low-NOx Rule

CARB approved the Omnibus Low-NOx Rule on August 28, 2020, which will require engine NOx emissions to be cut to approximately 75% below current standards beginning in 2024, and 90% below current standards in 2027. The rule also places nine additional regulatory requirements on new heavy-duty trucks and engines. Those additional requirements include a 50% reduction in particulate matter emissions, stringent new low-load and idle standards, a new in-use testing protocol, extended deterioration requirements, a new California-only credit program, and extended mandatory warranty requirements. The regulatory requirements in the Omnibus Low-NOx Rule first became effective in 2024, at the same time as the Advanced Clean Trucks regulations that CARB

approved that require manufacturers to convert increasing percentages of their heavy-duty trucks sold in California to zero-emission vehicles.

Low Emission Vehicle Program

The CARB first adopted Low Emission Vehicle (LEV) program standards in 1990. These first LEV standards ran from 1994 through 2003. LEV II regulations, running from 2004 through 2010, represent continuing progress in emission reductions. As the State's passenger vehicle fleet continues to grow and more sport utility vehicles and pickup trucks are used as passenger cars rather than work vehicles, the more stringent LEV II standards were adopted to provide reductions necessary for California to meet federally mandated clean air goals outlined in the 1994 State Implementation Plan (SIP). In 2012, the CARB adopted the LEV III amendments to California's LEV regulations. These amendments, also known as the Advanced Clean Car Program, include more stringent emission standards for model years 2017 through 2025 for both criteria pollutants and greenhouse gas (GHG) emissions for new passenger vehicles.

On September 23, 2020, Governor Gavin Newsom issued Executive Order N-79-20 establishing a goal that 100 percent of new passenger cars and trucks sold in California shall be zero-emission by 2035. The Executive Order also sets a goal that, where feasible, all operations include zero-emission medium- and heavy-duty trucks by 2045, and drayage trucks by 2035. Off-road vehicles have a goal to transition to 100 percent zero-emission vehicles by 2035, where feasible.

On-Road Heavy-Duty Vehicle Program

The CARB has adopted standards for emissions from various types of new on-road heavy-duty vehicles. Section 1956.8, Title 13, California Code of Regulations contains California's emission standards for on-road heavy-duty engines and vehicles, and test procedures. The CARB has also adopted programs to reduce emissions from in-use heavy-duty vehicles including the Heavy-Duty Diesel Vehicle Idling Reduction Program, the Heavy-Duty Diesel In-Use Compliance Program, the Public Bus Fleet Rule and Engine Standards, and the School Bus Program and others. Further, the CARB has also adopted the Advanced Clean Trucks Regulation and the Advanced Clean Fleets Regulation. The Advanced Clean Trucks Regulation is a manufacturers ZEV sales requirement and a one-time reporting requirement for large entities and fleets. Similarly, the Advanced Clean Fleets Regulation will help advance the introduction of zero-emission technologies into California's truck and bus fleets, requiring fleets that are well suited for electrification to transition to zero-emission vehicles (ZEV) through requirements to phase in the use of ZEVs for targeted fleets and requirements that manufacturers only manufacture ZEV trucks starting in the 2036 model year.

California Air Resources Board Regulation for In-Use Off-Road Diesel Vehicles

On July 26, 2007, the CARB adopted a regulation to reduce DPM and NOx emissions from in-use (existing) off-road heavy-duty diesel vehicles in California. Such vehicles are used in construction, mining, and industrial operations. The regulation limits idling to no more than five consecutive minutes, requires reporting and labeling, and requires disclosure of the regulation upon vehicle sale. The CARB is enforcing that part of the rule with fines up to $10,000 per day for each vehicle in

violation. Performance requirements of the rule are based on a fleet's average NOx emissions, which can be met by replacing older vehicles with newer, cleaner vehicles or by applying exhaust retrofits. The California Air Resources Board (CARB) approved amendments to the In-Use Off-Road Diesel-Fueled Fleets Regulation (Off-Road Regulation) on November 17, 2022, aimed at further reducing emissions from the off-road sector.

The regulation applies to nearly all privately and federally owned diesel-fueled trucks and buses and to privately and publicly owned school buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds. The regulation provides a variety of flexibility options tailored to fleets operating low use vehicles, fleets operating in selected vocations like agricultural and construction, and small fleets of three or fewer trucks.[1]

Diesel Risk Reduction Plan

The CARB's Diesel Risk Reduction Plan has led to the adoption of new State regulatory standards for all new on-road, off-road, and stationary diesel-fueled engines and vehicles to reduce DPM emissions by about 90 percent overall from year 2000 levels. The projected emission benefits associated with the full implementation of this plan, including federal measures, are reductions in DPM emissions and associated cancer risks of 75 percent by 2010, and 85 percent by 2020.[2]

LOCAL

City of Modesto Urban Area General Plan

A discrete reference number is assigned to each policy to facilitate its identification elsewhere in this Program EIR (e.g., policies are designated as AQ-*X,* where *X* is the discrete number).

AQ-1: Policies: Environmental Resources and Open Space Implement measures to reduce motor vehicle use and related ozone precursor and PM10 emissions through changes to the transportation infrastructure. Potential measures to be implemented may include those shown in Section V-2 of the Final Master Environmental Impact Report.

AQ-2: Implement measures to reduce vehicle use and associated emissions related to existing and future land use development in the City of Modesto. Potential measures to be implemented may include those shown in Section V-2 of the Final Master Environmental Impact Report.

AQ-3: Implement measures to reduce emissions associated with energy use by residences and businesses. Potential measures to be implemented may include those shown in Section V-2 of the Draft Master EIR.

[1] California Air Resources Board (CARB). 2025. Truck and Bus Regulation. Website: http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm. Accessed July 16, 2025.

[2] California Air Resources Board (CARB). 2021. Diesel Risk Reduction Plan. Website: https://ww2.arb.ca.gov/our-work/programs/diesel-risk-reduction-plan. Accessed July 16, 2025.

AQ-4: The City of Modesto recognizes the efforts of the San Joaquin Valley Air Pollution Control District to identify the cumulative transportation and air quality impacts of all General Plan amendments approved during the previous year. This measure is intended to track the effectiveness of current air quality–related programs and guide revision to these programs through periodic review of cumulative air quality impacts in the City. The City of Modesto encourages employers to implement the following measures:

1. In-house matching services (for carpools and vanpools) at employers with over 100 weekday employees, or at large development sites occupied by several smaller employers, or coordination with Caltrans' "Commuter Computer" program;
2. Employer-based dissemination of commute information;
3. Employer subsidies for transit passes and incorporation of transit stop facilities into site design;
4. A program to guarantee rideshare participants a ride home in case of emergency;
5. Flex-time scheduling;
6. Site plan design that encourages pedestrian movement between adjacent land uses;
7. Incentives such as preferred parking for carpoolers;
8. Encouraging submission of site plans featuring mixed land uses or "neo-traditional" design; and,
9. Encouraging employers to experiment with telecommuting options, where feasible.

AQ-5: Work with neighboring jurisdictions and affected agencies to address cross-jurisdictional and regional transportation and air quality issues.

AQ-6: Coordinate with other jurisdictions and other regional agencies in the San Joaquin valley to establish parallel air quality programs and implementation measures (trip reduction ordinances, indirect source programs, etc.).

AQ-7: Implement measures to reduce emissions associated with future development through the CEQA review process. Section V-2 of the MEIR describes those measures to be implemented, as well as additional measures that may be implemented at the discretion of the City.

AQ-8: Consult with the SJVAPCD during CEQA review for discretionary projects with the potential for causing adverse air quality impacts.

AQ-9: Consider supporting investment in geographic information system technology.

AQ-10: Work to improve the public's understanding of the land use, transportation, and air quality link.

AQ-11: Encourage local public and private groups to provide air quality education programs.

AQ-12: Encourage new air pollution sources such as, but not limited to, industrial, manufacturing, and processing facilities to be located an adequate distance (based on pollutant dispersion

characteristics, site orientation, prevailing winds, etc.) from residential areas and other sensitive receptors. Chapter VII. Environmental Resources, Open Space and Conservation City of Modesto Urban Area General Plan VII-23 March 2019

AQ-13: Implement measures to reduce the temporary, yet potentially significant, local air quality impacts from construction activities. Potential measures to be implemented may include those measures shown in Section V-2 of Master Environmental Impact Report.

AQ-14: Require residential development projects and projects categorized as sensitive receptors (hospitals, schools, convalescent homes, etc.) to be located an adequate distance from existing and potential sources of toxic and/or odorous emissions such as freeways, major arterials, industrial sites, refuse transfer or disposal sites, and hazardous material locations.

AQ-15: Determine project air quality impacts using analysis methods and significance thresholds recommended by the SJVAPCD.

AQ-16: Ensure that identified air quality impacts are consistently and fairly mitigated.

AQ-17: Ensure all air quality mitigation measures are feasible, implementable, and cost effective.

AQ-18: Identify the cumulative transportation and air quality impacts of all General Plan amendments approved during the previous year.

AQ-19: Reduce the air quality impacts of development projects that may be insignificant by themselves, but cumulatively are significant.

AQ-20: Encourage innovative mitigation measures to reduce air quality impacts by coordinating with the SJVAPCD, project applicants, and other interested parties.

AQ-21: Review of new development shall be coordinated with SJVAPCD staff to ensure all projects subject to the SJVAPCD Rule 9510 (Indirect Source Review) comply fully with the rule. This rule fulfills the SJVAPCD's emission reduction commitments in the PM10 and Ozone Attainment Plans through emission reductions from the construction and use of development projects through design features and onsite measures. Rule 9510 applies to any applicant that seeks to gain a final discretionary approval for a development project, or any portion thereof, which meets certain minimum thresholds.

AQ-22: A Construction Health Risk Assessment shall be required on a project-by-project basis if, at the direction of SJVAPCD after applicant consultation, the specific project is considered to have a potentially significant project-level health risk impact, through refined modeling using 2015 OEHHA guidance (or the latest accepted methodology), to identify impacts and, if necessary, include measures determined by SJVAPCD to reduce exposure.

AQ-23: Future development that includes sensitive receptors (such as schools, hospitals, daycare centers, or retirement homes) located within the setback distances from highways, railroads, local roadways, and stationary sources specified below shall require site-specific analysis to determine the level of TAC and PM2.5 exposure. This analysis shall be conducted following methodology and procedures recommended by SJVAPCD and OEHHA. If the site-specific analysis reveals significant exposures, such as cancer risk greater than 20 in one million or acute or chronic hazards with a Hazard Index greater than 1.0, additional measures (described below) shall be required to reduce the risk such that the threshold is not exceeded.

AQ-24: Coordinate land use planning to prevent new odor complaints. Consult with SJVAPCD, as necessary, to identify the potential for odor complaints from various existing and planned or proposed land uses and development projects. Prohibit new sources of odors that have the potential to result in frequent odor complaints unless it can be shown that potential odor complaints can be mitigated where feasible. Prohibit sensitive receptors from locating near odor sources where frequent odor complaints would occur, unless it can be shown that potential odor complaints can be mitigated where feasible.

AQ-25: Consider air quality when planning the land uses and transportation systems to accommodate the expected growth in this community.

AQ-26: All transportation improvement projects to be included in regional transportation plans (RTP, RTIP, CMP, etc.) should be consistent with the air quality goals and policies of the General Plan

AQ-27: Consult with transit providers to determine project impacts on long-range transit plans and ensure that impacts are mitigated where feasible.

AQ-28: Work with the Housing Authority, transit providers, and developers to encourage the construction of low-income housing developments that use transit-oriented and pedestrian oriented design principles.

AQ-29: Work with Caltrans and the Regional Transportation Planning Agency to minimize the air quality, mobility, and social impacts of large scale transportation projects on existing neighborhoods.

AQ-30: Implement employer-based trip reduction programs for their employees.

AQ-31: Replace or convert conventional fuel vehicles with clean fuel vehicles as feasible, within the City's motorpool fleet, considering budgetary constraints.

AQ-32: Support the use of teleconferencing in lieu of employee travel to conferences and meetings when feasible.

AQ-33: Work with employers and developers to provide employees and residents with attractive, affordable transportation alternatives.

AQ-34: Work to establish public / private partnerships to develop satellite and neighborhood work centers for telecommuting.

AQ-35: Encourage the development of state of the art communication infrastructure linked to the rest of the world.

AQ-36: Reduce particulate emissions from construction, grading, excavation, and demolition to the maximum extent feasible in accordance with the requirements of SJVAPCD Regulation VIII. Regulation VIII was adopted to reduce the amount of particulate matter suspended in the atmosphere as a result of emissions generated from anthropogenic (man-made) fugitive dust sources.

AQ-37: Require all access roads, driveways, and parking areas serving new commercial and industrial development to be constructed with materials that minimize particulate emissions in accordance with the requirements of SJVAPCD Regulation VIII and are appropriate to the scale and intensity of use.

AQ-38: Reduce PM10 emissions from City–maintained roads to the maximum extent feasible

AQ-39: Effectively stabilize dust emissions using water, chemical stabilizer / suppressant, cover with a tarp or other suitable cover or vegetative ground cover, all disturbed areas, including storage piles, which are not being actively utilized for construction purposes.

AQ-40: Effectively stabilize dust emissions using water or chemical stabilizer / suppressant, all onsite unpaved roads and off-site unpaved access roads.

AQ-41: Effectively control fugitive dust emissions utilizing application of water or by presoaking all land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities.

AQ-42: Wet all exterior surfaces of buildings that are more than six stories tall during demolition.

AQ-43: When materials are transported off site, cover all materials, or effectively wet them to limit visible dust emissions, and maintain at least six inches of freeboard space from the top of the container.

AQ-44: Limit operations or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday (the use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions.) (Use of blower devices is expressly forbidden.)

AQ-45: Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, effectively stabilize said piles for fugitive dust emissions utilizing sufficient water or chemical stabilizer / suppressant.

AQ-46: Within urban areas, immediately remove trackout when it extends 50 or more feet from the site and at the end of each workday.

AQ-47: Prevent carryout and trackout for any site with 150 or more vehicle trips per day.

AQ-48: Limit traffic speeds on unpaved roads to 15 mph.

AQ-49: Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than one percent (1%).

AQ-50: Install wheel washers for all exiting trucks, or wash off all trucks and equipment leaving the site.

AQ-51: Install wind breaks at windward side(s) of construction areas.

AQ-52: Suspend excavation and grading activity when winds exceed 20 mph (regardless of windspeed, an owner/operator must comply with Regulation VIII's 20 percent (20%) opacity limitation).

AQ-53: Limit the area subject to excavation, grading, and other construction activity at any one time.

Stanislaus County General Plan

The Stanislaus County General Plan (Stanislaus County, 2015) establishes a framework to guide the physical development and growth of the County over the next 20 years. It outlines goals, policies, and programs related to land use, housing, transportation, noise, safety, agriculture, and environmental protection. The plan plans for development that meets the needs of current and future residents while balancing economic, social, and environmental factors.

Relevant air quality policies noted in the Stanislaus County General Plan (Stanislaus County, 2015) include:

- Policy 6: The County shall strive to reduce motor vehicle emissions and vehicle miles traveled (VMT) by encouraging the use of alternatives to single occupant vehicles.
    5. Developers will construct or pay the cost of new pedestrian pathways, bikeways, rideshare facilities, transit amenities, and other improvements necessary to serve the development and to mitigate impacts to the existing circulation system caused by the development.
- Policy 8: Promote public transit as a viable transportation choice.

3. Ensure that provisions are made in proposed development for access to current and future public transit services. In particular, continuous segments of walls or fences should not impede pedestrian access to Expressways, Principal and Minor Arterials, and Major and Minor Collectors with transit service.

- Policy 19: The County will strive to accurately determine and fairly mitigate the local and regional air quality impacts of proposed projects.
    1. Require all development proposals, where appropriate, to include reasonable air quality mitigation measures.
    2. Minimize case-by-case analysis of air quality impacts through the use of standard criteria for determining significant environmental effects, a uniform method of calculating project emissions, and standard mitigation methods to reduce air quality impacts.
- Policy 20: The County shall strive to reduce motor vehicle emissions by reducing vehicle trips and vehicle miles traveled and increasing average vehicle ridership.
    1. Through strategies identified in the Circulation Element, ensure that circulation systems are designed and maintained to minimize traffic congestion and vehicle emissions.
    2. Support a broad range of transportation modes, including public transit, bicycling and pedestrian travel, through the strategies identified in the Circulation Element.
    3. Help achieve a jobs/housing balance by working with appropriate organizations to attract employers to Stanislaus County.
- Policy 21: The County will support efforts to increase public awareness of air quality problems and solutions.
    1. Support and participate in the air quality education programs of the SJVAPCD to the greatest extent possible.
    2. Support education programs that increase public awareness of techniques to reduce particulate matter emissions.
    3. Work with the local building industry, utilities, and the SJVAPCD to educate developers and builders on the benefits of energy-efficient designs and the use of low-emission equipment for new residential and commercial construction.

San Joaquin Valley Air Pollution Control District

The primary role of SJVAPCD is to develop plans and implement control measures in the SJVAB to control air pollution. These controls primarily affect stationary sources such as industry and power plants. Rules and regulations have been developed by SJVAPCD to control air pollution from a wide range of air pollution sources. SJVAPCD also provides uniform procedures for assessing potential air quality impacts of proposed projects and for preparing the air quality section of environmental documents.

AIR QUALITY PLANNING

The U.S. EPA requires states that have areas that do not meet the NAAQS to prepare and submit air quality plans showing how the NAAQS will be met. If the states cannot show how the NAAQS will be met, then the states must show progress toward meeting the NAAQS. These plans are referred to as the SIP. In October 2018, the CARB adopted the 2018 Updates to the California State Implementation Plan.

In addition, the CARB requires regions that do not meet CAAQS for ozone to submit clean air plans (CAPs) that describe measures to attain the standard or show progress toward attainment. To ensure federal CAA compliance, SJVAPCD is currently developing plans for meeting new NAAQS for ozone and $PM_{2.5}$ and the CAAQS for PM_{10} in the SJVAB (for CCAA compliance). The following describes the air plans prepared by the SJVAPCD.

8-HOUR OZONE PLAN

The SJVAPCD's Governing Board adopted the 2007 Ozone Plan on April 30, 2007. This far-reaching plan, with innovative measures and a "dual path" strategy, assures expeditious attainment of the federal 8-hour ozone standard as set by U.S. EPA in 1997. The CARB approved the plan on June 14, 2007. The U.S. EPA approved the 2007 Ozone Plan effective April 30, 2012. SJVAPCD adopted the 2016 Ozone Plan to address the federal 2008 8-hour ozone standard, which must be attained by end of 2031.[3,4] More recently, a new ozone attainment plan is under development. Specifically, the 2022 Ozone Plan for the Attainment of the 2015 Federal 8-hour Ozone Standard was adopted on December 15, 2022.

PM_{10} PLAN

Based on PM_{10} measurements from 2003 to 2006, the U.S. EPA found that the SJVAB has reached federal PM_{10} standards. On September 21, 2007, the SJVAPCD's Governing Board adopted the 2007 PM_{10} Maintenance Plan and Request for Redesignation. This plan demonstrated that the valley would continue to meet the PM_{10} standard. U.S. EPA approved the document and on September 25, 2008, the SJVAB was redesignated to attainment/maintenance (SJVAPCD, 2015).

PM2.5 PLAN

The SJVAPCD adopted the 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards on November 15, 2018.[5] This plan addresses the U.S. EPA federal 1997 annual $PM_{2.5}$ standard of 15 µg/m³ and 24-hour $PM_{2.5}$ standard of 65 µg/m³; the 2006 24-hour $PM_{2.5}$ standard of 35 µg/m³; and the 2012 annual

[3] SJVAPCD. Ozone Plans. https://ww2.valleyair.org/rules-and-planning/air-quality-plans/ozone-plans/2022-ozone-plan-for-the-san-joaquin-valley/, accessed July 16, 2025.

[4] SJVAPCD. 2016 Plan for the 2008 8-Hour Ozone Standard, https://www.valleyair.org/rules-and-planning/air-quality-plans/ozone-plans/2016-plan-for-the-2008-8-hour-ozone-standard/, accessed July 16, 2025.

[5] SJVAPCD. Particulate Matter Plans. https://ww2.valleyair.org/rules-and-planning/air-quality-plans/particulate-matter-plans/, accessed July 16, 2025.

$PM_{2.5}$ standard of 12 µg/m³. This plan demonstrates attainment of the federal $PM_{2.5}$ standards as expeditiously as practicable (SJVAPCD, 2025).

All the above-referenced plans include measures (i.e., federal, state, and local) that would be implemented through rule making or program funding to reduce air pollutant emissions in the SJVAB. Transportation control measures are part of these plans.

SJVAPCD RULES AND REGULATIONS

SJVAPCD Indirect Source Review

On December 15, 2005, SJVAPCD adopted the Indirect Source Review Rule (ISR or Rule 9510 of SJVAPCD Rules and Regulations, Regulation IX) to reduce ozone precursors (i.e., ROG and NOx) and PM_{10} emissions from new land use development projects. Specifically, Rule 9510 targets the indirect emissions from vehicles and construction equipment associated with these projects and applies to both construction and operational-related impacts. The rule applies to the proposed Project since it proposes more than 25,000 square feet of light industrial uses.

This rule requires the applicants of certain development projects which equal or exceed established applicability thresholds to apply to the SJVAPCD when applying for the development's last discretionary approval. Projects subject to the rule are required to quantify indirect emissions (mobile source emissions), area source emissions and construction exhaust emissions and to mitigate a portion of these emissions. The Indirect Source Rule was adopted in December 2005 and last amended in December 2017. Rule 9510 was adopted to reduce the impacts of growth in emissions from all new development in the San Joaquin Valley. Developers of projects subject to Rule 9510 must reduce emissions occurring during construction and operational phases through on-site measures or pay off-site mitigation fees. One hundred percent of all off-site mitigation fees are used by the SJVAPCD to fund emission reduction projects through its Incentive Programs, achieving emission reductions on behalf of the project. The emission reduction expected from the rule allows the SJVAPCD to achieve attainment of the federal air quality standards for ozone by 2031.

The rule requires all subject, nonexempt projects to mitigate both construction and operational period emissions by (1) applying feasible SJVAPCD-approved mitigation measures, or (2) paying any applicable fees to support programs that reduce emissions. Off-site emissions reduction fees (off-site fees) are required for projects that do not achieve the required emissions reductions through on-site emission reduction measures. Phased projects can defer payment of fees in accordance with an Off-site Emissions Reduction Fee Deferral Schedule (FDS) approved by the SJVAPCD.

To determine how an individual project would satisfy Rule 9510, each project would submit an air quality impact assessment (AIA) to the SJVAPCD as early as possible, but no later than prior to the project's final discretionary approval, to identify the project's baseline unmitigated emissions inventory for indirect sources: on-site exhaust emissions from construction activities and operational activities from mobile and area sources of emissions (excludes fugitive dust and permitted sources). Rule 9510 requires the following reductions, which are levels that the SJVAPCD has identified as necessary, based on its air quality management plans, to reach attainment for ozone and particulate matter:

Construction Equipment Emissions

The exhaust emissions for construction equipment greater than 50 horsepower (hp) used or associated with the development project shall be reduced by the following amounts from the statewide average as estimated by CARB:

- 20 percent of the total NOx emissions
- 45 percent of the total PM_{10} exhaust emissions

AIA mitigation strategies may include those that reduce construction emissions on-site by using less polluting construction equipment, which can be achieved by utilizing add-on controls, cleaner fuels, or newer, lower emitting equipment.

Operational Emissions

- NOx Emissions. Applicants shall reduce 33.3 percent of the project's operational baseline NOx emissions over a period of 10 years as quantified in the approved AIA.
- PM_{10} Emissions. Applicants shall reduce 50 percent of the project's operational baseline PM_{10} emissions over a period of 10 years as quantified in the approved AIA.

These requirements listed above can be met through any combination of on-site emissions reduction measures. If a project cannot achieve the above standards through imposition of mitigation measures, then the project would be required to pay the applicable off-site fees. These fees are used to fund various incentive programs that cover the purchase of new equipment, engine retrofit, and education and outreach.

Fugitive PM_{10} Prohibitions

SJVAPCD controls fugitive PM_{10} through Regulation VIII of SJVAPCD Rules and Regulations ("SJVAPCD Rule"), Fugitive PM_{10} Prohibitions. The purpose of this regulation is to reduce ambient concentrations of PM_{10} and $PM_{2.5}$ by requiring actions to prevent, reduce, or mitigate anthropogenic (human caused) fugitive dust emissions.

- Regulation VIII, Rule 8021 applies to any construction, demolition, excavation, extraction, and other earthmoving activities, including, but not limited to, land clearing, grubbing, scraping, travel on-site, and travel on access roads to and from the site.
- Regulation VIII, Rule 8031 applies to the outdoor handling, storage, and transport of any bulk material.
- Regulation VIII, Rule 8041 applies to sites where carryout or trackout has occurred or may occur on paved roads or the paved shoulders of public roads.
- Regulation VIII, Rule 8051 applies to any open area having 0.5 acres or more within urban areas or 3.0 acres or more within rural areas and contains at least 1,000 square feet of disturbed surface area.
- Regulation VIII, Rule 8061 applies to any new or existing public or private paved or unpaved road, road construction project, or road modification project.
- Regulation VIII, Rule 8071 applies to any unpaved vehicle/equipment traffic area.
- Regulation VIII, Rule 8081 applies to off-field agricultural sources.

Sources regulated are required to provide Dust Control Plans that meet the regulation requirements. Under Rule 8021, a Dust Control Plan is required for any residential project that will include 10 or more acres of disturbed surface area, a nonresidential project with 5 or more acres of disturbed surface area, or a project that relocates 2,500 cubic yards per day of bulk materials for at least three days. The Dust Control Plan is required to be submitted to SJVAPCD prior to the start of any construction activity. The Dust Control Plan must also describe fugitive dust control measures to be implemented before, during, and after any dust-generating activity.

Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations

If asphalt paving will be used, then paving operations of the proposed Project will be subject to SJVAPCD Rule 4641 of Regulation IV. This rule applies to the manufacture and use of cutback asphalt, slow cure asphalt and emulsified asphalt for paving and maintenance operations.

Nuisance Odors

SJVAPCD controls nuisance odors through implementation of SJVAPCD Rule 4102 (Nuisance) of Regulation IV. Pursuant to this rule, "a person shall not discharge from any source whatsoever such quantities of air contaminants or other materials which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health, or safety of any such person or the public or which cause or have a natural tendency to cause injury or damage to business or property."

Employer Based Trip Reduction Program

SJVAPCD has implemented Rule 9410 of Regulation IX, Employer Based Trip Reduction. The purpose of this rule is to reduce VMT from private vehicles used by employees to commute to and from their worksites to reduce emissions of NOx, ROG, and particulate matter (PM_{10} and $PM_{2.5}$). The rule applies to employers with at least 100 employees. Employers are required to implement an Employer Trip Reduction Implementation Plan (ETRIP) for each worksite with 100 or more eligible employees to meet applicable targets specified in the rule. Employers are required to facilitate the participation of the development of ETRIPs by providing information to their employees explaining the requirements and applicability of this rule. Employers are required to prepare and submit an ETRIP for each worksite to the District. The ETRIP must be updated annually. Under this rule, employers shall collect information on the modes of transportation used for each eligible employee's commutes both to and from work for every day of the commute verification period, as defined in using either the mandatory commute verification method or a representative survey method. Annual reporting includes the results of the commute verification for the previous calendar year along with the measures implemented as outlined in the ETRIP and, if necessary, any updates to the ETRIP.

Visible Emissions

SJVAPCD controls visible emissions through Rule 4101, Visible Emissions. The purpose of this regulation is to prohibit visible air contaminants in the atmosphere. This rule requires that a person shall not be discharged into the atmosphere from any single source of emission whatsoever any air contaminant, other than uncombined water vapor, for a period or periods aggregating more than three (3) minutes in anyone (1) hour which is:

- As dark or darker in shade as that designated as No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines.
- Of such opacity as to obscure an observer's view to a degree equal to or greater than the smoke described in Section 5.1 of this rule.

Architectural Coatings

The purpose of SJVAPCD Rule 4601 is to limit VOC emissions from architectural coatings. This rule specifies architectural coatings storage, cleanup, and labeling requirements. This rule is applicable to any person who supplies, markets, sells, offers for sale, applies, or solicits the application of any architectural coating, or who manufactures, blends, or repackages any architectural coating for use within the District.

3.3.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed Project will have a significant impact on the environment associated with air quality if it will:

- Conflict with or obstruct implementation of the applicable air quality plan;
- 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;
- Expose sensitive receptors to substantial pollutant concentrations; and/or
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

APPROACH TO ANALYSIS

While the final determination of whether a project is significant is within the purview of the Lead Agency pursuant to Section 15064(b) of the CEQA Guidelines, the SJVAPCD recommends that its quantitative air pollution thresholds be used to determine the significance of project emissions. If the Lead Agency finds that the project would exceed these air pollution thresholds, the project should be considered to have significant air quality impacts. The applicable SJVAPCD thresholds and methodologies are contained under each impact statement below, as the City, in its discretion, has determined to utilize these thresholds and methodologies, which are based on scientific and factual data.

This analysis was performed consistently with the guidance and methodologies provided by the SJVAPCD's GAMAQI.[6] Based on the SJVAPCD New Source Review (NSR) offset requirements for stationary sources, the SJVAPCD has established thresholds of significance for criteria pollutant emissions, shown in Table 3.3-6. These thresholds apply to the project because these air pollutants would be generated during project construction and operation and constitute criteria pollutants or

[6] San Joaquin Valley Air Pollution Control District (SJVAPCD). 2015. Guidance for Assessing and Mitigating Air Quality Impact. Website: https://ww2.valleyair.org/media/g4nl3p0g/gamaqi.pdf. Accessed July 16, 2025.

precursor emissions for criteria pollutants, which are regulated by the federal and State Clean Air Acts.

TABLE 3.3-6: SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT SIGNIFICANCE THRESHOLDS

POLLUTANT	*CONSTRUCTION THRESHOLDS (TPY)*	*OPERATIONAL THRESHOLDS (TPY)*
ROG	10	10
NOx	10	10
CO	100	100
SOx	27	27
PM_{10}	15	15
$PM_{2.5}$	15	15

SOURCES: SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT (SJVAPCD). 2015. GUIDANCE FOR ASSESSING AND MITIGATING AIR QUALITY IMPACT. WEBSITE: HTTPS://WW2.VALLEYAIR.ORG/MEDIA/M2ECYXIW/1-CMS-FORMAT-CEQA-AIR-QUALITY-THRESHOLDS-OF-SIGNIFICANCE-CRITERIA-POLLUTANTS.PDF ACCESSED JUNE 9, 2025.

The SJVAPCD has also established significance thresholds to assess the impacts of project-related construction and operational emissions on regional and local ambient air quality. Table 3.3-7 shows the daily mass emissions screening criteria for construction and operation as adopted by the SJVAPCD for CAP and TAC emissions. The analysis summarized in this report estimates project-related construction and operational mass emissions and compares the emissions to these significance thresholds.

TABLE 3.3-7: SJVAPCD DAILY MASS EMISSIONS SCREENING CRITERIA

POLLUTANT	*CONSTRUCTION THRESHOLDS (POUNDS PER DAY)*	*OPERATIONAL THRESHOLDS (POUNDS PER DAY)*
ROG	100	100
NOx	100	100
CO	100	100
SOx	100	100
PM_{10}	100	100
$PM_{2.5}$	100	100

SOURCES: SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT (SJVAPCD). 2015. GUIDANCE FOR ASSESSING AND MITIGATING AIR QUALITY IMPACT. WEBSITE: HTTPS://WWW.VALLEYAIR.ORG/TRANSPORTATION/CEQA%20RULES/GAMAQI%20JAN%202002%20REV.PDF ACCESSED JUNE 8, 2025.

The daily mass emissions screening criteria provided in Table 3.3-7 represent screening-level thresholds that can be used to evaluate whether project-related emissions would cause a significant impact on air quality. Emissions below the screening-level thresholds would not cause a significant impact. If emissions exceed those thresholds, modeling would be required to demonstrate that the project's total air quality impacts result in ground-level concentrations that are below the CAAQS and NAAQS, including appropriate background levels.

CRITERIA POLLUTANT EMISSIONS MODELING

California Emission Estimator Model (CalEEMod)™ (v.2022.1), developed for the California Air Pollution Officers Association (CAPCOA) in collaboration with California air districts, was used to estimate emissions for the proposed Project. Project construction was assumed to be completed in

four phases. However, the exact timing of Project construction would depend on Project needs, availability of materials and more. The modeled construction schedule is conservative, in that it assumes buildout of the Project much earlier than when it may occur; this represents a conservative approach to modeling, since the emissions efficiency of on- and off-road construction vehicles would increase over time.

The land use assumptions for the modeling are: Manufacturing uses (667,528 square feet); Unrefrigerated Warehouse – No Rail (1,201,730 square feet); refrigerated Warehouse – No Rail (500,650 square feet); Gas Station with Convenience Store (18 fueling positions); Fast-Food Restaurant with Drive-Through (8,000 square feet); and Parking Lot (83 acres). Vehicle trips, vehicle miles traveled (VMT), and fleet mix estimated in the modeling are consistent with those provided by Fehr & Peers in its traffic analysis (see Appendix F of the Draft EIR for further detail).

The construction phase details are provided in Table 3.3-8, below. Project construction activities were assumed to occur five days per week, according to the CalEEMod default data. The Project is assumed to be constructed over four separate construction phases. The first construction phase was modeled and assessed against the SJVAPCD's significance thresholds since this phase represents the worst-case analysis with the highest construction vehicle engine exhaust emission rates. Future emission rates are anticipated to be greater due to the phase out of older dirtier engines and the use of cleaner more stringent engine exhaust standards. Future construction phases are anticipated to have comparable durations and equipment usage. See Appendix B of this Draft EIR for further detail.

TABLE 3.3-8: ANTICIPATED CONSTRUCTION SCHEDULE FOR THE FIRST CONSTRUCTION PHASE

CALEEMOD PHASE	*CALEEMOD PHASE START DATE*	*CALEEMOD PHASE END DATE*
Site Preparation	4/15/2027	5/14/2027
Grading	5/15/2027	7/30/2027
Building Construction	8/1/2027	9/24/2027
Paving	9/25/2027	11/19/2027
Architectural Coating	11/20/2027	1/14/2028

SOURCE: CALEEMOD (DEFAULT VALUES).

The following additional non-default CalEEMod model assumptions were utilized, based on information provided by the Project applicant:

- Soil import of 70,000 cubic yards during the Project's grading phase;
- Off-road construction equipment to utilize "Tier IV" diesel engines, for equipment with a horsepower greater than 50 horsepower;
- Project Specific Equipment mix was based on CalEEMod default data.
- For the warehouse/distribution/manufacturing related uses, heavy-duty operational truck trips were assumed to travel 51.8 miles per one-way trip for heavy-duty trucks, 32.3 miles per one-way trip for medium-duty trucks, and 29.3 miles per one-way trip for passenger vehicles. The weighted average trip length is 24.14 miles for all these vehicle categories;
- For the warehouse/distribution/manufacturing related uses, vehicle trips for trucks and passenger vehicles were taken from the Project's Trip Generation Study.

- For gas station and fast-food related land uses, CalEEMod trip length and vehicle fleet mix were used.
- The 'General Category' consumer products emissions factor was revised to reflect the CARB adjustments applied to their Consumer and Commercial Product Survey Emission data, made after the 2008 consumer products emissions factor (the adjustment made to reflect the average adjustment factor).
- Construction: Water Exposed Surfaces Three Daily.

IMPACTS AND MITIGATION MEASURES

Impact 3.3-1: Project operation would conflict with or obstruct implementation of the District's air quality plan. (Significant and Unavoidable)

The CEQA Guidelines indicate that a significant impact would occur if the proposed Project would conflict with or obstruct implementation of the applicable Air Quality Attainment Plan (AQAP). The CARB has developed a three-step approach to determine project conformity with the applicable AQAP:

- *Determination that an AQAP is being implemented in the area where the project is being proposed.*
- *The proposed project must be consistent with the growth assumptions of the applicable AQAP.*
- *The project must contain in its design all reasonably available and feasible air quality control measures.*

The proposed Project is in conformance with the AQAP, based on these criteria, as follows:

- *Determination that an AQAP is being implemented in the area where the project is being proposed.*

The SJVAPCD has implemented the current, modified 2016 8-hour AQAP as approved by CARB and approved by USEPA for the 2008 8-hour O_3 standard.

- *The proposed project must be consistent with the growth assumptions of the applicable AQAP.*

The Stanislaus Council of Governments (StanCOG) 2022 Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS) growth projections provide for future employment/population factors. The development of the SJVAPCD AQAP is based in part on the general plan projections of the various cities and counties that constitute the SJVAB. The City of Modesto General Plan Land Use Element designates the Project site as Industrial, which is intended to accommodate flex/office space, manufacturing, warehousing and distribution, and ancillary uses for workers' needs. Therefore, the proposed Project, which involves the development of up to 2,503,230 square feet (maximum development scenario) of warehouse, distribution, and manufacturing space, is considered consistent with the site's General Plan land use designation and

its traffic is included in the volumes projected for the existing General Plan designation. The SJVAPCD AQAP is based on the growth assumptions of the City of Modesto General Plan and StanCOG 2022 RTP/SCS. Since the Project is consistent with the StanCOG RTP/SCS, and StanCOG 2022 RTP/SCS projections are incorporated into the SIP, the Project is also consistent with the SIP.

- *The project must contain in its design all reasonably available and feasible air quality control measures.*

The Project incorporates various policy and rule-required implementation measures that would reduce related emissions, including all of the current Air District rules and regulations.[7] For example, the proposed Project would be required to implement SJVAPCD Rule 9510, which ensures that the Project would fulfill the Air District's emissions reduction commitments in the relevant PM_{10} and Ozone Attainment plans.[8] In addition, the Project would comply with all applicable stationary source permitting rules implemented by SJVAPCD, which further confirms the Project would not cause or contribute to any ambient air quality standard exceedances. Moreover, the proposed Project would also implement various mitigation measures that would reduce Project operational and construction emissions, as provided below.

Nevertheless, as described in detail under Impact 3.3-2 below, the proposed Project would exceed the SJVAPCD's thresholds for operational criteria air pollutants for CO, ROG, NOx, and PM_{10} (even with implementation of all feasible mitigation measures), and would also exceed the SJVAPCD threshold for ROG during Project construction (under the unmitigated scenario). Therefore, the proposed Project is required to implement Mitigation Measure 3.3-1 through Mitigation Measure 3.3-14. However, since the Project's operational emissions for CO, ROG, NOx, and PM_{10} would remain in exceedance of the applicable criteria pollution thresholds, even with implementation of the following mitigation measures, the Project's potential impact on this environmental topic is considered ***significant and unavoidable.***

MITIGATION MEASURE(S)

Mitigation Measure 3.3-1: *During Project construction, off-road diesel-powered equipment shall be prohibited from being in the "on" position for more than 10 hours per day.*

Mitigation Measure 3.3-2*: The Project applicant shall ensure that diesel generators, if needed, shall not be used on site during project operations, except in emergency situations (i.e. power outages caused by natural disasters, equipment failure, or other events that disrupt the primary energy supply), in which case such generators shall have Best Available Control Technology (BACT) that meets CARB's final Tier IV emission standards.*

Mitigation Measure 3.3-3*: The Project applicant shall install and maintain perimeter landscaping that includes vegetation and tree canopy. The intent is to help create more shade within the overall Project site, thereby reducing the local heat island effect, which may reduce localized energy*

[7] See here for further detail: https://www.valleyair.org/rules/1ruleslist.htm

[8] Compliance with Air District Rule 9510 is assumed under CEQA.

consumption needs. As an alternative, the Project applicant may install structural solar canopies along the perimeter of the Project site, in place of perimeter landscaping (in whole or part).

***Mitigation Measure 3.3-4**: The Project applicant shall install Energy Star certified appliances or equivalent.*

***Mitigation Measure 3.3-5**: The Project applicant shall install energy efficient lighting that meets or exceeds Title 24 requirements.*

***Mitigation Measure 3.3-6**: The Project applicant shall devise and implement a property maintenance plan during Project operation that includes sweeping parking lots regularly (i.e. weekly or monthly) to remove road dust, tire wear, brake dust, and other contaminants. Prior to Project operation and finalization of the property maintenance plan, the Project applicant shall consult with the SJVAPCD (Air District), to ensure the property maintenance plan complies with applicable SJVAPCD rules and regulations, as well as any other applicable Air District requirements.*

***Mitigation Measure 3.3-7**: Truck idling (during construction and operation) onsite shall be limited to two minutes, and in no instance shall idling exceed five minutes consistent with the requirements established by the California Air Resources Board. To achieve this limit, the developer shall inform drivers and operators of idling time limits by including highly visible signage at key points onsite, such as at docks and delivery areas. Additionally, the Project Applicant shall require that their construction contractors and future tenants comply with this requirement, in writing, within construction contracts and/or operational leases, as applicable.*

***Mitigation Measure 3.3-8**: The Project applicant shall train managers and employees on efficient scheduling and load management to minimize queuing and idling of trucks.*

***Mitigation Measure 3.3-9**: The Project applicant shall ensure that all landscape equipment used on-site shall be electric or zero-emission vehicles. The Project applicant shall provide on-site electrical charging facilities to adequately service such electric vehicles.*

***Mitigation Measure 3.3-10**: The Project applicant shall install conduit as infrastructure for electric vehicle charging stations onsite to allow truck docks to charge electric trucks in the future. Such conduit shall be provided on the site to serve a minimum of 50% of the number of truck docking stations, with the location of conduit at the discretion of the developer (e.g., truck trailer parking spaces or other locations).*

***Mitigation Measure 3.3-11**: The Project applicant shall install conduit as infrastructure for electric vehicle charging stations onsite to allow for truck docks to serve Transport Refrigeration Units (TRUs) so that those TRUs that can accept electric plug-ins will not be required to use the vehicle's TRUs to keep perishable items cold. Such conduit shall be provided on the site to serve a minimum of 50% of the number of truck docking stations, with the location of conduit at the discretion of the developer (e.g., truck trailer parking spaces or other locations).*

***Mitigation Measure 3.3-12**: The Project applicant shall provide priority parking for employee carpool vehicles.*

Mitigation Measure 3.3-13*: The Project shall incorporate daylighting within the warehouses to minimize energy consumption associated with lighting.*

Mitigation Measure 3.3-14*: The Project applicant shall, during construction, use super compliant architectural coatings that have a maximum of 10 grams per liter. This will apply to the majority of flat and nonflat coatings. Exemptions to this requirement will be limited to specialty coatings that do not have a super compliant VOC content option. A list of manufacturers that provide architectural coatings with 10 grams per liter of VOCs can be found at: https://www.aqmd.gov/home/rules-compliance/compliance/vocs/architectural-coatings/super-compliant-coatings.*

Impact 3.3-2: The proposed Project would result in a cumulatively considerable net increase of a criteria pollutant for which the region is in nonattainment under an applicable federal or State ambient air quality standard. (Significant and Unavoidable)

If an area is in nonattainment for a criteria pollutant, then the background concentration of that pollutant has historically exceeded the ambient air quality standard. It follows that if a Project exceeds the regional threshold for that nonattainment pollutant, then it would result in a cumulatively considerable net increase of that pollutant and result in a significant cumulative impact.

The SJVAB is in nonattainment for PM_{10}, $PM_{2.5}$, and ozone. Therefore, if the proposed Project exceeds the regional thresholds for PM_{10}, or $PM_{2.5}$, then it would contribute to a cumulatively considerable impact on those pollutants. If the proposed Project exceeds the regional threshold for NOx or VOC (which are precursors to ozone), then it follows that the proposed Project would result in a cumulatively considerable contribution and thus result in a significant cumulative impact for ozone.

Regional emissions include those generated from all on-site and off-site activities. Regional significance thresholds have been established by the SJVAPCD because emissions from projects in the SJVAB can potentially contribute to the existing emission burden and possibly affect the attainment and maintenance of ambient air quality standards. Projects within the SJVAB with regional emissions that exceed any of the thresholds presented previously are considered to have a significant regional air quality impact.

CONSTRUCTION EMISSIONS

Emissions from construction activities represent temporary impacts that are typically short in duration, depending on the size, phasing, and type of project. Construction-related activities would result in Project-generated emissions from site preparation, grading, paving, building construction, and architectural coatings. CalEEMod™ (v.2022.1) was used to estimate construction emissions for the proposed Project during the first construction phase. It is estimated that the Project would be constructed in four construction phases. For the estimates of construction emissions for each construction phase, it was conservatively estimated that emissions would be comparable to the first construction phase even though it is anticipated that future construction related exhaust emissions

would be less due to increasingly stringent regulatory requirements and improvements in vehicular exhaust control technology. Table 3.3-9, below, provides the construction criteria pollutant emissions and thresholds associated with implementation of the proposed Project. It should be noted that the SJVAPCD recommends the same criteria pollutant thresholds for both construction and operational emissions, as provided within the *SJVAPCD Guidance for Assessing and Mitigating Air Quality Impacts* (2015). If the proposed Project's emissions exceed the SJVAPCD's threshold of significance for construction-generated emissions, the proposed Project would have a significant impact on air quality. As shown in Table 3.3-9, the proposed Project would not exceed the SJVAPCD thresholds of significance for construction-related criteria pollutant emissions and consequently would not result in significant impact on regional air quality.

TABLE 3.3-9: CONSTRUCTION PROJECT GENERATED EMISSIONS (TONS PER YEAR)

PHASE	CO	NOX	ROG	SOX	PM_{10}	$PM_{2.5}$
CONSTRUCTION PHASE 1	3	2	5	<1	<1	<1
CONSTRUCTION PHASE 2	3	2	5	<1	<1	<1
CONSTRUCTION PHASE 3	3	2	5	<1	<1	<1
CONSTRUCTION PHASE 4	3	2	5	<1	<1	<1
MAXIMUM EMISSIONS	3	2	5	<1	<1	<1
THRESHOLD	100	10	10	27	15	15
EXCEEDS THRESHOLD?	**No**	**No**	**No**	**No**	**No**	**No**

SOURCES: CALEEMOD (V.2022.1)

Additionally, SJVAPCD has developed daily mass emissions screening criteria for ROG, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$ to determine whether project emissions would result in a violation of AAQS. Because the NAAQS and CAAQS are concentration-based standards, Project emissions were evaluated using the SJVAPCD mass emissions screening approach, which provides a preliminary assessment to determine whether a project would contribute to a violation of an AAQS. The screening is conducted by evaluating daily Project emissions against a 100 pound per day threshold for each criteria air pollutant. The following table (Table 3.3-10) provides the proposed Project's construction emissions in pounds per day in comparison to these screening thresholds.

TABLE 3.3-10: CONSTRUCTION PROJECT GENERATED EMISSIONS (POUNDS PER DAY)

POLLUTANT	CO	NOX	ROG	SOX	PM_{10}	$PM_{2.5}$
YEAR 2027	67	28	330	<1	11	4
YEAR 2030	67	28	330	<1	11	4
YEAR 2033	67	28	330	<1	11	4
YEAR 2035	67	28	330	<1	11	4
MAXIMUM UNMITIGATED EMISSIONS	67	28	330	<1	11	4
THRESHOLD (POUNDS/DAY)	100	100	100	100	100	100
EXCEEDS THRESHOLD?	**No**	**No**	**Yes**	**No**	**No**	**No**
MAXIMUM MITIGATED EMISSIONS	67	28	87	<1	11	4
THRESHOLD (POUNDS/DAY)	100	100	100	100	100	100
EXCEEDS THRESHOLD?	**No**	**No**	**No**	**No**	**No**	**No**

SOURCE: CALEEMOD (V.2022.1)

NOTE: EMISSIONS ONLY INCLUDE THOSE EMISSIONS THAT ARE CONSIDERED "ON-SITE," PER SJVAPCD GUIDANCE. TO PROVIDE A CONSERVATIVE ANALYSIS, TOTAL ON-SITE AND OFF-SITE EMISSIONS ARE SHOWN.

As shown in Table 3.3-9, under the unmitigated scenario, the proposed Project would not exceed the daily mass screening criteria thresholds during Project construction, except for ROG emissions result from the application of architectural coatings. Mitigation Measure 3.3-14 requires the Project to use super compliant coatings of 10 grams per liter. Implementation of this mitigation measure would reduce ROG emissions below the SJVAPCD's significance thresholds. Therefore, with implementation of the mitigation measures provided under Impact 3.3-1, the Project's construction-related criteria pollutant emissions would have a ***less than significant*** impact.

OPERATIONAL EMISSIONS

The SJVAPCD is tasked with implementing programs and regulations required by the FCAA and the CCAA. In that capacity, SJVAPCD has prepared plans to attain Federal and State ambient air quality standards. To achieve attainment with the standards, the SJVAPCD has established thresholds of significance for criteria pollutant emissions in its *Guidance for Assessing and Mitigating Air Quality Impacts* (2015). Projects with emissions below the thresholds of significance for criteria pollutants would be determined to "Not conflict or obstruct implementation of the District's air quality plan," and to not have a cumulatively considerable net increase of a criteria pollutant for which the project region is in non-attainment. If the proposed Project's emissions exceed the SJVAPCD's threshold of significance for operational-generated emissions, the proposed Project will have a significant impact on air quality and all feasible mitigation measures must be implemented to reduce emissions.

Mobile source emissions will be generated by the Project due to the vehicle travel expected to occur to and from the Project site. According to the Traffic Analysis (Fehr & Peers) (as provided in Appendix F of the Draft EIR), the proposed Project is anticipated to generate approximately 11,730 net vehicle trips per day. Of these, it is estimated that there would be 1,480 truck trips per day. It should also be noted that the air quality analysis is based on the warehouse, distribution, and manufacturing uses have average trip length for passenger vehicles of 29.3 miles, medium trucks 32.3 miles, and heavy trucks have 41.8 miles. This reflects the average truck trip length within the *San Joaquin Countywide Warehousing Data Collection and Travel Behavior Study* completed by Fehr & Peers in 2021.

CalEEMod™ (v.2022.1) was used to model operational emissions of the proposed Project. Table 3.3-11 and Table 3.3-12 show proposed Project emissions as provided by CalEEMod, in tons per year and pounds per day, respectively. As shown in Table 3.3-11 below, total Project operational emissions would exceed the SJVAPCD thresholds of significance for CO, NOx, ROG, and PM_{10} in terms of tons per day (primarily due to vehicle trips). Mitigation Measures 3.3-1 through 3.3-14 would reduce operations phase emissions to the degree feasible. However, since most emissions are associated with vehicular trips associated with worker commutes and truck deliveries, emissions would still exceed the SJVAPCD's significance thresholds, even with implementation of all mitigation measures, this impact would remain significant and unavoidable.

TABLE 3.3-11: OPERATIONAL PROJECT GENERATED EMISSIONS (TONS PER YEAR)

POLLUTANT	CO	NOX	ROG	SOX	PM_{10}	$PM_{2.5}$
MOBILE	97	25	8	<1	29	8
AREA	10	<1	12	<1	<1	<1
ENERGY	1	2	<1	<1	<1	<1
WATER	<1	<1	<1	<1	<1	<1
WASTE	<1	<1	<1	<1	<1	<1
REFRIG.	<1	<1	<1	<1	<1	<1
TOTAL	108	27	21	<1	29	8
THRESHOLD	100	10	10	27	15	15
EXCEEDS THRESHOLD?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**No**

SOURCE: CALEEMOD (V.2022.1)

The SJVAPCD has developed daily mass emissions screening criteria for ROG, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$ to determine whether project emissions would result in a violation of an AAQS. Because the NAAQS and CAAQS are concentration-based standards, Project emissions were evaluated using the SJVAPCD mass emissions screening approach, which provides a preliminary assessment to determine whether a project would contribute to a violation of an AAQS. The screening is conducted by evaluating daily Project emissions against a 100 pound per day threshold for each criteria air pollutant. The following table (Table 3.3-12) provides the proposed Project's operational emissions in pounds per day in comparison to these screening thresholds. As shown in Table 3.3-12, the proposed Project's operational emissions would not exceed any of the daily mass screening criteria thresholds except for CO from landscaping equipment. Mitigation Measure 3.3-9 requires that zero emission landscaping equipment be used to minimize emissions from this source. Mitigated emissions would be less than the SJVAPCD's significance thresholds and consequently result in less than significant localized emissions.

TABLE 3.3-12: OPERATIONAL PROJECT GENERATED EMISSIONS (POUNDS PER DAY)

POLLUTANT	CO	NOX	ROG	SOX	PM_{10}	$PM_{2.5}$
MOBILE	36	8	3	<1	9	2
AREA	109	<1	75	<1	<1	<1
ENERGY	8	9	<1	<1	<1	<1
MAXIMUM UNMITIGATED EMISSIONS	153	17	78	<1	9	2
THRESHOLD (POUNDS/DAY)	100	100	100	100	100	100
EXCEEDS THRESHOLD?	**Yes**	**No**	**No**	**No**	**No**	**No**
MAXIMUM MITIGATED EMISSIONS	44	17	60	<1	9	2
THRESHOLD (POUNDS/DAY)	100	100	100	100	100	100
EXCEEDS THRESHOLD?	**No**	**No**	**No**	**No**	**No**	**No**

SOURCE: CALEEMOD (V.2022.1)

NOTE: EMISSIONS ONLY INCLUDE THOSE EMISSIONS THAT ARE CONSIDERED "ON-SITE," PER SJVAPCD GUIDANCE. THIS EXCLUDES "MOBILE" EMISSIONS, EXCEPT FOR APPROXIMATELY 5% OF MOBILE EMISSIONS THAT ARE ESTIMATED TO BE ON-SITE.

REGULATORY COMPLIANCE

In accordance with SJVAPCD Rule 9510, an Air Impact Assessment (AIA) shall be prepared based on the applicability and exemption criteria of Rule 9510.[9] The rule includes general mitigation requirements for construction and/or operational emissions. Per the general mitigation requirements of Rule 9510, the Project shall reduce the project's operational baseline NOx emissions by 33.3% over a period of ten years as quantified in the approved AIA. The project shall pay any off-site fees in full by the invoice due date or prior to generating the emissions associated with the Project or any phase thereof, whichever occurs first. Those fees are in turn used by SJVAPCD to fund offsite mitigation projects throughout the Air District.

Separately, prior to the issuance of a Grading Permit for each phase of the Project, the Project Proponent shall prepare and submit a Dust Control Plan that meets all the applicable requirements of SJVAPCD Rule 8021, Section 6.3. Additionally, the Project would be required to implement dust control measures that include application of water or chemical dust suppressants to unpaved roads and graded areas, covering or stabilization of transported bulk materials, prevention of carryout or trackout of soil materials to public roads, limiting the area subject to soil disturbance, construction of wind barriers, access restrictions to inactive sites, as required by the applicable rules. The Project would also be required to, during all construction activities, implement the dust control practices identified in Tables 6-2 and 6-3 of the GAMAQI (2002).

CONCLUSION

Criteria pollutant emissions generated by the proposed Project during operation would exceed applicable thresholds after compliance with all applicable rules and regulations, even after implementation of Mitigation Measure 3.3-1 through Mitigation Measure 3.3-14. No other feasible mitigation measure exists to reduce the applicable operational criteria pollutant impacts to below the applicable SJVAPCD thresholds. Therefore, this impact would be ***significant and unavoidable***.

MITIGATION MEASURE(S)

Implement ***Mitigation Measure 3.3-1 through Mitigation Measure 3.3-14.***

Impact 3.3-3: The proposed Project would not expose sensitive receptors to substantial pollutant concentrations. (Less than Significant)

TOXIC AIR CONTAMINANTS

A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. Those who are sensitive to air pollution include children, the elderly, and people with preexisting respiratory or cardiovascular illnesses. The SJVAPCD considers a sensitive receptor to be a location that houses or attracts children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants. Examples of sensitive receptors include hospitals, residences, convalescent facilities, and schools. There are

[9] Available at: https://www.valleyair.org/media/la5eedpb/rule-9510.pdf. Accessed: July 16, 2025.

no traditional sensitive receptors such as residences, convalescent facilities, or schools that are proposed as part of the proposed Project. The closest residential receptors to the Project are located as follows:

- Rural residences located along the eastern portion of the Project site along Dale Road;
- Rural residences and the Joseph A Gregori High School located proximate to the northern portion of the Project site across Pirrone Road;
- Additional scattered residences located approximately 630 feet to the west of the Project site; and
- To the south of the Project site is the Kaiser Permanente Modesto Medical Center.

Heavy-duty trucks are a common source of Diesel Particulate Matter (DPM), in contrast to passenger vehicles (such as light-duty cars and trucks). The inhalation of DPM generates cancer and non-cancer health risks, especially where concentrations are elevated for long periods of time and for younger sensitive receptors. SJVAPCD's GAMAQI (SJVAPCD, 2015) includes procedures for evaluating hazardous air pollutants. Based on the guidance provided in the GAMAQI, an air toxics health impact analysis has been prepared for the proposed Project to analyze the Project's anticipated impacts from diesel exhaust emitted by heavy-duty trucks operated as part of the Project.

An air toxics health risk assessment was conducted utilizing Lakes Environmental Software AERMOD and the CARB's Hotspots Analysis Reporting Program Version 2 (HARP 2) Air Dispersion, Modelling, and Risk Tool (ADMRT) for the DPM associated with the heavy-duty trucks. Emissions associated with truck idling and truck on-site travel were calculated. The maximum residential (70-year exposure) cancer, workplace (40-year exposure) cancer, chronic (non-cancer), and acute (non-cancer) risks were assessed and compared to SVJAPCD thresholds. A Health Risk Assessment was prepared for the Project. See Appendix B of this Draft EIR for full model inputs. Table 3.3-13 presents the results of the analysis.

Separately, Project construction would generate DPM emissions from the use of off-road diesel equipment required. The amount to which the receptors are exposed (a function of concentration and duration of exposure) is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards).

The use of diesel-powered construction equipment would be temporary and episodic. The duration of exposure would be short and exhaust from construction equipment would dissipate rapidly. Current models and methodologies for conducting health risk assessments are associated with longer-term exposure periods of 9, 30, and 70 years, which do not correlate well with the temporary and highly variable nature of construction activities. Given that construction is anticipated to occur over the course of approximately four years across four separate construction phases, construction health risks associated with construction of this timeframe were evaluated. See Appendix B for further detail.

TABLE 3.3-13: SUMMARY OF MAXIMUM HEALTH RISKS

RISK METRIC	*MAXIMUM RISK*	*SIGNIFICANCE THRESHOLD*	*IS THRESHOLD EXCEEDED?*
OPERATIONAL			
Residential Cancer Risk (70-year exposure)	6 per million	20 per million	No
Workplace Cancer Risk (40-year exposure)	<1 per million	20 per million	No
Chronic (non-cancer)	1 per million	Hazard Index ≥1	No
Acute (non-cancer)[1]	0	Hazard Index ≥1	No
CONSTRUCTION			
Residential Cancer Risk (2-year exposure)	4 per million	20 per million	No
Workplace Cancer Risk (2-year exposure)	4 per million	20 per million	No
Chronic (non-cancer)	<1 per million	Hazard Index ≥1	No
Acute (non-cancer)[1]	0	Hazard Index ≥1	No
TOTAL			
Residential Cancer Risk (Aggregate)	10 per million	20 per million	No
Workplace Cancer Risk (Aggregate)	4 per million	20 per million	No
Chronic (non-cancer)	1 per million	Hazard Index ≥1	No
Acute (non-cancer)[1]	0	Hazard Index ≥1	No

SOURCES: AERMOD 11.2.0; AND HARP-2 AIR DISPERSION AND RISK TOOL (VERSION 22118).

The California Office of Environmental Health Hazard Assessment has not identified short-term health effects from DPM. Construction activities would be subject to and would comply with California regulations limiting the idling of heavy-duty construction equipment to no more than five minutes to further reduce nearby sensitive receptors' exposure to temporary and variable DPM emissions.

Furthermore, as shown in Figure 5 in Appendix B, operational workplace cancer risk would also be below the threshold, at approximately 1 in a million at its peak value in the southern part of the Project site, for workers that may be located at or near this location during work conditions. However, it is very unlikely that any individual would be located at this location within the Project site for 40 years; therefore, this result also represents a conservative estimate. These risks are well below the applicable SJVAPCD thresholds. As shown in Table 3.3-13, which identifies the combined health risks associated with both construction and operational, the proposed Project, in and of itself, would not result in a significant increased exposure of receptors to localized concentrations of TACs. Risk of residential cancer risk, workplace cancer risk, and chronic and acute non-cancer risks are below the applicable SJVAPCD TAC thresholds. Further details are provided in the Health Risk Assessment provided in Appendix B. Therefore, implementation of the proposed Project would cause a ***less than significant*** impact relative to this topic, since it is under the threshold established by the SJVAPCD.

VALLEY FEVER

Valley Fever, or coccidioidomycosis, is an infection caused by inhalation of the spores of the fungus, Coccidioides immitis (C. immitis). The spores live in soil and can live for an extended time in harsh environmental conditions. Activities or conditions that increase the amount of fugitive dust contribute to greater exposure, and they include dust storms, grading, and recreational off-road activities.

The San Joaquin Valley is considered an endemic area for Valley Fever. By geographic region, hospitalizations for Valley Fever in the San Joaquin Valley increased from 230 (6.9 per 100,000 population) in 2000 to 701 (17.7 per 100,000 population) in 2007. Within the region, Kern County reported the highest hospitalization rates, increasing from 121 (18.2 per 100,000 population) in 2000 to 285 (34.9 per 100,000 population) in 2007, and peaking in 2005 at 353 hospitalizations (45.8 per 100,000 population). The Centers for Disease Control and Prevention indicates that 752 of the 8,657 persons (8.7 percent) hospitalized in California between 2000 and 2007 for Valley Fever died.[10]

The distribution of C. immitis within endemic areas is not uniform and C. immitis growth sites are commonly small (a few tens of meters) and widely scattered. Known sites appear to have some ecological factors in common suggesting that certain physical, chemical, and biological conditions are more favorable for C. immitis growth. Avoidance, when feasible, of sites favorable for the occurrence of C. immitis is a prudent risk management strategy. Listed below are ecologic factors and sites favorable for the occurrence of C. immitis:[11]

1. Rodent burrows (often a favorable site for C. immitis, perhaps because temperatures are more moderate and humidity higher than on the ground surface).
2. Prehistoric Indian campsites near fire pits.
3. Areas with sparse vegetation and alkaline soils.
4. Areas with high salinity soils.
5. Areas adjacent to arroyos (where residual moisture may be available).
6. Packrat middens.
7. Upper 30 centimeters of the soil horizon, especially in virgin undisturbed soils.
8. Sandy well aerated soil with relatively high-water holding capacities.

Sites within endemic areas less favorable for the occurrence of C. immitis include:

1. Cultivated fields
2. Heavily vegetated areas (e.g., grassy lawns)
3. Higher elevations (above 7,000 feet)

[10] The Centers for Disease Control and Prevent (CDC). 2009. Increase in Coccidioidomycosis – California, 2000-2007. February 13. Website: https://www.cdc.gov/mmwr/preview/mmwrhtml/mm5805a1.htm. Accessed July 16, 2025.

[11] United States Geological Survey (USGS). 2000. Operational Guidelines (Version 1.0) for Geological Fieldwork in Areas Endemic for Coccidioidomycosis (Valley Fever). Website: https://pubs.usgs.gov/publication/ofr00348. Accessed July 16, 2025.

4. Areas where commercial fertilizers (e.g., ammonium sulfate) have been applied
5. Areas that are continually wet
6. Paved (asphalt or concrete) or oiled areas
7. Soils containing abundant microorganisms
8. Heavily urbanized areas where there is little undisturbed virgin soil

The Project site is relatively undeveloped and is surrounded by undeveloped, agricultural, industrial, and residential land uses that are semi-rural to urban in character. Because most of the Project site and the immediately surrounding vicinity consists of urbanized development or cultivated fields, the Project site is an area that would lead to a low probability of having C. immitis growth sites and exposure from disturbed soil.

Construction activities would generate fugitive dust that could contain C. immitis spores. The proposed Project would be required to minimize the generation of fugitive dust during construction activities by complying with the SJVAPCD's Rule 8021. Rule 8021 requires limitation of fugitive dust emissions from construction, demolition, excavation, extraction, and other earthmoving activities, by implementing control measures such as pre-watering the Project site, phasing construction work to reduce the amount of disturbed surface at any one time, and applying water or other suppressants to unpaved haul/access roads and unpaved vehicle/equipment traffic areas. Therefore, this regulation would ensure that Valley Fever impacts during construction are less than significant.

During operations, dust emissions are anticipated to be negligible, because the Project site would be occupied by up to 2,503,230 square feet (maximum development scenario) of warehouse, distribution, and manufacturing buildings, pavement, and landscaped areas after construction is complete. Therefore, Project operations would not occur on undeveloped sites and dust emissions typically associated with activity on unpaved surfaces would be negligible. This condition would preclude the possibility of the proposed Project from generating significant fugitive dust that may contribute to Valley Fever exposure. Impacts would be ***less than significant***.

ASBESTOS AND LEAD-BASED PAINT EXPOSURE

According to a map of areas where naturally occurring asbestos in California are likely to occur, there are no such areas in the vicinity of the Project site.[12] In addition, there are no existing buildings that have lead-based paint or asbestos containing materials. Therefore, development of the proposed Project is not anticipated to expose receptors to naturally occurring asbestos, asbestos containing materials, or lead-based paint. This impact would be ***less than significant***.

[12] United States Geological Survey (USGS). 2011. Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California. Website: https://pubs.usgs.gov/of/2011/1188/. Accessed July 16, 2025.

Impact 3.3-4: The proposed Project would not cause exposure to other emissions (such as those leading to odors) adversely affecting a substantial number of people. (Less than Significant)

The following text addresses odors. Other emissions (including criteria pollutants and TACs) are addressed in Impacts 3.3-1 through 3.3-4.

While offensive odors rarely cause any physical harm, they can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and the SJVAPCD. The general nuisance rule (Health and Safety Code §41700) is the basis for the threshold.

Examples of facilities that are known producers of odors include: Wastewater Treatment Facilities, Chemical Manufacturing, Sanitary Landfill, Fiberglass Manufacturing, Transfer Station, Painting/Coating Operations (e.g. auto body shops), Composting Facility, Food Processing Facility, Petroleum Refinery, Feed Lot/Dairy, Asphalt Batch Plant, and Rendering Plant.

If a project proposes locating receptors and known odor sources in proximity to each other, further analysis may be warranted. However, if a project would not locate receptors and known odor sources in proximity to each other, then further analysis is not warranted. The proposed Project does not include new industrial uses that are not already present in the vicinity of the Project site. There is a residence located near to the Project site to the west; however, it is proposed to be removed. Moreover, since the proposed Project would not be a source of offensive odors, sensitive receptors located near the Project site would not be exposed by the Project to significant odors that would affect a substantial number of people. SJVAPCD Rule 4102 prohibits any mobile or stationary source generating an objectionable odor, except for odors emanating from certain agricultural operations. The California Health and Safety Code §41700 and Air District Rule 4102 prohibit emissions of air contaminants from any source that causes nuisance or annoyance to a considerable number of people or that present a threat to public health or cause property damage. Compliance with these rules would preclude land uses proposed under the proposed Project from emitting objectionable odors. The Project does not propose uses that would create new odors that would adversely affect a substantial number of people. The proposed Project also does not introduce any new sensitive receptors. Therefore, operation of the proposed Project would not result in significant objectionable odors. Impacts associated with exposure to odors would be ***less than significant.***

CUMULATIVE IMPACTS

The cumulative context for air quality impacts is the San Joaquin Valley Air Basin (SJVAB), which consists of eight counties, stretching from Kern County in the south to San Joaquin County in the north. The SJVAB is bound by the Sierra Nevada in the east, the Coast Ranges in the west, and the Tehachapi mountains in the south.

Impact 3.3-5: Cumulative Impact on the Region's Air Quality (Significant and Unavoidable and Cumulatively Considerable)

Under buildout conditions in Stanislaus County, the SJVAB would continue to experience increases in criteria pollutants, thereby hindering efforts to improve air quality throughout the basin. As described previously, Stanislaus County has a state designation of Nonattainment for ozone, PM_{10} and $PM_{2.5}$. Table 3.3-2 presents the State and Federal attainment status for San Joaquin County.

As discussed previously, operational emissions would exceed the SJVAPCD thresholds of significance. It should be noted that there are not separate cumulative criteria pollutant emissions thresholds; rather, the project-level criteria pollutant emissions thresholds were designed by SJVAPCD to simultaneously determine impacts associated at both the individual project as well as cumulative level. Therefore, the proposed Project is required to implement feasible mitigation measures aimed to reduce criteria pollutant emissions. Because the operational emissions shown therein would exceed the SJVAPCD's significance thresholds despite the application of mitigation measures, the impact would remain ***significant and unavoidable***.

Additionally, as discussed previously, a health risk analysis has been prepared for the proposed Project to analyze the potential health risks associated with increased trucks to the Project site and surrounding roadways associated with the development and operation of the proposed industrial and commercial uses. The source of TACs for this type of Project can be attributed to diesel exhaust from the trucks. As shown in Table 3.3-13, the proposed Project, in and of itself, would not result in a significantly increased exposure of receptors to localized concentrations of TACs. Risk of residential cancer risk, workplace cancer risk, and chronic and acute non-cancer risks are below the applicable SJVAPCD thresholds. Furthermore, as described in the SJVAPCD's *Guidance for Assessing and Mitigating Air Quality Impacts*, impacts from hazardous air pollutants are localized impacts. The SJVAPCD has established thresholds of significance for TACs that are extremely conservative and protective of health impacts on sensitive receptors. Because impacts from TACs are localized and the thresholds of significance for TACs have been established at such a conservative level, risks below the individual thresholds of significance are also considered less than cumulatively significant, and no other cumulative risk thresholds apply.

The increase in up to 2,503,230 square feet (maximum development scenario) of warehouse, distribution, and manufacturing space anticipated with buildout of the Project is consistent with growth projections assumed in the Modesto General Plan for the same time horizon. While the proposed Project, as well as future projects in the City and County, would be subject to the requirements of the SJVAPCD, even with the application of the previously described mitigation measures with this section (Section 3.3: Air Quality), emissions levels would remain above the current defined SJVAPCD criteria pollutant thresholds of significance during Project operation. As such, cumulative impacts on the region's air quality would have a ***significant and unavoidable*** impact. The Project's contribution to this significant impact would be ***cumulatively considerable***.

CONCLUSION

The proposed Project entails the development of industrial uses that would result in emissions from both the construction and operations phases. Construction related emissions would be below the SJVAPCD's CEQA significance thresholds with the adoption of mitigation measures. However, the operations phase of the Project would result in emissions that exceed SJVAPCD's CEQA significance thresholds despite the implementation of mitigation measures and consequently would result in an unavoidable impact on air quality. A health risk assessment was conducted for the Project and found that the Project would not result in any significant impacts related to the exposure of toxic air pollutant emissions. The Project would result in less than significant impacts related to odors and other contaminants. Lastly, the Project would result in unavoidable significant impacts related to consistency with the SJVAPCD AQAP due to the Project's emissions exceeding the SJVAPCD's significance thresholds.

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This section describes the regulatory setting, regional biological resources, and impacts that are likely to result from Project implementation. The analysis contained in this section is intended to be at a Project-level, and covers impacts associated with the conversion of the entire site to an urban use. This section is based in part on the following: *City of Modesto General Plan* (City of Modesto, 2019), *Public Draft Environmental Impact Report for the Modesto Urban Area General Plan* (City of Modesto, 2025), Modesto Municipal Code (City of Modesto, 2024), as well as site specific surveys and analysis.

Comments were received during the public review period or scoping meeting for the Notice of Preparation regarding this topic from the following individuals and organizations:

- California Department of Fish and Wildlife (CDFW) (March 27, 2025).
- Central Valley Regional Water Quality Control Board (CVRWQCB) (March 27, 2025).
- Garry Pearson (resident) (March 27, 2025).

The portions of the comment letters related to this topic are addressed within this section. Full comments received are included in Appendix A.

KEY TERMS

The following key terms are used throughout this section to describe biological resources and the framework that regulates them:

Hydric Soils. One of the three wetland identification parameters, according to the Federal definition of a wetland, hydric soils have characteristics that indicate they were developed in conditions where soil oxygen is limited by the presence of saturated soil for extended periods during the growing season. There are approximately 2,000 named soils in the United States that may occur in wetlands.

Hydrophytic Vegetation. Plant types that typically occur in wetland areas. Nearly 5,000 plant types in the United States may occur in wetlands. Plants are listed in regional publications of the U.S. Fish and Wildlife Service (USFWS) and include such species as cattails, bulrushes, cordgrass, sphagnum moss, bald cypress, willows, mangroves, sedges, rushes, arrowheads, and water plantains.

Sensitive Natural Community. A sensitive natural community is a biological community that is regionally rare, provides important habitat opportunities for wildlife, is structurally complex, or is in other ways of special concern to local, State, or Federal agencies. The California Environmental Quality Act (CEQA) identifies the elimination or substantial degradation of such communities as a significant impact. The CDFW tracks sensitive natural communities in the California Natural Diversity Database (CNDDB).

Special Status Species. Special-status species are those plants and animals that, because of their recognized rarity or vulnerability to various causes of habitat loss or population decline, are recognized by Federal, State, or other agencies. Some of these species receive specific protection that is defined by Federal or State endangered species legislation. Others have been designated as "sensitive" based on adopted policies and expertise of State resource agencies or organizations with acknowledged expertise, or policies adopted by local governmental agencies such as counties, cities,

and special districts to meet local conservation objectives. These species are referred to collectively as "special-status species" in this report, following a convention that has developed in practice but has no official sanction. For the purposes of this assessment, the term “special status” includes those species that are:

- Federally listed or proposed for listing under the Federal Endangered Species Act (50 C.F.R. Sections 17.11-17.12).
- Candidates for listing under the Federal Endangered Species Act (61 FR Sections 7596-7613).
- State listed or proposed for listing under the California Endangered Species Act (14 CCR Section 670.5).
- Species listed by the USFWS or the CDFW as a species of concern (USFWS), rare (CDFW), or of special concern (CDFW).
- Fully protected animals, as defined by the State of California (California Fish and Game Code Sections 3511, 4700, and 5050).
- Species that meet the definition of threatened, endangered, or rare under CEQA (CEQA Guidelines Section 15380).
- Plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code Section 1900 et seq.); and
- Plants listed by the California Native Plant Society (CNPS) as rare, threatened, or endangered (List 1A and List 2 status plants in Skinner and Pavlik 1994).[1]

Waters of the U.S. The Federal government defines waters of the U.S. as "lakes, rivers, streams, intermittent drainages, mudflats, sandflats, wetlands, sloughs, and wet meadows" [33 C.F.R. §328.3(a)]. Waters of the U.S. exhibit a defined bed and bank and ordinary high-water mark (OHWM). The OHWM is defined by the U.S. Army Corps of Engineers (USACE) as “that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas” [33 C.F.R. §328.3(e)].

Wetlands. Wetlands are ecologically complex habitats that support a variety of both plant and animal life. The Federal government defines wetlands as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” [33 C.F.R. §328.3(b)]. Wetlands require wetland hydrology, hydric soils, and hydrophytic vegetation. Examples of wetlands include freshwater marsh, seasonal wetlands, and vernal pool complexes that have a hydrologic link to waters of the U.S.

[1] Skinner M.W. and Pavlik B.M. (eds) 1994. Inventory of Rare and Endangered Vascular Plants of California. California Native Plant Society Special Publication no. 1. 5th edn. Sacramento, California.

METHODS

Pre-Field Investigation

Prior to the field investigation, numerous maps, databases, and reports were reviewed including:

- U.S. Geological Survey (USGS) 7.5-minute Quadrangle
- USGS National Hydrography Data Set
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps
- National Resource Conservation Service (NRCS) Soil Survey
- California Wildlife Habitat Relationships (CWHR) maps
- CNDDB
- California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants
- USFWS IPac
- USFWS Official List

Field Survey

The Project site was subject to a field survey by Principal Biologist Steve McMurtry on May 13, 2025. The site reconnaissance survey served several purposes. First, it served as reconnaissance of the site to establish the existing conditions of the site and to verify information gathered in the pre-field investigation. This included identification of the habitat types, hydrologic features, topography, soil characteristics, and vegetation. The field investigations followed the Protocols for Surveying and Evaluating Impacts on Special Status Native Plant Populations and Natural Communities (CDFW 2009). Habitat was recorded. Visibility during each survey was excellent.

3.4.1 ENVIRONMENTAL SETTING

GEOMORPHIC PROVINCES/BIOREGION

The City of Modesto is in the central-southern portion of the Great Valley Geomorphic Province of California. The Great Valley Province is a broad structural trough bounded by the tilted block of the Sierra Nevada on the east and the complexly folded and faulted Coast Ranges on the west. The San Joaquin River drains the Great Valley Province into the San Joaquin Delta to the north, discharging into the San Francisco Bay to the northwest.

The City of Modesto is located within the San Joaquin Valley Bioregion, which is comprised of Kings County, most of Fresno, Kern, Merced, and Stanislaus counties, and portions of Madera, San Luis Obispo, and Tulare counties. The San Joaquin Valley Bioregion is the third most populous out of ten bioregions in the state, with an estimated two million people. The largest cities are Fresno, Bakersfield, Modesto, and Stockton. Interstate 5 and State Route 99 are the major north-south roads that run the entire length of the bioregion.

The bioregion is bordered on the west by the coastal mountain ranges. Its eastern boundary joins the southern two-thirds of the Sierra bioregion, which features Yosemite, Kings Canyon, and Sequoia National Parks. At its northern end, the San Joaquin Valley bioregion borders the southern end of

the Sacramento Valley bioregion. To the west, south, and east, the bioregion extends to the edges of the valley floor.

Habitat in the bioregion includes vernal pools, valley sink scrub and saltbush, freshwater marsh, grasslands, arid plains, orchards, and oak savannah. Historically, millions of acres of wetlands flourished in the bioregion, but stream diversions for irrigation dried all but about five percent. Remnants of the wetland habitats are protected in this bioregion in publicly owned parks, reserves, and wildlife areas. The bioregion is considered the state's top agricultural producing region with the abundance of fertile soil.

LOCAL SETTING

Location

The Scannell Industrial Project (proposed Project) consists of approximately 145 acres located at the northwest corner of Kiernan Avenue and Dale Road intersection, within the unincorporated Community of Salida. The Project site and surrounding properties are in agricultural use. There are also light industrial developments east and west of the Project site, along Kiernan Avenue. Joseph A. Gregori High School is located immediately northwest of the site, and the Kaiser Permanente Modesto Medical Center and similar business park uses are located immediately south, within the City of Modesto.

The Project site consists of active agricultural fields (alfalfa) and orchard (almond) operations to the northern and southern portions of the Project site, respectively. The northern half of the Project site was in alfalfa, and the southern half was in almonds.

Topography

The Project site is flat and ranges in elevation from 75 to 82 feet above mean sea level.

Climate

The City of Modesto is in the central portion of Stanislaus County, which is in the northern part of the San Joaquin Valley Air Basin (SJVAB). According to the County's General Plan EIR, the SJVAB has an inland Mediterranean climate averaging over 260 sunny days per year. The valley floor experiences warm, dry summers and cool, wet winters. Summer high temperatures often exceed one hundred degrees Fahrenheit, averaging in the low 90s in the northern valley and high 90s in the south. In the entire SJVAB, high daily temperature readings in summer average 95 degrees Fahrenheit. Over the last 30 years, the SJVAB averaged 106 days per year 90 degrees Fahrenheit or hotter, and 40 days per year 100 degrees Fahrenheit or hotter. The daily summer temperature variation can be as much as 30 degrees Fahrenheit.

In winter, as the cyclonic storm track moves southward, the storm systems moving in from the Pacific Ocean bring a maritime influence on the SJVAB. The high mountains to the east prevent the cold, continental air masses of the interior from influencing the valley. Winters are mild and humid. Temperatures below freezing are unusual. Average high temperatures in the winter are in the 50s,

but highs in the 30s and 40s can occur on days with persistent fog and low cloudiness. The average daily low temperature is 45 degrees Fahrenheit.

Vegetation

Vegetation on the Project site consists of agricultural, ruderal, and landscaping. Because of the active agricultural use (alfalfa and almonds), there is limited natural vegetation on the Project site. The exception is along the perimeter of the agricultural fields, where naturalized ruderal and annual grasses are present. Common plant species observed in these perimeter areas include: wild oat (*Avena barbata*), rip-gut brome (*Bromus diandrus*), softchess (*Bromus hordeaceus*) alfalfa (*Medicago sativa*), Russian thistle (Salsola tragus), Italian thistle (*Carduus pycnocephalus*), rough pigweed (*Amaranthus retroflexus*), sunflower (*Helianthus annuus*), tarragon (*Artemisia dracunculus*), coyote brush (*Baccharis pilularis*), prickly lettuce (*Lactuca serriola*), milk thistle (*Silybum marianum*), sow thistle (*Sonchus asper*), telegraph weed (*Heterotheca grandiflora*), barley (*Hordeum* sp.), mustard (*Brassica niger*), and heliotrope (*Heliotropium curassavicum*). The northern half of the Project site was planted in alfalfa. The southern half of the Project site is an almond orchard, and had alfalfa planted in the rows as a common practice for nitrogen fixing.

Wildlife

Agricultural and ruderal vegetation found on the Project site provides habitat for both common and a few special-status wildlife populations. For example, some commonly observed wildlife species in the region include: California ground squirrel (*Spermophilus beecheyi*), California vole (*Microtus californicus*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus),* American kestrel (*Falco sparverius*), white-tailed kite (*Elanus leucurus*), American killdeer (*Charadrius vociferus*), gopher snake (*Pituophis melanoleucus*), garter snake (*Thamnophis species*), and western fence lizard (*Sceloporus occidentalis*), as well as many native insect species. There are also several bat species in the region. Bats often feed on insects as they fly over agricultural and natural areas.

Locally common and abundant wildlife species are important components of the ecosystem. Due to habitat loss, many of these species must continually adapt to using agricultural, ruderal, and ornamental vegetation for cover, foraging, dispersal, and nesting. It is noted that the low growing alfalfa crop to the north provides a different habitat value compared to the almond orchard habitat to the south.

CALIFORNIA WILDLIFE HABITAT RELATIONSHIPS SYSTEM

The CWHR habitat classification scheme has been developed to support the CWHR System, a wildlife information system and predictive model for California's regularly occurring birds, mammals, reptiles, and amphibians. When first published in 1988, the classification scheme had fifty-three habitats. At present, there are 59 wildlife habitats in the CWHR System: 27 tree, 12 shrub, 6 herbaceous, 4 aquatic, 8 agricultural, 1 developed, and 1 non-vegetated.

Figure 3.4-1 shows the CWHR designations in the Project site. As shown, the entire Project site is designated Deciduous Orchard; Evergreen Orchard; Vineyard, Irrigated; and Row and Field Crops. It is noted that the almond orchard is a deciduous orchard. Although Evergreen Orchard; Vineyard is grouped into a single category with Deciduous Orchard, it is noted that they are not present and are not discussed further.

Below is a brief description of these CWHR habitats.

DEVELOPED COVER TYPES

Orchard – Deciduous are typically open single species tree dominated habitats. Depending on the tree type and pruning methods they are low, bushy trees with an open understory to facilitate harvest. Trees range in height at maturity for many species from 15 to 30 feet but may be ten feet or less depending on the species. Crowns usually touch and are usually in a linear pattern. Spacing between trees is uniform depending on desired spread of mature trees. The understory is usually composed of low-growing grasses, legumes, and other herbaceous plants, but may be managed to prevent understory growth totally or partially, such as along tree rows. Deciduous orchards can be found on flat alluvial soils in the valley floors, in rolling foothill areas, or on steep slopes. Although some deciduous orchards are non-irrigated, most are irrigated. Some flat soils are flood irrigated, but many deciduous orchards are sprinkler irrigated. Large numbers of orchards are irrigated by drip or trickle irrigation systems. Most deciduous orchards are in valley or foothill areas, with a few, such as apples and pears, up to 3,000 feet elevation.

Irrigated Row and Field Crops include a variety of sizes, shapes, and growing patterns. Cotton and asparagus can be three or four feet tall while others may be a foot or less high. Most irrigated row and field crops are grown in rows. Some may form 100 percent canopy while others may have significant bare areas between rows. Most are annuals, while others, such as asparagus and strawberries are perennial. The annuals are usually planted in spring and harvested in summer or fall. However, they may be planted in rotation with other irrigated crops and sometimes winter wheat or barley may be planted after harvest of a previous crop in the fall, dry farmed (during the wet winter and early spring months), and then harvested in the late spring. In some areas of southern California three crops may be grown in a year.

SPECIAL-STATUS SPECIES

The following discussion is based on a background search of special-status species that are documented in the CNDDB, the CNPS Inventory of Rare and Endangered Plants, and the USFWS records of listed endangered and threatened species from the IPAC database. The background search was regional in scope and focused on the documented occurrences within the 9-quadrangle (approximately ten miles) region for the Project site. Table 3.4-1 provides a list of special-status plants and Table 3.4-2 provides a list of special-status animals. Figure 3.4-2 presents the documented occurrences within the 9-quadrangle (approximately ten miles) region for the Project site.

TABLE 3.4-1: SPECIAL-STATUS PLANT SPECIES WHICH MAY OCCUR IN PROJECT AREA

SPECIES	*STATUS (FED./CA/ CNPS)*	*GEOGRAPHIC DISTRIBUTION*	*HABITAT AND BLOOMING PERIOD*	*PRESENCE DETERMINATION*
Alkali-sink goldfields *Lasthenia chrysantha*	–/–/1B.1	Solano, Sacramento, San Joaquin, Stanislaus, Merced, San Benito, Madera, Fresno, Kings, Tulare and Kern and counties.	Vernal pools. Alkaline. Between 0-200 m. February-June.	Not Present. Not observed during field survey. No appropriate habitat.
Big tarplant *Blepharizonia plumosa*	--/--/1B.1	San Francisco Bay area with occurrences in Alameda, Contra Costa, San Joaquin, Stanislaus, and Solano Counties	Valley and foothill grassland; 30-505 m. July-October.	Not Present. Not observed during field survey. No appropriate habitat.
Delta button-celery *Eryngium racemosum*	--/E/1B.1	San Joaquin River delta floodplains and adjacent Sierra Nevada foothills: Calaveras, Merced, San Joaquin, and Stanislaus Counties	Riparian scrub, seasonally inundated depressions along floodplains on clay soils; below 75 m. June-August.	Not Present. Not observed during field survey. No appropriate habitat.
Diamond-petaled California poppy *Eschscholzia rhombipetala*	–/–/1B.1	Interior foothills of south Coast Ranges from Contra Costa County to Stanislaus County. Carrizo Plain in San Luis Obispo County.	Grassland, chenopod scrub, on clay soils, where grass cover is sparse enough to allow growth of low annuals below 3,200 feet. March-April.	Not Present. Not observed during field survey. No appropriate habitat.
Greene's tuctoria *Tuctoria greenei*	E/R/1B.1	Butte, Fresno, Glenn, Madera, Merced, Modoc, Shasta, San Joaquin, Stanislaus, Tehama, and Tulare Counties	Vernal pools. Vernal pools in open grasslands. 25-1325 m. May-Jul)	Not Present. Not observed during field survey. No appropriate habitat.
Heartscale *Atriplex cordulata var. cordulata*	--/--/1B.2	Central Valley and interior valleys of the Coast Range from Butte to Kern counties.	Saline or alkaline sandy soils in grassland or saltbush scrub. March-October	Not Present. Not observed during field survey. No appropriate habitat.
Legenere *Legenere limosa*	–/–/1B.1	Primarily located in the lower Sacramento Valley, also from north Coast Ranges, northern San Joaquin Valley, and Santa Cruz Mountains.	Deep, seasonally wet habitats such as vernal pools, ditches, marsh edges, and riverbanks, below five hundred feet. May-June.	Not Present. Not observed during field survey. No appropriate habitat.

SPECIES	*STATUS (FED./CA/ CNPS)*	*GEOGRAPHIC DISTRIBUTION*	*HABITAT AND BLOOMING PERIOD*	*PRESENCE DETERMINATION*
Lemmon's jewelflower *Caulanthus lemmonii*	–/–/1B.2	Alameda, San Joaquin, Stanislaus, Merced, Fresno, San Benito, Monterey, Kings, San Luis Obispo, Kern, Santa Barbara, and Ventura counties.	Pinyon and juniper woodland, valley and foothill grassland. Between 75-1,585 m. March-May.	Not Present. Not observed during field survey. No appropriate habitat.
Lesser saltscale *Atriplex minuscula*	–/–/1B.1	Alameda, Butte, Fresno, Kern, Madera, Merced, Tulare counties.	Alkali grassland, alkali meadow, alkali scrub, and saltbush scrub, between 50 and 650 feet. May-October.	Not Present. Not observed during field survey. No appropriate habitat.
Prairie wedge grass *Sphenopholis obtusata*	–/–/2B.2	Alameda, Amador, Fresno, Mono, Inyo, Riverside, San Bernardino, San Diego, Stanislaus, Tulare counties.	Cismontane woodland, meadows, and seeps. Open moist sites, along rivers and springs, alkaline desert seeps. 15-2625 m. April-July.	Not Present. Not observed during field survey. No appropriate habitat.
Subtle orache *Atriplex subtilis*	–/–/1B.2	Butte, Fresno, Kings, Kern, Madera, Merced, Stanislaus, and Tulare counties.	Alkaline soils, valley, and foothill grassland between 130 and 330 feet. June-October.	Not Present. Not observed during field survey. No appropriate habitat.

SOURCES: CNDDB, 2025; DE NOVO PLANNING GROUP, 2025.

NOTES: CNPS = CALIFORNIA NATIVE PLANT SOCIETY

FEDERAL STATUS EXPLANATIONS:

E = ENDANGERED UNDER THE FEDERAL ENDANGERED SPECIES ACT.

STATE STATUS EXPLANATIONS:

E = ENDANGERED UNDER THE CALIFORNIA ENDANGERED SPECIES ACT.

R = RARE UNDER THE CALIFORNIA ENDANGERED SPECIES ACT

CALIFORNIA NATIVE PLANT SOCIETY (CNPS) STATUS EXPLANATIONS:

1B = RARE, THREATENED, OR ENDANGERED IN CALIFORNIA AND ELSEWHERE.

2 = RARE, THREATENED, OR ENDANGERED IN CALIFORNIA, BUT MORE COMMON ELSEWHERE.

3 = A REVIEW LIST – PLANTS ABOUT WHICH MORE INFORMATION IS NEEDED.

4 = PLANTS OF LIMITED DISTRIBUTION – A WATCH LIST

.1 = SERIOUSLY ENDANGERED IN CALIFORNIA (OVER 80% OF OCCURRENCES THREATENED-HIGH DEGREE AND IMMEDIACY OF THREAT).

.2 = FAIRLY ENDANGERED IN CALIFORNIA (20-80% OCCURRENCES THREATENED).

.3 = NOT VERY ENDANGERED IN CALIFORNIA (<20% OF OCCURRENCES THREATENED).

TABLE 3.4-2: SPECIAL-STATUS WILDLIFE AND FISH SPECIES WHICH MAY OCCUR IN PROJECT AREA

COMMON AND SCIENTIFIC NAME	STATUS FED./CA	GEOGRAPHIC DISTRIBUTION	HABITATS REQUIREMENTS	POTENTIAL FOR OCCURRENCE IN STUDY AREA
INVERTEBRATES				
American bumble bee *Bombus pensylvanicus*	--/--	Southern Arizona, New Mexico, and California	Long-tongued; forages on a wide variety of flowers including vetches (Vicia), clovers (Trifolium), thistles (Cirsium), sunflowers (Helianthus), etc. Nests above ground under long grass or underground. Queens overwinter in rotten wood or underground.	Low potential. Agricultural fields/orchards provide limited habitat.
Crotch's bumble bee *Bombus crotchii*	--/CE	Occur in the United States and Baja California in Mexico. Occur primarily in California, Western Desert, and adjacent foothills. Distributed throughout most of southwestern North America.	Coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia, and Eriogonum.	No potential to occur. Habitat is not present.
Conservancy fairy shrimp *Branchinecta conservatio*	E/SSI	Disjunct occurrences in Solano, Stanislaus, Merced, Tehama, Ventura, Butte, and Glenn Counties	Large, turbid vernal pools in annual grasslands. Inhabit astatic pools located in swales formed by old, braided alluvium; filled by winter/spring rains, last until June.	No potential to occur. Habitat is not present.
California linderiella *Linderiella occidentalis*	--/--	It has been documented on most landforms, geologic formations and soil types supporting vernal pools in California, at altitudes as high as 1,150 meters (3,770 feet) above sea level. Most common in the Central Valley.	Seasonal pools in unplowed grasslands with old alluvial soils underlain by hardpan or in sandstone depressions. Water in the pools has very low alkalinity, conductivity, and total dissolved solids.	No potential to occur. Habitat is not present.
Moestan blister beetle *Lytta moesta*	--/SSI	Historical distribution Fresno, Kern, Madera, Santa Cruz, Stanislaus, and Tulare counties.	Vernal pool grasslands within the Central Valley. Thought to depend on dried vernal pool habitat and solitary vernal pool bees as hosts.	None. Documented occurrences in the vicinity of the City's General Plan Area are considered extirpated. In addition, suitable vernal pool habitat to support this species is not present on-site.

COMMON AND SCIENTIFIC NAME	*STATUS: FED./CA*	*GEOGRAPHIC DISTRIBUTION*	*HABITATS REQUIREMENTS*	*POTENTIAL FOR OCCURRENCE IN STUDY AREA*
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T/SSI	Riparian and wetland habitats below 3,000 feet throughout the Central Valley	Riparian and oak savanna habitats with blue elderberry shrubs; elderberries are the host plant	No potential to occur. Habitat is not present.
Vernal pool fairy shrimp *Branchinecta lynchi*	T/SSI	Central Valley, central and south Coast Ranges from Tehama County to Santa Barbara County. Isolated populations also in Riverside County	Common in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swales, earth slump, or basalt-flow depression pools	No potential to occur. Habitat is not present.
Vernal pool tadpole shrimp *Lepidurus packardi*	E/SSI	Shasta County south to Merced County	Vernal pools and ephemeral stock ponds with clear to highly turbid water. Pools commonly found in grass bottomed swales of unplowed grasslands. Some pools are mud-bottomed and highly turbid.	No potential to occur. Habitat is not present.
Western bumble bee *Bombus occidentalis*	--/CE	Occur in the western United States and western Canada.	Once common and widespread, species have declined precipitously from central CA to southern B.C., from disease.	Moderate potential: Alfalfa fields and orchards provide some foraging opportunities.
FISH				
Steelhead, Central Valley DPS *Oncorhynchus mykiss irideus*	T/--	The Central Valley ESU includes all naturally spawned populations (and their progeny) in the Sacramento and San Joaquin Rivers and their tributaries, excluding San Francisco and San Pablo bays and their tributaries.	Preferred spawning habitat for steelhead is in cool to cold perennial streams with high dissolved oxygen levels and fast flowing water. Abundant riffle areas for spawning and deeper pools with sufficient riparian cover for rearing are necessary for successful breeding.	No potential to occur. Habitat is not present.

COMMON AND SCIENTIFIC NAME	*STATUS FED./CA*	*GEOGRAPHIC DISTRIBUTION*	*HABITATS REQUIREMENTS*	*POTENTIAL FOR OCCURRENCE IN STUDY AREA*
Green sturgeon - southern DPS *Acipenser medirostris pop. 1*	T/SSC	Spawns in the Sacramento, Feather, and Yuba Rivers. Presence in upper Stanislaus and San Joaquin Rivers may indicate spawning.	Spawning site fidelity. Non-spawning adults occupy marine/estuarine waters. Delta Estuary is important for rearing juveniles. Spawning occurs primarily in cool (11-15 C) sections of mainstem rivers in deep pools (8-9 meters) with substrate containing small to medium sized sand, gravel, cobble, or boulder.	No potential to occur. Habitat is not present.
Hardhead *Mylopharodon conocephalus*	--/SSC	Low to mid-elevation streams in the Sacramento-San Joaquin drainage.	Clear, deep pools with sand-gravel-boulder bottoms and slow water velocity. Not found where exotic Centrarchids predominate.	No potential to occur. Habitat is not present.
AMPHIBIANS				
California tiger salamander *Ambystoma californiense*	T/T	Central Valley, including Sierra Nevada foothills, up to approximately 1,000 feet, from Yolo County south to Tulare County. Also in the coastal valleys and foothills, from Sonoma County south to Santa Barbara County; Sonoma and Santa Barbara populations are listed as Federal Endangered.	Inhabits grassland, oak woodland, ruderal, and seasonal pool habitats. Seasonal ponds and vernal pools are crucial to breeding. Adults utilize mammal burrows as estivation habitat.	None. Considered extirpated in the vicinity of the Modesto General Plan Area, and extremely limited suitable habitat is present within the General Plan Area. Appropriate breeding habitat not present on the Project site. Estivation habitat limited by active agricultural activities in the vicinity and regular weed abatement on-site.
Western spadefoot *Spea hammondii*	--/SSC	Sierra Nevada foothills, Central Valley, Coast Ranges, coastal counties in southern California	Occurs primarily in grassland habitats but can be found in valley-foothill hardwood woodlands. Shallow temporary pools formed by winter rains are essential for breeding and egg-laying.	No potential to occur. Habitat is not present.
REPTILES				
Northern California legless lizard	--/SSC	California legless lizards are found in California and Mexico. They are found from western central California (San Joaquin and	Sandy or loose loamy soils under sparse vegetation. Soil moisture is essential. They prefer soils with a high moisture content.	No potential to occur. Habitat is not present.

COMMON AND SCIENTIFIC NAME	*STATUS FED./CA*	*GEOGRAPHIC DISTRIBUTION*	*HABITATS REQUIREMENTS*	*POTENTIAL FOR OCCURRENCE IN STUDY AREA*
Anniella pulchra		the coastal regions), through northwestern Baja California, and as far south as Colonia Guerrero, Mexico.		
BIRDS				
Cackling (=Aleutian Canada) goose *Branta hutchinsii leucopareia*	--/WL	The entire population winters in Butte Sink, then moves to Los Banos, Modesto, the Delta, and East Bay reservoirs; stages near Crescent City during spring before migrating to breeding grounds.	Winters on lakes and inland prairies. Forages on natural pasture or that cultivated to grain; loafs on lakes, reservoirs, ponds.	Low. May forage in upland agricultural habitats within the Project site. Aquatic habitat is not present.
Great blue heron *Ardea herodias*	--/--	Found throughout much of North America and into Central and South America. Common throughout California.	Colonial nester in tall trees, cliffsides, and sequestered spots on marshes. Rookery sites near foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	No potential to occur. Habitat is not present.
Least Bell's vireo *Vireo bellii pusillus*	E/E	Summer resident of southern California in low riparian in vicinity of water or in dry river bottoms.	Found below 2000 ft. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, mesquite.	No potential to occur. Habitat is not present.
Merlin *Falco columbarius*	--/WL	Most of the prairie Merlins move into the southern and central U.S. and northern Mexico, although some in urban areas remain there year-round.	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands and deserts, farms, and ranches. Clumps of trees or windbreaks are required for roosting in open country.	No potential to occur. Habitat is not present.
Snowy egret *Egretta thula*	--/--	Found mostly throughout North, Central, and South America. Breeds in coastal and inland wetlands. Their range has been limited over time due to habitat destruction and hunting. A migratory species that relocates from the United States and Canada to Mexico, Central	Prefer shallow water inlets for feeding such as salt-marsh pools, tidal channels, and bays. Mostly along coastal areas and islands. During wintertime they migrate and roost in the mangroves of the Caribbean.	Low. May forage in upland agricultural habitats within the Project site. Aquatic habitat is not present.

COMMON AND SCIENTIFIC NAME	STATUS: FED./CA	GEOGRAPHIC DISTRIBUTION	HABITATS REQUIREMENTS	POTENTIAL FOR OCCURRENCE IN STUDY AREA
		America, South America, and the West Indies.		
Song sparrow- "Modesto" population *Melospiza melodia*	--/SSC	Restricted to the Sacramento and extreme northern San Joaquin Valleys from Colusa County south to northern Stanislaus County.	Associated with woody riparian habitat and freshwater marshes.	No potential to occur. Habitat is not present.
Swainson's hawk *Buteo swainsoni*	--/T	Lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley. Highest nesting densities occur in Yolo County.	Breeds in stands with few trees in juniper- sage flats, riparian areas, eucalyptus stands, and oak savannah. Requires adjacent suitable foraging areas such as grasslands or grain fields supporting rodent populations.	Moderate. May forage in suitable agricultural habitats (open alfalfa fields to the north) within the Project site, however, the orchards do not provide high quality foraging opportunities. There was no nest sites observed or recorded, but there are known nest sites in the regional vicinity.
Tricolored blackbird *Agelaius tricolor*	--/E*, SSC	Permanent resident in the Central Valley from Butte County to Kern County. Breeds at scattered coastal locations from Marin County south to San Diego County; and at scattered locations in Lake, Sonoma, and Solano Counties. Rare nester in Siskiyou, Modoc, and Lassen Counties	Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grainfields. Habitat must be large enough to support fifty pairs with open water habitat in the vicinity.	No potential to occur. Habitat is not present.
Burrowing owl *Athene cunicularia*	--/SSC	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas. Rare along south coast	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Moderate. May forage in suitable agricultural habitats (open alfalfa fields to the north) within the Project site, however, the orchards do not provide high quality foraging opportunities. There were no burrowing owl burrows on the Project site, and the potential for nesting is low given the intensive agricultural activities.

COMMON AND SCIENTIFIC NAME	*STATUS FED./CA*	*GEOGRAPHIC DISTRIBUTION*	*HABITATS REQUIREMENTS*	*POTENTIAL FOR OCCURRENCE IN STUDY AREA*
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	T/E	In California, breeding distribution is now thought to be restricted to isolated sites in the Sacramento, Amargosa, Kern, Santa Ana, and Colorado River valleys.	Nests in riparian forests along the broad, lower flood-bottoms of larger river systems. Nests in dense vegetation including willow, and often mixed with cottonwoods, with lower story of blackberries, nettles, or wild grape.	No potential to occur. Habitat is not present.
MAMMALS				
Western mastiff bat *Eumops perotis californicus*	--/SSC	Occurs along the western Sierra primarily at low to mid elevations and widely distributed throughout the southern coast ranges. Distribution is tied to large rock structures which provide suitable roosting sites, including cliff crevices and cracks in boulders.	Found in a wide variety of habitats from desert scrub to montane conifer. Roosts and breeds in deep, narrow rock crevices, but may also use crevices in trees, buildings, and tunnels. Roost entrances must have vertical faces and be high enough to drop off to take flight.	None. City's General Plan Area is outside of known range. No suitable habitat occurs within the General Plan Area, including the Project site.
Townsend's big-eared bat *Corynorhinus townsendii*	--/C,SSC	This species is associated with a wide variety of habitats from deserts to mid-elevation mixed coniferous-deciduous forest.	Roost in limestone caves, lava tubes, mines, buildings, etc. Will only roost in the open, hanging from walls and ceilings. Extremely sensitive to disturbance.	No potential to occur. Habitat is not present.
Riparian (San Joaquin Valley) woodrat *Neotoma fuscipes riparia*	E/SSC	Historical distribution along the San Joaquin, Stanislaus, and Tuolumne Rivers. Current distribution limited to Caswell State Park and the confluence area of the San Joaquin and Stanislaus Rivers in San Joaquin, Stanislaus, and Merced Counties.	Riparian habitats with multi-storied riparian habitat including dense shrub cover, willow thickets, and an oak overstory. Need areas with mix of brush and trees, and suitable nesting sites in trees, snags, or logs.	No potential to occur. Habitat is not present.
Riparian brush rabbit *Sylvilagus bachmani riparius*	E/E	Limited to San Joaquin County at Caswell State Park near the confluence of the Stanislaus and San Joaquin Rivers and Paradise Cut area on Union Pacific right-of-way lands	Native valley riparian habitats with large clumps of dense shrubs, low-growing vines, and some tall shrubs and trees including willows, wild roses, and blackberry.	No potential to occur. Habitat is not present.

COMMON AND SCIENTIFIC NAME	*STATUS FED./CA*	*GEOGRAPHIC DISTRIBUTION*	*HABITATS REQUIREMENTS*	*POTENTIAL FOR OCCURRENCE IN STUDY AREA*
San Joaquin kit fox *Vulpes macrotis mutica*	E/T	Principally occurs in the San Joaquin Valley and adjacent open foothills to the west, from Kern County north to Contra Costa County. Restricted to the western foothills of the San Joaquin Valley in the northern portion of the range and records become sparse in this area.	Annual grasslands or grassy open stages with scattered shrubby vegetation including saltbush scrub, grassland, oak, savanna, and freshwater scrub. Need loose-textured sandy soils for burrowing, suitable prey base, and short grass habitats.	No potential to occur. Habitat is not present.

SOURCE: CNDDB 2025; CNPS 2025.

FEDERAL

E = LISTED AS ENDANGERED UNDER THE FEDERAL ENDANGERED SPECIES ACT.

T = LISTED AS THREATENED UNDER THE FEDERAL ENDANGERED SPECIES ACT.

C = CANDIDATE SPECIES UNDER THE FEDERAL ENDANGERED SPECIES ACT.

- = NO LISTING

STATE

E = LISTED AS ENDANGERED UNDER THE CALIFORNIA ENDANGERED SPECIES ACT.

T = LISTED AS THREATENED UNDER THE CALIFORNIA ENDANGERED SPECIES ACT.

C = CANDIDATE SPECIES UNDER THE CALIFORNIA ENDANGERED SPECIES ACT.

FP = FULLY PROTECTED UNDER THE CALIFORNIA FISH AND GAME CODE.

SSC = SPECIES OF SPECIAL CONCERN IN CALIFORNIA.

SSI = SPECIAL-STATUS INVERTEBRATE IN CALIFORNIA.

- = NO LISTING.

** CALIFORNIA FISH AND GAME COMMISSION EMERGENCY LISTING DECEMBER 3, 2014. STATUS OF ENDANGERED DECEMBER 29, 2014 THROUGH JUNE 30, 2015.*

3.4.2 REGULATORY SETTING

There are several regulatory agencies whose responsibility includes the oversight of the natural resources of the state and nation including the California Department of Fish and Wildlife (CDFW), USFWS, U.S. Army Corps of Engineers (USACE), and the Central Valley Regional Water Quality Control Board (CVRWQCB). These agencies often respond to declines in the quantity of a particular habitat or plant or animal species by developing protective measures for those species or habitat type. The following is an overview of the federal, state, and local regulations that are applicable to the proposed Project.

FEDERAL

Federal Endangered Species Act

The Federal Endangered Species Act (FESA) of 1973 (16 U.S.C. §1531 et seq.) defines an endangered species as any species or subspecies that is in danger of extinction throughout all or a significant portion of its range. A threatened species is defined as any species or subspecies that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Once a species is listed it is fully protected from a "take" unless a take permit is issued by the USFWS. A take is defined as the harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting wildlife species or any attempt to engage in such conduct, including modification of its habitat (16 U.S.C., 1532, 50 C.F.R. 17.3). Proposed endangered or threatened species are those species for which a proposed regulation, but not a final rule, has been published in the Federal Register.

Migratory Bird Treaty Act

To kill, posses, or trade a migratory bird, bird part, nest, or egg is a violation of the Federal Migratory Bird Treaty Act (FMBTA 16 U.S.C., §§703-712), unless it is in accordance with the regulations that have been set forth by the Secretary of the Interior.

Federal Bald and Golden Eagle Protection Act

The Federal Bald and Golden Eagle Protection Act (16 U.S.C., §668) provides regulations to protect bald and golden eagles as well as their nests and eggs from willful damage or injury.

Clean Water Act – Section 404

Section 404 of the CWA (33 U.S.C., §1344) regulates all discharges of dredged or fill material into waters of the U.S. Discharges of fill material includes the placement of fill that is necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; and fill for intake and outfall pipes and subaqueous utility lines [33 C.F.R., §328.2(f)].

Waters of the U.S. include lakes, rivers, streams, intermittent drainages, mudflats, sandflats, wetlands, sloughs, and wet meadows. Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" [33 C.F.R., §328.3(b)]. Waters of the U.S. exhibit a defined bed and bank and ordinary high-water mark (OHWM). The OHWM is defined by the USACE as "that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" [33 C.F.R. §328.3(e)].

The USACE is the agency responsible for administering the permit process for activities that affect waters of the U.S. Executive Order 11990 is a federal implementation policy, which is intended to result in no net loss of wetlands in accordance with 33 C.F.R., Part 325.

Clean Water Act – Section 401

Section 401 of the CWA (33 U.S.C. 1341) requires an applicant who is seeking a 404 permit to first obtain a water quality certification from the CVRWQCB. To obtain the water quality certification, the CVRWQCB must certify that the proposed fill would be consistent with the standards set forth by the state.

Rivers and Harbors Act of 1899

Section 10 of the Rivers and Harbors Act (33 U.S.C., §403) prohibits the obstruction or alteration of any navigable water of the United States. The Act requires authorization from the USACE for any excavation or deposition of materials into these waters or for any work that could affect the course, location, condition, or capacity of rivers or harbors.

STATE

Fish and Game Code §2050-2097 – California Endangered Species Act

The California Endangered Species Act (CESA) protects certain plant and animal species when they are of special ecological, educational, historical, recreational, aesthetic, economic, and scientific value to the people of the State. CESA established that it is State policy to conserve, protect, restore, and enhance endangered species and their habitats.

CESA was expanded upon the original Native Plant Protection Act and enhanced legal protection for plants. To be consistent with Federal regulations, CESA created the categories of "threatened" and "endangered" species. It converted all "rare" animals into the Act as threatened species but did not do so for rare plants. Thus, there are three listing categories for plants in California: rare, threatened, and endangered. Under State law, plant and animal species may be formally designated by official listing by the California Fish and Game Commission.

Fish and Game Code §1900-1913 – California Native Plant Protection Act

In 1977 the State Legislature passed the Native Plant Protection Act (NPPA) in recognition of rare and endangered plants of the state. The intent of the law was to preserve, protect, and enhance endangered plants. The NPPA gave the California Fish and Game Commission the power to designate native plants as endangered or rare, and to require permits for collecting, transporting, or selling such plants. The NPPA includes provisions that prohibit the taking of plants designated as "rare" from the wild, and a salvage mandate for landowners, which requires notification of the CDFW 10 days in advance of approving a building site.

Fish and Game Code §3503, 3503.5, 3800 – Predatory Birds

Under the California Fish and Game Code, all predatory birds in the order Falconiformes or Strigiformes in California, called “raptors,” are protected. The law indicates that it is unlawful to take, possess, or destroy the nest or eggs of any such bird unless it is in accordance with the code. Any activity that would cause a nest to be abandoned or cause a reduction or loss in a reproductive effort is considered a take. This includes construction activities.

Fish and Game Code §1601-1603 – Streambed Alteration

Under the California Fish and Game Code, CDFW has jurisdiction over any proposed activities that would divert or obstruct the natural flow or change the bed, channel, or bank of any lake or stream. Private landowners or project proponents must obtain a “Streambed Alteration Agreement” from CDFW prior to any alteration of a lakebed, stream channel, or their banks. Through this agreement, CDFW may impose conditions to limit and fully mitigate impacts on fish and wildlife resources. These agreements are usually initiated through the local CDFW warden and will specify timing and construction conditions, including any mitigation necessary to protect fish and wildlife from impacts of the work.

Public Resources Code §21000 et seq. - California Environmental Quality Act

CEQA states that a species that is not listed on the federal or state endangered species list may be considered rare or endangered if the species meets certain criteria. (CEQA Guidelines § 15380) Species that are not listed under FESA or CESA, but are otherwise eligible for listing (i.e., candidate or proposed) may be protected by the local government until the opportunity to list the species arises for the responsible agency.

Species that may be considered for review are included on a list of “Species of Special Concern,” developed by the CDFW. Additionally, the California Native Plant Society (CNPS) maintains a list of plant species native to California that have low populations, limited distribution, or are otherwise threatened with extinction. This information is published in the Inventory of Rare and Endangered Vascular Plants of California. List 1A contains plants that are believed to be extinct. List 1B contains plants that are rare, threatened, or endangered in California and elsewhere. List 2 contains plants that are rare, threatened, or endangered in California, but more numerous elsewhere.

California Wetlands Conservation Policy

In August 1993, the Governor announced the "California Wetlands Conservation Policy." The goals of the policy are to establish a framework and strategy that will:

- Ensure no overall net loss and achieve a long-term net gain in the quantity, quality, and permanence of wetland acreage and values in California in a manner that fosters creativity, stewardship, and respect for private property.
- Reduce procedural complexity in the administration of State and federal wetland conservation programs.
- Encourage partnerships to make landowner incentive programs and cooperative planning efforts the primary focus of wetland conservation and restoration.

The Governor also signed Executive Order W-59-93, which incorporates the goals and objectives contained in the new policy and directs the Resources Agency to establish an Interagency Task Force to direct and coordinate administration and implementation of the policy.

Natural Community Conservation Planning Act

The Natural Community Conservation Planning Act (Fish and Game Code, §§2800-2835) provides long-term protection of species and habitats through regional, multi-species planning before the special measures of the CESA become necessary.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Water Code, §13000 et seq.) authorizes the SWRCB to regulate state water quality and protect beneficial uses.

Water Quality Control Plan for the Sacramento-San Joaquin River Basins

The Water Quality Control Plan for the Sacramento-San Joaquin River Basins (Basin Plan), adopted by the CVRWQCB in 1998, identifies the beneficial uses of water bodies and provides water quality objectives and standards for waters of the Sacramento River and SJR basins, including the Delta.

State and federal laws mandate the protection of designated “beneficial uses” of water bodies. State law defines beneficial uses as “domestic; municipal; agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves” (Water Code Section 13050[f]). Additionally beneficial uses of the SJR include groundwater recharge and freshwater replenishment. Major issues and the general conditions of existing beneficial uses in the SJR are as follows:

- Agricultural Supply: Extensive use is made of SJR and Delta waters for agricultural purposes. Annual water diversions from the Delta by the State Water Project (SWP) and the Central Valley Project (CVP) for agriculture are estimated to reach 4.3 million acre-feet (MAF) per year by 2030. In addition, about 2,000 privately owned agricultural water supply diversions are scattered throughout the Delta, consisting of riverside pumping stations.

- Recreation: Water-dependent recreation uses of the SJR and the Delta include swimming, wading, waterskiing, sport fishing, and a variety of other activities that involve contact with the water. Noncontact (water-enhanced) recreation uses include picnicking, camping, pleasure boating, hunting, bird watching, education, and aesthetic enjoyment.
- Groundwater Recharge: Water from the SJR and the Delta recharges the San Joaquin Valley groundwater basin. Recharge serves to maintain salt balance in the soil column, prevent saltwater intrusion into freshwater aquifers, and provide for water supplies. Groundwater is replenished through deep percolation of streamflow, precipitation, and applied irrigation water. Groundwater quality is adequate throughout the San Joaquin Valley and the Delta, although at shallow depths within the Delta the water is often saline and contains high levels of total dissolved solids (TDS) and dissolved minerals. Enforceable TDS standards do not exist for drinking water. The need for treatment depends on consumer acceptance.
- Fish and Wildlife: The SJR and the waterways of the Delta provide important habitat for a diverse variety of aquatic life and terrestrial wildlife. This includes temporary habitat and migration routes for anadromous and other migratory species, as well as permanent habitat for resident species. Fish dependent on the Delta as a migration corridor, nursery, or permanent residence include Chinook salmon, steelhead, delta smelt, Sacramento splittail, striped bass, American shad, sturgeon, catfish, largemouth bass, and numerous other estuary and freshwater species. The amount and quality of water flowing through the Delta influences the overall productivity of the area on an annual basis. A large assemblage of wildlife uses the Delta either seasonally or year-round, including waterfowl; migratory and resident songbirds; mice, rabbits, and other small mammals; water dependent mammals, such as beaver and muskrat; and predators such as skunks, raccoon, northern harrier, and coyote.

LOCAL

City of Modesto Urban Area General Plan

SWPH-1: For proposed development consistent with the adopted Urban Area General Plan on lands within the Baseline Developed Area and Downtown, exclusive of lands within the Dry Creek and Tuolumne River Comprehensive Planning Districts, an assessment of whether any potential habitat for special-status species is present within proposed development areas shall be made. No further biological study is warranted unless habitat is present or if specific information concerning the known or potential presence of significant biological resources is identified in future updates of the California Natural Diversity Database, or through formal or informal input received from resource agencies or other qualified sources (UAGP Policy VII-E.2[a]).

SWPH-2: For all lands within the Planned Urbanizing Area, site-specific surveys shall be conducted by a qualified biologist to determine whether any sensitive natural communities or species are present within the proposed development area. These studies shall particularly focus on proposed development within any lands included within a potential biological resource study area as delineated on Figure V-7-1 in the Final Program Environmental Impact Report (Riparian Corridor Diagram). Prior to considering development applications, the City shall

coordinate with the USFWS and CDFW regarding listed species and potential for impacts. The City shall employ the measures recommended by the USFWS and/or CDFW to avoid an incidental take.

Conduct surveys at the appropriate season to best determine the likelihood of occurrence and should employ accepted methodologies as determined by CDFW and the USFWS. The results of such surveys should be recorded onto the City's existing biological resources map for future planning purposes. (UAGP Policy VII-E.3[a])

SWPH-3: Avoid and preserve all areas occupied or potentially occupied by special-status species, where feasible. Protect areas that can be avoided by fencing, signage, or establishment of buffer zones appropriate to the species and/or habitat involved. Design fencing to allow passage of small mammals and avoid impacts to wildlife movement or dispersal.

Generally, a minimum 100-foot buffer of undeveloped land from identified sensitive resources would be necessary. Improve this buffer area through sustainable habitat restoration. Require protected habitat to be managed to contribute to the long-term conservation of the species and ecosystems on which they depend.

Where it is determined that state and/or federally listed species are present, consult with the CDFW and/or USFWS in accordance with the California and/or federal Endangered Species Acts to determine mitigation measures to avoid and minimize impacts to those species. If other special-status species are determined to be present and cannot be avoided, implement species-specific mitigation measures to minimize impacts to those species through informal consultation with CDFW and/or USFWS. Incorporate the mitigation measures and other recommendations of these agencies into the development plan. (UAGP Policy VII-E.3[b])

SWPH-4: Additional measures to protect sensitive habitats may be implemented. Potential measures to be implemented may include measures listed in the following table.

POLICIES FOR SENSITIVE BIOLOGICAL HABITATS

a. Avoid disturbance in wetland areas, including vernal pools and riparian communities along rivers and streams. Avoidance of these areas would include implementing a no-disturbance buffer of at least 100 feet from the high-water mark of channels that have no riparian vegetation and 250 feet from the outermost high-water edge of the marsh wetlands, vernal pools, and swales. Riparian vegetation shall be protected with a 200-foot-wide no- disturbance buffer delineated from the high-water mark of the surface water body. If complete avoidance is not possible, the disturbance to wetland areas shall be minimized to the maximum extent possible, with restoration of the disturbed area provided. The topsoil within the wetland shall be removed and kept separate from other spoils to be used in restoration. New vegetation should consist of similar native species to those removed. Activities with the potential to impact wetlands shall occur only under permit (either individual or nationwide) from the U.S. Army Corps of Engineers. Prior to development, wetland areas shall be delineated by a qualified biologist in accordance with the delineation standards of the Corps.
b. Where wetlands or other sensitive habitats cannot be avoided, replacement habitat at a nearby off-site location shall be provided in accordance with the requirements of the applicable federal or state agency.

The replacement habitat should be substantially equivalent to the nature of the habitat lost and should be provided at a ratio suitable to assure that, at a minimum, there is no net loss of habitat acreage or value. The replacement habitat shall be set aside in perpetuity for habitat use. Typically, the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service and California Department of Fish and Wildlife require a minimum of two replacement acres for every one acre of riparian or wetland habitat lost.
c. Confine work in or near streams, wetlands, and vernal pools to the dry season between May 1 and October 15. Minimize road widths at stream or wetland crossings, and construct roads at right angles to reduce adverse impacts to riparian corridors.
d. Preserve existing and mature native trees to the extent feasible, except when such trees are diseased or otherwise constitute a hazard to persons or property. During construction, all activities and storage of equipment should occur outside the drip lines of any trees to be preserved.
e. All areas within identified riparian corridors shall be maintained in a natural state, or limited to recreation and open space uses. Recreation should be limited to passive forms of recreation, with any facilities constructed to be non-intrusive to wildlife or sensitive species.
f. New landscaping within or immediately adjacent to the identified riparian corridors should employ native species ecologically consistent with natural riparian habitats.
g. Within the identified riparian corridors, environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses consistent with these values shall be allowed (e.g., nature education and research, fishing, habitat enhancement and protection).
h. In accordance with the MBTA and CFGC and to avoid disturbance to active bird nests, any tree or shrub removal shall occur during the nonbreeding season for birds (September through January). If construction activities or tree removal must occur during the breeding season (February through August), surveys for active nests shall be conducted by a qualified biologist no more than 30 days prior to the start of construction. A no- disturbance buffer determined by a qualified biologist and dependent upon species and nest location of up to 250 feet shall be delineated around active nests until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival.
i. The General Plan Area may contain elderberry shrubs. All projects within the General Plan Area should evaluate the project site conditions for the potential for removal of elderberry shrubs. If elderberry shrubs with one or more stems 1.0 inch or greater in diameter at ground level are present, appropriate mitigation should be discussed and prior to any subsequent project approvals, early consultation with USFWS is recommended. The removal and trimming of elderberry shrubs are regulated by the USFWS.
j. Burrowing owls are known to occur near the General Plan Area in agricultural and grassland habitats and vacant lots within developed habitats. Impacts to burrowing owls and their nest burrows must be avoided to comply with the Federal Migratory Bird Treaty Act (MBTA) and Department of Fish and Game Code Sections 3503, 3503.5, and 3513. Per CDFW's Staff Report on Burrowing Owl Mitigation (CDFG 2012), if any ground- disturbing activities occur in potential burrowing owl habitat during the nesting (February 1 through August 31) or non-nesting season (September 1 through January 31), implementation of avoidance measures is required. A burrowing owl habitat assessment is recommended for areas containing potentially suitable habitat: agricultural, grassland, and vacant parcels if at least 2.5 acres in size or contiguous with undeveloped habitat of at least 2.5 acres in size. Agricultural habitat determined to be suitable includes pastureland, non-irrigated cropland, and ruderal or fallow fields; orchards, vineyards, and other active croplands with vegetation greater than 15 inches in height are not considered suitable habitat. Vacant or ruderal parcels are considered potentially suitable habitat if ground squirrels,

debris piles, and/or pipes are present to provide burrows or burrow surrogates for burrowing owl to occupy.

If burrowing owl habitat is confirmed present within a maximum of 500 feet of the project site, no visual barriers are present between the project site and the burrowing owl habitat, and no owls were observed to occupy the habitat at the time of the assessment, then one preconstruction site survey (take avoidance survey) shall be conducted no more than 14 days prior to the onset of any ground-disturbing activities. Further, if the preconstruction survey determines that burrowing owls occupy the site and impacts to occupied burrows cannot be avoided, then passive relocation shall be conducted as described below during the non-nesting season or if the burrowing owl(s) are determined to not be actively nesting. Prior to passive relocation, a burrowing owl exclusion, mitigation, and monitoring plan will be prepared in accordance with the CDFW Staff Report on Burrowing Owl Mitigation (CDFG 2012) and submitted to the City for approval before any constructive activities can proceed that may impact the species.

The Staff Report on Burrowing Owl Mitigation (CDFG 2012) recommends that impacts to occupied burrows during the nesting season be avoided by implementation of a no-disturbance buffer zone of a minimum of 250 feet, unless a qualified biologist verifies through noninvasive methods that either: 1) the burrowing owls have not begun egg laying and incubation; or 2) that juveniles from the occupied nest are foraging independently and are capable of independent survival. Failure to implement this buffer zone could cause adult burrowing owls to abandon nests, cause eggs or young to be directly impacted (crushed), and/or result in reproductive failure.

Burrowing owls may be passively relocated if the burrowing owls have been determined not to be actively nesting and the burrowing owl exclusion, mitigation, and monitoring plan has been approved by the City and CDFW.

k. The State-threatened Swainson's hawk is known to nest within the General Plan Area in grassland, riparian, and agricultural habitats. Because of the loss of suitable foraging habitat and existing nesting habitat that may occur during area development, mitigation measures compensating for these potential losses of habitat shall be included. The CDFW considers the removal of known raptor nest trees, even outside of the nesting season, to be a significant impact under CEQA and, in the case of Swainson's hawk, could also result in "take" under the CESA. This is especially true in species such as Swainson's hawk, which exhibit high site fidelity to nest trees and nesting area year after year (CDFG 1994).

To avoid such impacts, surveys for nesting Swainson's hawk shall be conducted for projects within riparian, grassland, and agricultural habitats as mapped by Figures 3.4-2a through 3.4-2d or for projects within 0.25 mile of such habitats (see Figure V-7-2) and containing potential nest trees (trees greater than 20 feet in height). Surveys shall follow the methodology developed by the Swainson's Hawk Technical Advisory Committee (2000) and survey potential nest trees within 0.25 mile of disturbance activities.

If ground disturbance is initiated during the nesting season (March 15 – July 31), two pre-construction surveys shall be conducted with surveys not recommended between April 20 and June 10 because of difficulty in detecting active Swainson's hawk nests during the egg incubation period. The first survey may be conducted up to two months prior to initial activities. The second survey shall occur within 14 days of project initiation.

If an active nest is observed, a no-disturbance buffer zone shall be established in coordination with CDFW. No-disturbance buffers for new and intensive disturbances are typically 0.25 mile surrounding the nest location until the nest has been determined to no longer be active by a qualified biologist; however, the buffer may be reduced in consultation with CDFW and is dependent upon nest location, existing disturbance barriers, and baseline disturbance levels.

- No surveys are required if ground disturbance is initiated outside of the nesting season; however, impacts to known nest trees should be avoided at all times of year. If avoidance of a known nest tree (documented nest site within the previous five years) is not feasible, consultation with the CDFW is warranted prior to taking any action, and a determination of "take" potential under CESA or under Fish and Game Code Sections 3503.5 and 3513 will be made. Project-related "take" (as defined in Section 86 of the Fish and Game Code) of Swainson's hawk must be completely avoided or a State Incidental Take Permit, pursuant to Section 2081 of the Fish and Game Code, would be warranted.

In addition, the Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California (CDFG 1994) recommends that for projects impacting foraging habitat within one mile of an active nest tree, habitat be protected in perpetuity at a 1:1 ratio for each acre of Swainson's hawk foraging habitat impacted; for projects greater than one mile but within five miles of an active nest tree, 0.75 acre of habitat should be protected in perpetuity for every acre of foraging habitat impacted (0.75:1); and for projects greater than 5 miles but within ten miles of an active nest tree, 0.5 acre of habitat should be protected in perpetuity for every acre of foraging habitat impacted (0.5:1). Per the Staff Report (CDFG 1994), suitable foraging habitat includes annual grasslands, pasturelands, alfalfa and cereal cropland, fallow fields, and beet, tomato, and other low-growing row or field crops. Vineyards, orchards, and cotton fields are considered unsuitable foraging habitat because of vegetation height and/or density (CDFG 1994). The project sponsor should provide funding of a sufficient long-term endowment for the management of the protected properties.

(Note: This table does not use the standard nomenclature to be consistent with the reference contained in the Urban Area General Plan.)

COMPREHENSIVE PLANNING DISTRICTS IN RIPARIAN CORRIDORS

SWPH-5: All three riparian corridors within the planning area (Dry Creek, Stanislaus River, Tuolumne River) are designated as Comprehensive Planning Districts under the Urban Area General Plan. Development within these areas will be subject to a Comprehensive Plan and a Focused EIR prepared for that plan (UAGP Exhibit III-1). Preparation of a Park Master Plan shall suffice as the Comprehensive Plan for these areas. However, until a Park Master Plan is completed for these areas, the Tuolumne River Regional Park Master Plan shall be the guiding plan for the Dry Creek CPD. The TRRP Master Plan shall suffice as the Comprehensive Plan for Tuolumne River Comprehensive Planning District. The Comprehensive Planning Districts for these three corridors specify that land uses will be limited to "open space" use (i.e., low-impact recreational facilities, public ownership, agriculture, low-density residential uses not exceeding one dwelling per ten acres). Other open space policies specific to the riparian corridors require that riverfront vegetation be consistent with riparian habitat, environmentally sensitive habitat areas be protected against significant disruptions of habitat values, and land uses be limited to those dependent on the riparian resource. (UAGP Policies VII-B.7[j] through [q]) Measures in the above table shall also apply to the Comprehensive Planning Districts for the riparian corridors.

The Dry Creek Comprehensive Planning District intends for its 510 acres to become a linear park (UAGP Exhibit II-5). The 810-acre Stanislaus River Comprehensive Planning District is to become a regional park (UAGP Exhibit II-21).

The Tuolumne River Comprehensive Planning District contains 1,380 acres, including a significant amount of public land owned by a joint-powers authority (JPA) made up of

Modesto, Ceres, and Stanislaus County. It is a Regional Park designed to serve the residents of Modesto, Ceres, Stanislaus County, and the greater San Joaquin Valley area (UAGP Exhibit II-24). The JPA has completed and the City has certified a Program EIR for the Tuolumne River Regional Park (TRRP) Master Plan. The TRRP Program EIR contains mitigation measures addressing impacts on sensitive plant and wildlife habitat relating to recreation facility development and conservation activities within the TRRP.

3.4.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed Project will have a significant impact on biological resources if it will:

- 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.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- 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.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

IMPACTS AND MITIGATION

Impact 3.4-1: The proposed Project, with mitigation, would not have a direct or indirect effect on special-status invertebrate species (Less than Significant with Mitigation)

There are nine special-status invertebrates that are documented within the nine-quadrangle region for the Project site according to the CNDDB, including: American bumble bee (*Bombus pensylvanicus*), Crotch's bumble bee (*Bombus crotchii*), Conservancy fairy shrimp (*Branchinecta conservation*), California linderiella (*Linderiella occidentalis*), Moestan blister beetle (*Lytta moesta*), valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardi*), and western bumble bee (*Bombus occidentalis*) (Refer to Table 3.4-2).

VERNAL POOL INVERTEBRATES

California linderiella (*Linderiella occidentalis*) and Conservancy fairy shrimp (*Branchinecta conservation*) exclusively inhabit vernal pools or other seasonally ponded wetlands that sustain inundation during the winter before drying in the late spring. The Project site does not provide suitable habitat for this species.

Vernal pool fairy shrimp (VPFS) is a federal threatened invertebrate found in the Central Valley, central and south Coast Ranges from Tehama County to Santa Barbara County. They are commonly found in vernal pools and in sandstone rock outcrop pools. VPFS is not anticipated to be directly affected by any individual phase or component of the proposed Project because there is not appropriate vernal pool habitat in the Project site.

Vernal pool tadpole shrimp (VPTS) is a federal endangered invertebrate found in vernal pools and stock ponds from Shasta County south to Merced County. VPTS is not anticipated to be directly affected by any individual phase or component of the proposed Project because there is not appropriate vernal pool habitat in the Project site.

BEES

American bumble bee (*Bombus pensylvanicus*), crotch bumble bee (*Bombus crotchii*), western bumble bee (*Bombus occidentalis*) may occur in the region, and in the Project area at times. American bumble bee is not specifically protected under state or federal law.

The American bumble bee is known to occur in southern Arizona, New Mexico, and California. This long-tongued bee forages on a wide variety of flowers including vetches (Vicia), clovers (Trifolium), thistles (Cirsium), and sunflowers (Helianthus). This species nests above ground under long grass or underground, while the queens overwinter in rotten wood or underground.

The crotch bumble bee occurs primarily in California, including the Mediterranean region, Pacific Coast, Western Desert, Great Valley, and adjacent foothills through most of southwestern California. It also occurs in Mexico (Baja California and Baja California Sur) and has been documented in southwest Nevada, near the California border. Their natural habitat is grassland and scrub areas, requiring a hotter and drier environment than other bumblebee species. This species can only tolerate a very narrow range of climatic conditions. This is a non-migratory species of bumble bee that nests underground, often in abandoned rodent dens.

The western bumble bee was once one of the most common bee species in Northwest America. They have been found from the Mediterranean California all the way up to the Tundra regions of Alaska, making them one of the bees with the widest geographic range. In the past decade, the population has dropped over 40% and has been especially significant in the Pacific states from California to Washington. Declines have been attributed to a parasite, as well as an increase in the honeybees. Their natural habitat is shrubland, grassland, and artificial/terrestrial areas. They have been observed on a wide variety of plants in open grassy areas, urban parks and gardens, chaparral and shrub areas, and mountain meadows. This species is considered to be a more effective pollinator

than honeybees and they have been commercially reared to pollinate crops such as alfalfa, avocados, apples, cherries, blackberries, cranberries, and blueberries.

Although not "natural habitat," the existing agricultural fields and orchards can provide habitat for bumble bee species. The alfalfa fields can serve as foraging habitat for the western bumble bee, but they are less than optimal habitat crotch bumble bee or American bumble bee. The orchards are also foraging potential habitat for western bumble bees, and they provide some potential refuge opportunities. The potential for the agricultural fields/orchards to be used for foraging is dependent on the intensity and type of agricultural activities that occur at any given time.

BEETLES

Essential habitat for Molestan blister beetle is not present in the Project site. The proposed Project is not expected to have a significant impact on this species.

Valley elderberry longhorn beetle (VELB) is a federal threatened insect, proposed for delisting. Elderberry (*Sambucus* sp.), which is a primary host species for valley elderberry longhorn beetle (VELB) is a common plant found throughout the region, but especially in riparian zones. Essential habitat for VELB is not present in the Project site. The proposed Project is not expected to have a significant impact on this species.

CONCLUSION

Habitat for Conservancy fairy shrimp (*Branchinecta conservation*), California linderiella (*Linderiella occidentalis*), Moestan blister beetle (*Lytta moesta*), valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), vernal pool fairy shrimp (*Branchinecta lynchi*), and vernal pool tadpole shrimp (*Lepidurus packardi*), and crotch bumble bee (*Bombus crotchii*) is not found on the Project site. There is limited habitat along the field edges that can provide foraging opportunities for American bumble bee (*Bombus pensylvanicus*). Approximately 2.1 acres of foraging habitat for this species is found on-site. The alfalfa fields and almond orchards provide some habitat for western bumble bees (*Bombus occidentalis*). This has a ***potentially significant*** impact.

MITIGATION MEASURE(S)

Mitigation Measure 3.4-1: *The Project applicant shall implement the following measure to avoid or minimize impacts on special-status bumble bees:*

- *A qualified biologist(s) shall conduct a preconstruction survey within seven (7) days of the commencement of work. If special-status bees of any species are observed, they shall be photographed for identification. If construction begins between March 1 and November 1, the ground shall also be searched during the survey for active bumble bee colonies. If bee colonies are identified, these colonies shall be demarcated with a flagged avoidance buffer, as determined by a qualified biologist and shall be avoided during the active season from March 1 through November 1, or until the qualified biologist has determined that the colony is no longer active or until the colony is relocated.*

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Mitigation Measure 3.4-1 requires a preconstruction survey for special-status bumble bees and avoidance and mitigation measures should bumble bees be found. With implementation of the above mitigation measures, the proposed Project would have a ***less than significant*** impact on special-status invertebrate species.

Impact 3.4-2: The proposed Project would not have a direct or indirect effect on special-status reptile and amphibian species (Less than Significant)

According to the CNDDB, there are three special-status amphibian and reptile species that are documented within the nine-quadrangle Project region, the: California tiger salamander (*Ambystoma californiense [A. tigrinum c.]*), western spadefoot (*Spea hammondii*), and northern California legless lizard (*Anniella pulchra*). The potential to have a direct or indirect substantial effect on special-status reptile and amphibian species, including through substantial reduction of habitat, substantial reduction of the number or restriction in the range of a listed species, elimination of a reptile or amphibian community, or a drop in population levels below self-sustaining levels, is discussed below.

CALIFORNIA TIGER SALAMANDER

The California tiger salamander (CTS) (*Ambystoma californiense*) requires a combination of aquatic breeding habitat and upland estivation habitat within approximately one mile of each other. This species inhabits grassland, oak woodland, ruderal, and seasonal pool habitats. Seasonal ponds and vernal pools are crucial to breeding, while adults utilize mammal burrows as estivation habitat. This species is considered extirpated in the vicinity of the Modesto General Plan Area, and extremely limited suitable habitat is present within the General Plan Area. Appropriate breeding habitat is not present on the Project site. Estivation habitat on the Project site is also limited by active agricultural activities in the vicinity and regular weed abatement on-site. The Project site does not provide suitable habitat for this species. The proposed Project would not have a direct or indirect impact on CTS.

WESTERN SPADEFOOT

Western spadefoot (WS) (*Spea hammondii*), a California Species of Special Concern, occurs primarily in grassland habitats, but can also be found in valley-foothill hardwood woodlands. The western spadefoot requires shallow, temporary pools or streams during breeding season and egg-laying. Where natural vernal pools are absent, western spadefoots may make use of artificial ponds and stock tanks. Most of the year, western spade foot resides in burrows at depths of up to three feet. Adult western spadefoot movement is limited to rainy or humid nights during the breeding season; adults are rarely found on the surface at other times of the year. This species feeds on invertebrates such as insects and worms. The Project site does not provide suitable habitat for this species. The proposed Project would not have a direct or indirect impact on WS.

NORTHERN CALIFORNIA LEGLESS LIZARDS

The Northern California legless lizards (NCLL) (*Anniella pulchra*) are found from western central California (San Joaquin and the coastal regions), through northwestern Baja California, and as far south as Colonia Guerrero, Mexico. This species prefers sandy or loose loamy soils under sparse vegetation. Soil moisture is essential as they prefer soils with a high moisture content. The Project site does not provide suitable habitat for this species. The proposed Project would not have a significant impact on NCLL.

CONCLUSION

The proposed Project is not anticipated to affect California tiger salamander (*Ambystoma californiense [A. tigrinum c.]*), western spadefoot (*Spea hammondii*), and northern California legless lizard (*Anniella pulchra*). Suitable habitats for these species are not present on-site. As such, this impact would be ***less than significant***.

Impact 3.4-3: The proposed Project, with mitigation, would not have direct or indirect effects on special-status bird species (Less than Significant with Mitigation)

SPECIAL STATUS BIRDS IN THE REGION

Year-round birds: Special-status birds that can be present in the region throughout the year include: Great blue heron (*Ardea Herodias*), bald eagle (*Haliaeetus leucocephalus*), black rail (*Laterallus jamaicensis*), burrowing owl (*Athene cunicularia*), loggerhead shrike *(Lanius ludovicianus*), Nuttalls woodpecker (*Picoides nuttallii*), oak titmouse (*Baeolophus inornatus*), song sparrow (Modesto population) (*Melospiza melodia*), tricolored blackbird *(Agelaius tricolor*), Williamson's sapsucker (*Sphyrapicus thyroideus*), yellow-billed magpie (*Pica nuttalli*), Cackling (=Aleutian Canada) goose (*Branta hutchinsii leucopareia*) among others. Some of these species are migratory but also reside year-round in California. Many of these species depend on specialized habitat features such as wetlands, rivers/streams, riparian forest, lakes, marshes, etc., which are not present on the Project site.

Summering Birds: Special-status birds that are only present in the region in the spring and summer months include: least bittern (*Ixobrychus exilis*), Swainson's hawk (*Buteo swainsoni*), and western yellow-billed cuckoo (*Coccyzus americanus occidentalis*). Many of these species depend on specialized habitat features such as wetlands, rivers/streams, riparian forest, lakes, marshes, etc., which are not present on the Project site.

Overwintering Birds: Special-status birds that are only present in the region in the fall and winter months include: Cackling (=Aleutian Canada) goose (*Branta hutchinsii leucopareia*), Snowy egret (*Egretta thula*), Yellow-breasted chat (*Icteria virens*), ox sparrow (*Passerella iliaca*), lesser yellowlegs (*Tringa flavipes*), Lewis's woodpecker (*Melanerpes lewis*), long-billed curlew (*Numenius americanus*), marbeled godwit (*Limosa fedoa*), merlin *(Falco columbarius*), mountain plover (*Charadrius montanus*), peregrine falcon (*Falco peregrinus*), short-eared owl (*Asio flammeus*), and

western grebe (A*echmophorus occidentalis*). As noted above, Cackling (=Aleutian Canada) goose (*Branta hutchinsii leucopareia*) can be present in the region year-round. Many of these species depend on specialized habitat features such as wetlands, rivers/streams, riparian forest, lakes, marshes, etc., which are not present on the Project site.

Nesting Raptors (Birds of Prey): All raptors (owls, hawks, eagles, falcons), including species and their nests, are protected from take pursuant to the Fish and Game Code of California Section 3503.5, and the federal Migratory Bird Treaty Act, among other federal and State regulations. Special-status raptors that are known to occur in the region include: bald eagle (*Haliaeetus leucocephalus*), burrowing owl (*Athene cunicularia*), Cooper's hawk *(Accipiter cooperii*), ferruginous hawk *(Buteo rega*), golden eagle *(Aquila chrysaetos*), great horned owl *(Bubo virginianus),* prairie falcon *(Falco mexicanus*), red-tailed hawk *(Buteo jamaicensis),* short-eared owl (*Asio flammeus*), Swainson's hawk *(Buteo swainsoni*), and white-tailed kite *(Elanus leucurus*), among others. Many of these species depend on specialized habitat for nesting such as powerlines and large mature trees, which are not present on the Project site. However, many of these raptor species will forage at distances of ten or more miles from their nest, and often in low lying grass or crop fields, including alfalfa. The alfalfa fields to the north side of the Project site offer suitable foraging for many raptors. While almond orchards, such as those on the south side of the Project site, may occasionally be used by some raptors, most species — such as Swainson's hawk, red-tailed hawk, and northern harrier — strongly prefer open habitats for foraging.

CNDDB RECORDS

Special-status birds that are documented in the CNDDB within the nine-quadrangle Project region include: Cackling (=Aleutian Canada) goose (*Branta hutchinsii leucopareia*), great blue heron (*Ardea herodias*), Least Bell's vireo (*Vireo bellii pusillus*), merlin (*Falco columbarius*), snowy egret (*Egretta thula*), song sparrow - "Modesto" population (*Melospiza melodia*), Swainson's hawk (*Buteo swainsoni*), tricolored blackbird (*Agelaius tricolor*), burrowing owl (*Athene cunicularia*), and western yellow-billed cuckoo (*Coccyzus americanus occidentalis*). Of these recorded species, Swainson's hawk and burrowing owl have potential to be present on the site at times given the foraging habitat that is present. The other species presented above have a very low to no chance of being present given the lack of suitable habitat for the species. There are a variety of other special-status birds not specifically listed in the CNDDB, that have the potential to be present given their regional presence, high mobility, and foraging interests. Some are migrants or winter visitants, while others are residents.

The potential to have substantial direct or indirect effects on special-status bird species, including through substantial reduction of habitat, substantial reduction of the number or restriction in the range of a listed species, elimination of a bird community, or a drop in population levels below self-sustaining levels, is discussed below for those species that have the potential to be present based on suitable habitat, regardless of past observations.

SPECIAL STATUS SPECIES

Burrowing owl (*Athene cunicularia*) is a ground nesting raptor species that is afforded protection by CDFW as a species of special concern due to declining populations in the Great Central Valley of California. They typically inhabit open grasslands and nest in abandoned ground squirrel burrows, cavities associated with raised mounds, levees, or soft berm features. There are other documented occurrences within the region, and this species is common in undeveloped areas, but can also be found along the fringe of development when the appropriate habitat is present.

Most of the Project site is actively cultivated and lacks active ground squirrel burrows. While the orchards have less ground disturbance, they are not high-quality foraging habitat for this species, as burrowing owl prefers more open environments with good visibility. The non-orchard fields, on the other hand, can be good foraging opportunities depending on the growth cycle and type of crop grown. For instance, early vegetative growth periods, or crops that are low growing vegetation, provide good foraging habitat for this species, while later vegetative growth periods with taller and denser crops do not provide good foraging habitat for this species. The quality of foraging habitat for burrowing owls within the agricultural fields is anticipated to vary by year and is directly correlated to the agricultural activity during that year.

The Project is not anticipated to have a direct impact on burrowing owl; however, there would be an indirect impact through the loss of available habitat in the region. Burrowing owls have not been observed on the Project site, and the Project site is not high-quality nesting habitat for this species given that it is mostly orchards and actively harvested alfalfa. It is also possible that burrowing owls could forage in some of the alfalfa fields during early vegetative growth, or after discing operations.

Swainson's hawk (*Buteo swainsoni*) is a raptor species currently listed as threatened in California by the CDFW. Breeding pairs typically nest in tall cottonwoods, valley oaks, or willows associated with riparian corridors, grassland, irrigated pasture, and cropland with a high density of rodents. The Central Valley populations breed and nest in the late spring through early summer before migrating to Central and South America for the winter.

Powerlines and trees located in the region represent potentially suitable nesting habitat for a variety of special-status raptors, including Swainson's hawk *(Buteo swainsoni*). The alfalfa fields that make up the northern portion of the Project site serve as foraging habitat for Swainson’s hawk, however, the orchards in the southern portion of the site do not serve as foraging due to the tree and canopy density not being favored by this species. There were no nests observed, and none are recorded on the Project site, however, there are known Swainson’s hawk nests within the regional vicinity.

The Project is not anticipated to have a direct impact on Swainson’s hawk; however, there would be an indirect impact through the loss of foraging habitat.

CONCLUSION

Transmission poles/lines and trees located in the region represent potentially suitable nesting habitat for a variety of special-status birds. Additionally, the northern part of the Project site (alfalfa fields) represents potentially suitable nesting habitat for some ground-nesting birds, such as

burrowing owl, under the right agricultural intensity. The southern portion of the Project site (orchards) is not suitable ground or aerial nesting. In general, most nesting occurs from late February and early March through late July and early August, depending on various environmental conditions.

Field surveys did not reveal the presence of any special-status species nesting; however, new nests can be constructed in future breeding cycles. Suitable foraging habitat is located on and around the Project site. This includes foraging habitat for burrowing owls and Swainson's hawk, among other species of birds. The proposed Project would require permanent disturbance to the foraging habitat to develop the Project site as proposed. This has a ***potentially significant*** impact. Mitigation Measures 3.4-2 through 3.4-4 would be required.

MITIGATION MEASURE(S)

Mitigation Measure 3.4-2: *The Project applicant shall implement the following measure to avoid or minimize impacts on western burrowing owl:*

- *No less than 14 days before initiating ground disturbance activities, the Project applicant shall complete an initial take avoidance survey. Implementation of avoidance and minimization measures would be triggered if the initial take avoidance survey results in positive owl presence in the Project Area where project activities shall occur. If needed, the development of avoidance and minimization approaches shall be developed in consultation with CDFW, consistent with the March 7, 2012, CDFW Staff Report on Burrowing Owl Mitigation.*

- *Permanent loss of burrowing owl foraging habitat shall be compensated for by preservation and management of foraging habitat of at least a similar quality and equivalent acreage at a biologically appropriate location. An example of similar quality shall be cropland for cropland, grassland for grassland, etc. An example of an appropriate location would be within the breeding range of burrowing owls in the Central Valley. The mitigation shall be documented in a mitigation plan that identifies the mitigation site, compensation acreage, performance criteria, and monitoring and management requirements to ensure the site provides suitable habitat for the applicable species. Long-term protection of mitigation lands shall be ensured through fee title acquisition, conservation easement, or other suitable mechanisms. Long-term management of mitigation lands shall be ensured by establishing a management endowment or other suitable funding source. It is anticipated that mitigation land would also function to mitigate for other species requiring mitigation land with similar characteristics (i.e., Swainson's hawk). In other words, the same acreage could function as mitigation for more than one species.*

Mitigation Measure 3.4-3: *The Project applicant shall implement the following measures to avoid or minimize impacts on Swainson's hawk:*

- *No more than 30 days before the commencement of construction, a qualified biologist shall perform preconstruction surveys for nesting Swainson's hawk and other raptors during the nesting season (February 1 through August 31).*

- *Appropriate buffers shall be established and maintained around active nest sites during construction activities to avoid nest failure because of project activities. A ½-mile no-disturbance buffer from active Swainson's hawk nests. If such a buffer is not feasible, consult with CDFW prior to any ground disturbing activities to determine if an Incidental Take Permit (ITP) pursuant to Fish and Game Code section 2081 subdivision (b) is necessary to avoid an unauthorized take of Swainson's hawk. The appropriate size and shape of the buffers shall be determined by a qualified biologist, in consultation with CDFW, and may vary depending on the nest location, nest stage, and construction activity. In determining the size of the buffers, the qualified biologist shall take into consideration the natural history of the Swainson's hawk, the proposed activity level adjacent to the nest, the nest occupants' habituation to existing or ongoing activity, nest concealment (i.e., whether there are visual or acoustic barriers between the proposed activity and the nest), and what (if any) nest monitoring is proposed. The buffers may be adjusted if a qualified biologist determines, based on these same considerations, that a change in the buffer size would not be likely to adversely affect the nest. Monitoring shall be conducted to confirm that project activity is not resulting in detectable adverse effects on nesting birds or their young. No project activity shall commence within the buffer areas until a qualified biologist has determined that the young have fledged or the nest site is otherwise no longer in use.*

- *Before the commencement of construction, the Project applicant shall provide compensatory mitigation for the permanent loss of Swainson's hawk foraging habitat. Loss of Swainson's hawk foraging habitat shall be compensated for by preservation and management of foraging habitat of at least a similar quality at an appropriate location. An example of similar quality shall be cropland for cropland, grassland for grassland, etc. An example of an appropriate location would be within the breeding range of Swainson's hawk in the Central Valley. The mitigation shall be documented in a mitigation plan that identifies the mitigation site, compensation acreage, performance criteria, and monitoring and management requirements to ensure the site provides suitable habitat for the applicable species. Long-term protection of mitigation lands shall be ensured through fee title acquisition, conservation easement, or other suitable mechanisms. Long-term management of mitigation lands shall be ensured by establishing a management endowment or other suitable funding source. It is anticipated that mitigation land would also function to mitigate for other species requiring mitigation land with similar characteristics (i.e., burrowing owl).*

- *To mitigate for the loss of foraging habitat (as specified in this document), the Project applicant shall compensate based on the following ratios:*

    - *(a) Portions of the Project within one mile of an active nest tree shall provide:*

        - *one acre of either lands protected through fee title acquisition or conservation easement (acceptable to the CDFW) on agricultural lands or other suitable habitats which provide foraging habitat for Swainson's hawk for each acre of development authorized (1:1 ratio); or*

- *One-half acre of either lands protected through fee title acquisition or conservation easement (acceptable to the CDFW) on agricultural lands or other suitable habitats which provide foraging habitat for Swainson's hawk for each acre of development authorized (0.5:1 ratio).*

- *(b) Portions of the Project within 5 miles of an active nest tree but greater than 1 mile from the nest tree shall provide 0.75 acres of either lands protected through fee title acquisition or conservation easement (acceptable to the CDFW) on agricultural lands or other suitable habitats which provide foraging habitat for Swainson's hawk for each acre of development authorized for each acre of urban development authorized (0.75:1 ratio).*

- *(c) Portions of the Project within 10 miles of an active nest tree but greater than 5 miles from an active nest tree shall provide 0.5 acres of either lands protected through fee title acquisition or conservation easement (acceptable to the CDFW) on agricultural lands or other suitable habitats which provide foraging habitat for Swainson's hawk for each acre of development authorized (0.5:1 ratio).*

- *Because nesting activity varies each nesting cycle, the applicant shall validate nest activity and apply the appropriate mitigation ratio at the time of disturbance.*

Mitigation Measure 3.4-4: *The Project applicant shall implement the following measure to avoid or minimize impacts on other protected bird species that may occur on the site:*

- *If ground-disturbing activities occur during the nesting bird season (February 1 - September 15), a qualified biologist shall conduct pre-activity surveys for active nests no more than one week prior to the start of ground disturbance to maximize the probability that nests that could potentially be impacted are detected. Surveys shall cover a sufficient area around the work site to identify nests and determine their status. A sufficient area means any area potentially affected by a project. In addition to direct impacts (i.e., nest destruction), noise, vibration, odors, and movement of workers or equipment could also affect nests. Prior to initiation of construction activities, a qualified biologist conduct a survey to establish a behavioral baseline of all identified nests.*

- *Once construction begins, a qualified biologist shall continuously monitor nests to detect behavioral changes resulting from the Project. If behavioral changes occur, the work causing that change shall cease and CDFW shall be consulted for additional avoidance and minimization measures. If continuous monitoring of identified nests by a qualified biologist is not feasible, a minimum no-disturbance buffer of 250 feet around active nests of non-listed bird species and a 500-foot no-disturbance buffer around active nests of non-listed raptors. These buffers are advised to remain in place until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival. Variance from these no-disturbance buffers is possible when there is a compelling biological or ecological reason to do so, such as when the construction area would be concealed from a nest site by topography. A qualified biologist*

shall advise and support any variance from these buffers and notify CDFW in advance of implementing a variance.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Mitigation Measure 3.4-2 requires avoidance surveys for burrowing owls and, if needed, avoidance and minimization approaches would be developed in consultation with CDFW. Implementation of the above mitigation measures would ensure that potential impacts to burrowing owl are reduced to a ***less than significant*** level because avoidance implies that the burrowing owl will not be directly impacted.

Mitigation Measure 3.4-3 requires preconstruction surveys for nesting Swainson's hawk and other raptors during the nesting season (February 1 through August 31). Nesting buffers may be required if found. This measure also requires the Project Applicant to conserve foraging habitat of equal value to the land that will be converted at a 0.5:1, 0.75:1, or 1:1 ratio based on the distance of the portion of the Project relative to the closest nest tree. Here, the use of conservation easements at a 0.5:1, 0.75:1, or 1:1 ratio is a legitimate expression of state and local police powers given it is presented in the CDFW *Staff Report regarding Mitigation for Impacts to Swainson's Hawks (Buteo swainsoni) in the Central Valley of California (1994).* It also follows the conservation strategies used locally in the City's Sustainable Agricultural Strategy, which functions as a dual-purpose agricultural conservation program, while also functionally conserving the habitat qualities of agricultural land for species like the Swainson's hawk, among others. Although the developed farmland/Swainson's hawk foraging habitat is not replaced and does not necessarily reduce the impact to an insignificant level, an equivalent area of comparable farmland is permanently protected from a similar fate providing mitigation benefits. Further, the requirement of rough proportionality between the mitigation measure and the impact of the development project is met. For every acre of farmland/Swainson's hawk foraging habitat permanently lost to development within a usable proximity for foraging, another acre of farmland is permanently protected from development. Here, it is intended that Mitigation Measure 3.4-3 mitigates for the loss of foraging habitat following CDFW's recommendation. CDFW concludes in their *Staff Report regarding Mitigation for Impacts on Swainson's Hawks (Buteo swainsoni) in the Central Valley of California (1994)* that incorporation of these mitigation measures into a CEQA document would reduce a project's impact to a Swainson's hawk(s) to less than significant levels. As such, this impact would be reduced to a ***less than significant*** level with the implementation of mitigation.

Mitigation Measure 3.4-4 requires preconstruction surveys for active nests of special-status birds in all areas of suitable habitat within 500 feet of project disturbance. If active nests or behaviors indicating that active nests are present, are observed, appropriate buffers around the nest sites would be determined by a qualified biologist to avoid nest failure resulting from project activities. Implementation of the above mitigation measures would ensure that potential impacts to nesting special-status birds are reduced to a ***less than significant*** level.

With the above mitigation measures, there would be no substantial direct or indirect effects on any special-status bird species, including through substantial reduction of habitat, substantial reduction

of the number or restriction in the range of a listed species, elimination of a bird community, or a drop in population levels below self-sustaining levels.

Impact 3.4-4: The proposed Project, with mitigation, would not result in direct or indirect effects on special-status mammal species (Less than Significant with Mitigation)

Special-status mammals that are documented in the CNDDB within the nine-quadrangle Project region include: Western mastiff bat (*Eumops perotis californicus*), Townsend's big-eared bat (*Corynorhinus townsendii*), Riparian (San Joaquin Valley) woodrat (*Neotoma fuscipes riparia*), Riparian brush rabbit (*Sylvilagus bachmani riparius*), and San Joaquin kit fox (*Vulpes macrotis mutica*).

The potential to have substantial direct or indirect effects on special-status mammal species, including through substantial reduction of habitat, substantial reduction of the number or restriction in the range of a listed species, elimination of a mammal community, or a drop in population levels below self-sustaining levels, is discussed below.

There are a variety of areas within the vicinity where bats could roost. Roosts commonly include tree/shrub foliage, hollow trees, inoperable vehicles, rocks, and debris piles. The orchards located on the Project site provide some limited roosting habitat, however, the frequency of agricultural activity in the orchard makes it not ideal roosting habitat for bat species. Any bats roosting in the area would find quality forage habitat mostly along the Stanislaus River north of the Project site. The agricultural habitat on the Project site also provides some foraging habitat for bats that may be present in the vicinity.

There was no evidence of bat roosts during field investigations, and this is no optimal habitat present. Bats are, however, common in agricultural areas, especially along river corridors and are expected to forage in the area and on the Project site.

Development of the Project site would eliminate foraging habitat for special-status bats by removing the agricultural areas. This has an indirect effect on bat species in the region. Development would not directly affect these bat species because it is not expected to result in injury or death to individual bats or roosts. Nevertheless, the following mitigation measure would be required.

MITIGATION MEASURE(S)

Mitigation Measure 3.4-5: *Prior to orchard removal and/or ground disturbance of the Project site, the Project applicant shall conduct a survey of the area to be disturbed for bat roosts, and if present, the Project applicant shall implement the following measures to avoid or minimize impacts on special-status bats:*

- *If removal of suitable roosting areas (i.e., trees, shrubs, etc.) must occur during the bat pupping season (April 1 through July 31), surveys for active maternity roosts shall be conducted by a qualified biologist. The surveys shall be conducted from dusk until dark.*

- *If a special-status bat maternity roost is located, appropriate buffers around the roost sites shall be determined by a qualified biologist and implemented to avoid destruction or abandonment of the roost resulting from habitat removal or other project activities. The size of the buffer shall depend on the species, roost location, and specific construction activities to be performed in the vicinity. No project activity shall commence within the buffer areas until the end of the pupping season (August 1) or until a qualified biologist confirms the maternity roost is no longer active.*

- *If a non-maternal roost is located, eviction and exclusion techniques shall be conducted as recommended by the qualified biologist. Methods may include opening the roosting area to change the air flow and lighting, installing one-way doors, or other appropriate methods that allow the bats to exit and find a new roost. After eviction is believed to be completed, acoustic monitoring, and an evening emergence survey shall be performed by the qualified biologist to ensure eviction is complete. For tree removal, a two-step tree removal process involving removal of all branches that do not provide roosting habitat on the first day, and then the next day cutting down the remaining portion of the tree.*

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Mitigation Measure 3.4-5 requires a survey for bat roosts, as well as buffers, if needed, around the roost sites. Implementation of the above mitigation measure would ensure that potential impacts to special-status mammals are reduced to a ***less than significant*** level. There would be no substantial direct or indirect effects on any special-status mammal species, including through substantial reduction of habitat, substantial reduction of the number or restriction in the range of a listed species, elimination of a mammal community, or a drop in population levels below self-sustaining levels.

Impact 3.4-5: The proposed Project would not result in direct or indirect effects on candidate, sensitive, or special-status plant species (Less than Significant)

There are 11 special-status plants that are documented within the nine-quadrangle area for the Project site, including: Alkali-sink goldfields (Lasthenia chrysantha), Big tarplant (Blepharizonia plumosa), Delta button-celery (Eryngium racemosum), Diamond-petaled California poppy (Eschscholzia rhombipetala), Greene's tuctoria (Tuctoria greenei), Heartscale (Atriplex cordulata var. cordulata), Legenere (Legenere limosa), Lemmon's jewelflower (Caulanthus lemmonii), Lesser saltscale (Atriplex minuscula), Prairie wedge grass (Sphenopholis obtusata), and Subtle orache (Atriplex subtilis). Of the eleven documented species, there is one federal listed species (endangered), two state listed species (endangered and rare), 10 CNPS 1B listed species, and one CNPS 2 listed species (2B).

A field survey was performed on May 13, 2025, and it is noted that the conditions of the Project site are highly disturbed due to the active agricultural operations (alfalfa and almonds) and there is little potential for any vegetation growth outside the agriculturally planted vegetation. No special-status plants were observed within the Project site during field surveys. Implementation of the individual

phases, and the proposed Project as a whole, will have a ***less than significant*** impact on special-status plants.

Impact 3.4-6: The proposed Project would not affect protected wetlands and jurisdictional waters (No Impact)

The Project site does not contain protected wetlands or other jurisdictional areas and there is no need for permitting associated with the federal or state Clean Water Acts. The Project site contains agricultural uses, including orchards and crops. The roadside ditch located along Kiernan Avenue is manmade and is exempt from any permitting requirements. Absent any wetlands or jurisdictional waters, implementation of the proposed Project would have ***no impact*** relative to this topic.

Impact 3.4-7: The proposed Project would not result in adverse effects on riparian habitat or a sensitive natural community (No Impact)

The CNDDB record search revealed documented occurrences of five sensitive habitats within the nine-quadrangle area for the Project site: Coastal and Valley Freshwater Marsh, Great Valley Cottonwood Riparian Forest, Great Valley Mixed Riparian Forest, Great Valley Valley Oak Riparian Forest, and Elderberry Savanna. These sensitive natural communities do not occur within the Project site. Therefore, implementation of the proposed Project would have ***no impact*** on riparian habitats or natural communities.

Impact 3.4-8: The proposed Project would not result in interference with the movement of native fish or wildlife species or with established wildlife corridors, or impede the use of native wildlife nursery sites (Less than Significant)

Habitat loss, fragmentation, and degradation resulting from land use changes or habitat conversion can alter the use and viability of wildlife movement corridors (i.e., linear habitats that naturally connect and provide passage between two or more otherwise disjunct larger habitats or habitat fragments). Wildlife habitat corridors maintain connectivity for daily movement, travel, mate-seeking, and migration; plant propagation; genetic interchange; population movement in response to environmental change or natural disaster; and recolonization of habitats subject to local extirpation or removal. The suitability of a habitat as a wildlife movement corridor is related to, among other factors, the habitat corridor's dimensions (length and width), topography, vegetation, exposure to human influence, and the species in question.

Species utilize movement corridors in several ways. "Passage species" are those species that use corridors as thru-ways between outlying habitats. The habitat requirements for passage species are less than those for corridor dwellers. Passage species use corridors for brief durations, such as for seasonal migrations or movement within a home range. As such, movement corridors do not necessarily have to meet any of the habitat requirements necessary for a passage species everyday survival. "Corridor dwellers" are those species that have limited dispersal capabilities – a category that includes most plants, insects, reptiles, amphibians, small mammals, and birds – and use corridors for a greater length of time.

The CNDDB record search did not reveal any documented wildlife corridors or wildlife nursery sites on or adjacent to the Project site. Special-status fish species documented within the region include Steelhead, Central Valley DPS (*Oncorhynchus mykiss irideus*), hardhead (*Mylopharodon conocephalus*), and green sturgeon – southern DPS (*Acipenser medirostris pop. 1*). The closest major natural movement corridor for native fish that are documented in the region is the Stanislaus River, located approximately 1.5 miles to the north of the Project site.

The Project site would not have any direct disturbance to the Stanislaus River or its tributaries, and therefore, would not have any direct disturbance to the movement corridor or habitat to fish species.

As noted in Chapter 2.0, Project Description, this Project site is in an area that is not served by existing public storm drain systems and will therefore need to retain all storm water on site. The proposed site plan includes a 6.75-acre storm drainage basin. The final size could increase or decrease based on a variety of engineering design factors that control storm drainage. Discharge of stormwater into a waterway is not proposed by the Project.

Overall, this impact would be ***less than significant***.

Impact 3.4-9: The proposed Project would not conflict with an adopted Habitat Conservation Plan (No Impact)

No adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan have been adopted. There would be ***no impact*** with respect to this topic.

Impact 3.4-10: The proposed Project would not conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (Less than Significant)

The City's General Plan establishes numerous policies related to biological resources as listed below:

GENERAL PLAN POLICIES

SWPH-1: For proposed development consistent with the adopted Urban Area General Plan on lands within the Baseline Developed Area and Downtown, exclusive of lands within the Dry Creek and Tuolumne River Comprehensive Planning Districts, an assessment of whether any potential habitat for special-status species is present within proposed development areas shall be made. No further biological study is warranted unless habitat is present or if specific information concerning the known or potential presence of significant biological resources is identified in future updates of the California Natural Diversity Database, or through formal or informal input received from resource agencies or other qualified sources (UAGP Policy VII-E.2[a]).

- ***Does Not Conflict****: The Project site is not within the adopted Urban Area General Plan on lands within the Baseline Developed Area and Downtown. Nevertheless, this section includes an assessment of whether any potential habitat for special-status species is present. This section*

also includes mitigation measures to reduce the potential impacts to special-status species to a less-than-significant level.

SWPH-2: For all lands within the Planned Urbanizing Area, site-specific surveys shall be conducted by a qualified biologist to determine whether any sensitive natural communities or species are present within the proposed development area. These studies shall particularly focus on proposed development within any lands included within a potential biological resource study area as delineated on Figure V-7-1 in the Final Program Environmental Impact Report (Riparian Corridor Diagram). Prior to considering development applications, the City shall coordinate with the USFWS and CDFW regarding listed species and potential for impacts. The City shall employ the measures recommended by the USFWS and/or CDFW to avoid an incidental take.

Conduct surveys at the appropriate season to best determine the likelihood of occurrence and should employ accepted methodologies as determined by CDFW and USFWS. The results of such surveys should be recorded onto the City's existing biological resources map for future planning purposes. (UAGP Policy VII-E.3[a])

- ***Does Not Conflict****: The Project site is not within the Planned Urbanizing Area. Nevertheless, this section includes an assessment of whether any potential habitat for special-status species is present. This section also includes mitigation measures to reduce the potential impacts to special-status species to a less-than-significant level. The results of the assessment are based on the site-specific survey completed for the Project site.*

SWPH-3: Avoid and preserve all areas occupied or potentially occupied by special-status species, where feasible. Protect areas that can be avoided by fencing, signage, or establishment of buffer zones appropriate to the species and/or habitat involved. Design fencing to allow passage of small mammals and avoid impacts to wildlife movement or dispersal.

A minimum 100-foot buffer of undeveloped land from identified sensitive resources would be necessary. Improve this buffer area through sustainable habitat restoration. Require protected habitat to be managed to contribute to the long-term conservation of the species and ecosystems on which they depend.

Where it is determined that state and/or federally listed species are present, consult with the CDFW and/or USFWS in accordance with the California and/or federal Endangered Species Acts to determine mitigation measures to avoid and minimize impacts to those species. If other special-status species are determined to be present and cannot be avoided, implement species-specific mitigation measures to minimize impacts to those species through informal consultation with CDFW and/or USFWS. Incorporate the mitigation measures and other recommendations of these agencies into the development plan. (UAGP Policy VII-E.3[b]).

- ***Consistent****: As noted in Impact 3.4-8, the proposed Project would not result in interference with the movement of native fish or wildlife species or with established wildlife corridors or impede the use of native wildlife nursery sites. As noted previously, this section of the EIR includes an assessment of whether any potential habitat for special-status species is present. This section also includes mitigation measures to reduce the potential impacts to special-status species to a*

less-than-significant level. The results of the assessment are based on the site-specific survey completed for the Project site.

SWPH-5: All three riparian corridors within the planning area (Dry Creek, Stanislaus River, Tuolumne River) are designated as Comprehensive Planning Districts under the Urban Area General Plan. Development within these areas will be subject to a Comprehensive Plan and a Focused EIR prepared for that plan (UAGP Exhibit III-1). Preparation of a Park Master Plan shall suffice as the Comprehensive Plan for these areas. However, until a Park Master Plan is completed for these areas, the Tuolumne River Regional Park Master Plan shall be the guiding plan for the Dry Creek CPD. The TRRP Master Plan shall suffice as the Comprehensive Plan for Tuolumne River Comprehensive Planning District. The Comprehensive Planning Districts for these three corridors specify that land uses will be limited to "open space" use (i.e., low-impact recreational facilities, public ownership, agriculture, low-density residential uses not exceeding one dwelling per ten acres). Other open space policies specific to the riparian corridors require that riverfront vegetation be consistent with riparian habitat, environmentally sensitive habitat areas be protected against significant disruptions of habitat values, and land uses be limited to those dependent on the riparian resource. (UAGP Policies VII-B.7[j] through [q]) Measures in the table shall also apply to the Comprehensive Planning Districts for the riparian corridors.

The Dry Creek Comprehensive Planning District intends for its 510 acres to become a linear park (UAGP Exhibit II-5). The 810-acre Stanislaus River Comprehensive Planning District is to become a regional park (UAGP Exhibit II-21).

The Tuolumne River Comprehensive Planning District contains 1,380 acres, including a significant amount of public land owned by a joint-powers authority (JPA) made up of Modesto, Ceres, and Stanislaus County. It is a Regional Park designed to serve the residents of Modesto, Ceres, Stanislaus County, and the greater San Joaquin Valley area (UAGP Exhibit II-24). The JPA has completed and the City has certified a Program EIR for the Tuolumne River Regional Park (TRRP) Master Plan. The TRRP Program EIR contains mitigation measures addressing impacts on sensitive plant and wildlife habitat relating to recreation facility development and conservation activities within the TRRP.

- ***Does Not Conflict****: The Project site is not located within any of the City's three riparian corridors within the planning area (Dry Creek, Stanislaus River, Tuolumne River). The closest major natural movement corridor for native fish that are documented in the region is the Stanislaus River, located approximately 1.5 miles to the north of the Project site.*

Overall, the proposed Project would have a ***less than significant*** impact regarding impact on other plans and policies.

MUNICIPAL CODE

The Modesto Municipal Code does not include ordinances protecting biological resources, such as a tree preservation policy or ordinance. As such, the proposed Project would have a ***less than significant*** impact relative to this topic.

CUMULATIVE IMPACTS

The cumulative setting for biological resources includes the Project site and the greater Stanislaus County region. Development associated with implementation of the local General Plan(s) would contribute to the ongoing loss of natural and agricultural lands in Stanislaus County, including the Project site. Cumulative development would result in the conversion of existing habitats to urban uses. The local General Plan(s), in addition to regional, State, and federal regulations, includes policies and measures that mitigate impacts to biological resources associated with General Plan buildout.

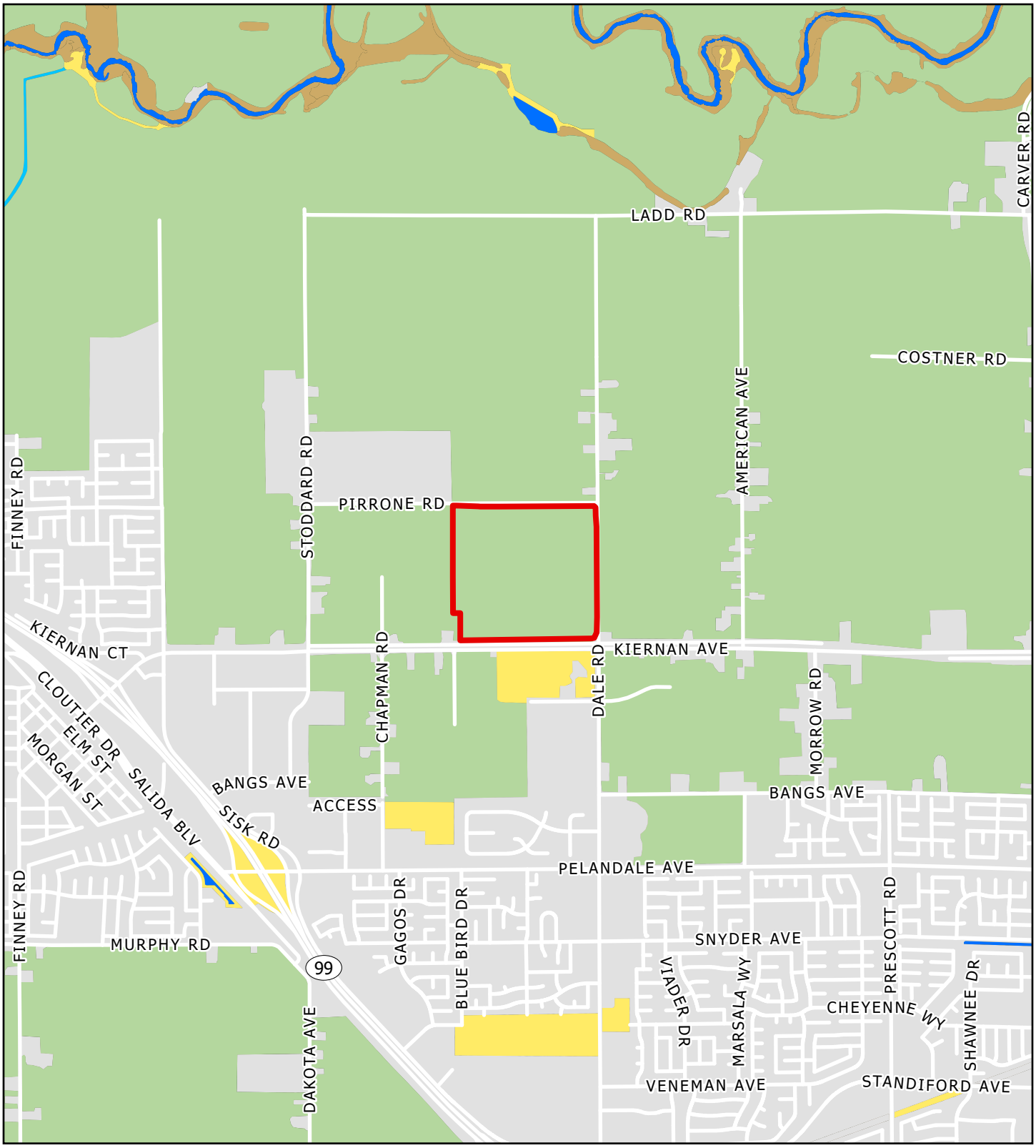
Impact 3.4-11: Cumulative Loss of Biological Resources Including Habitats and Special-Status Species (Less than Significant)

Under cumulative conditions, buildout of the General Plan(s) within Stanislaus County will result in impacts to biological resources in the cumulative area through new and existing development. The General Plan(s) includes policies that are designed to minimize impacts to the extent feasible.

As described previously in this section, construction in the Project site has the potential to result in impacts to special-status species in the region. The Project site provides potential habitat for several species. All biological resources impacts were determined to have no impact, be less-than-significant, or less-than-significant with mitigation.

Mitigation Measure 3.4-1 requires preconstruction survey for special-status bumble bees and avoidance and mitigation measures should bumble bees be found. Mitigation Measure 3.4-2 requires avoidance surveys for burrowing owls and, if needed, avoidance and minimization approaches would be developed in consultation with CDFW. Mitigation Measure 3.4-3 requires preconstruction surveys for nesting Swainson's hawk and other raptors during the nesting season (February 1 through August 31). Mitigation Measure 3.4-4 requires preconstruction surveys for active nests of special-status birds in all areas of suitable habitat within five hundred feet of project disturbance. Mitigation Measure 3.4-5 requires a survey for bat roosts, as well as buffers, if needed, around the roost sites.

The Project would result in impacts to biological resources including habitats and special status species as identified above. The City has evaluated urban development in the Project area through the General Plan process and subsequently determined in the General Plan Draft EIR that urban development in this location is appropriate. The proposed project, when considered alongside all past, present, and probable future projects (inclusive of buildout of the various General Plans within Stanislaus County), would not be expected to cause any significant cumulative impacts. Implementation of the regulations contained in the various General Plans within Stanislaus County would ensure that future projects minimize their potential biological resources. For these reasons, cumulative impacts on the loss of biological resources are ***less than significant and less than cumulatively considerable***.



Legend

- Project Area (144.3 acres)
- Annual Grassland
- Deciduous Orchard, Evergreen Orchard, Vineyard, Irrigated Row and Field Crops
- Fresh Emergent Wetland
- Lacustrine, Riverine
- Urban
- Valley Foothill Riparian

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 3.4-1. Landcover Types

0 1,000 2,000 Feet

Sources: California Department of Fish and Wildlife Vegetation Classification and Mapping Program, Vegetation Alliances and Associations of the Great Valley Ecoregion, California, 2012. Map Date: April 10, 2025.

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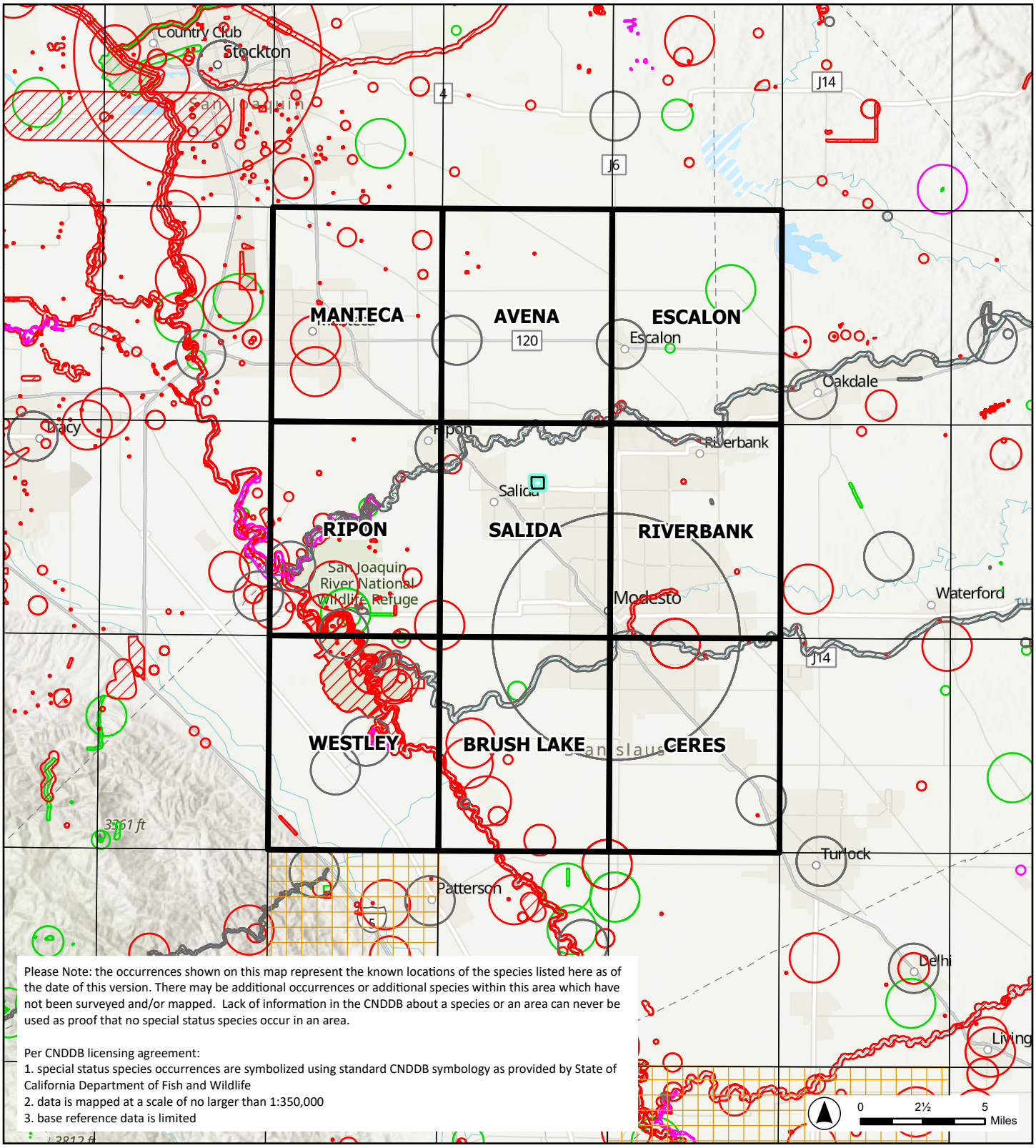

Please Note: the occurrences shown on this map represent the known locations of the species listed here as of the date of this version. There may be additional occurrences or additional species within this area which have not been surveyed and/or mapped. Lack of information in the CNDDB about a species or an area can never be used as proof that no special status species occur in an area.

Per CNDDB licensing agreement:
1. special status species occurrences are symbolized using standard CNDDB symbology as provided by State of California Department of Fish and Wildlife
2. data is mapped at a scale of no larger than 1:350,000
3. base reference data is limited

Legend

- Project Area
- USGS 7.5' Quadrangle
- Plant (80m)
- Plant (specific)
- Plant (non-specific)
- Plant (circular)
- Animal (80m)
- Animal (specific)
- Animal (non-specific)
- Animal (circular)
- Terrestrial Comm. (specific)
- Terrestrial Comm. (circular)
- Multiple (80m)
- Multiple (specific)
- Multiple (non-specific)
- Multiple (circular)
- Sensitive Environmental Occurrences

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 3.4-2.
California Natural Diversity Database
9-Quad Search

Sources: California Department of Fish and Wildlife, California Natural Diversity Database, 4/1/2025. Map Date: April 10, 2025.

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This section provides a discussion of prehistoric period background, ethnographic background, historic period background, known cultural resources in the region, the regulatory setting, an impact analysis, and mitigation measures. Information in this section is derived primarily from the Cultural Resource Assessment of the Scannell Industries Project (Peak & Associates, Inc., 2025) (see Appendix C).

One comment was received during the public review period or scoping meeting for the Notice of Preparation (NOP) regarding this topic from the Native American Heritage Commission (NAHC) (February 25, 2025). This comment is addressed within this section. Full comments received are included in Appendix A.

KEY TERMS

The following key terms are used throughout this section to describe cultural and tribal resources and the framework that regulates them:

Archaeology. The study of historic or prehistoric peoples and their cultures by analysis of their artifacts and monuments.

Complex. A patterned grouping of similar artifact assemblages from two or more sites, presumed to represent an archaeological culture.

Ethnography. The study of contemporary human cultures.

3.5.1 ENVIRONMENTAL SETTING

PROJECT SETTING

Project Site

The Scannell Industrial Project (proposed Project) consists of approximately 145 acres located at the northwest corner of Kiernan Avenue and Dale Road intersection, within the unincorporated Community of Salida. The Project site is located within the Stanislaus County Salida Community Plan (SCP) and is zoned for development as Salida Community Plan Industrial/Business Park (SCP-IBP) and Salida Community Plan Planned Industrial (SCP-PI). The area is also within the City of Modesto General Plan Planning Area with a designation of Salida Community Plan (SCP).

The Project site and surrounding properties are in agricultural use. There are also light industrial developments east and west of the Project site, along Kiernan Avenue. Joseph A. Gregori High School is located northwest of the site, and the Kaiser Permanente Modesto Medical Center and similar business park uses are located immediately south, within the City of Modesto. The Project site is located on the Assessor's Parcel Number (APN) 003-019-026.

Surrounding Uses

The Project site and surrounding properties are in agricultural use. The Project site is primarily bounded by lands within the unincorporated County to the north, east and west. Lands within the City of Modesto are located to the south. Uses within the surrounding area include the following:

- North – Agricultural lands, Joseph A. Gregori High School.
- East – Agricultural lands, industrial developments, along Kiernan Avenue.
- South – Kaiser Permanente Modesto Medical Center and similar business park uses, within the City of Modesto.
- West – Agricultural lands, industrial developments.

CULTURAL BACKGROUND

Prehistory

The Central Valley region was among the first in the state to attract intensive fieldwork, and research has continued to the present day. This has resulted in a substantial accumulation of data.

In the early decades of the 1900s, E.J. Dawson explored numerous sites near Stockton and Lodi, later collaborating with W.E. Schenck (Schenck and Dawson 1929). By 1933, the focus of work was directed to the Cosumnes locality where survey and excavation studies were conducted by the Sacramento Junior College (Lillard and Purves 1936). Excavation data, from the stratified Windmiller site (CA-Sac-107), suggested two temporally distinct cultural traditions. Later work at other mounds by Sacramento Junior College and the University of California, Berkeley, enabled the investigators to identify a third cultural tradition, intermediate between the previously postulated Early and Late Horizons. The three-horizon sequence, based on discrete changes in ornamental artifacts and mortuary practices, as well as on observed differences in soils within sites (Lillard, Heizer and Fenenga 1939), was later refined by Beardsley (1954). An expanded definition of artifacts diagnostic of each time period was developed, and its application extended to parts of the central California coast. Traits held in common allow the application of this system within certain limits of time and space to other areas of prehistoric central California.

The Windmiller Culture (Early Horizon) is characterized by ventrally-extended burials (some dorsal extensions are known), with westerly orientation of heads; a high percentage of burials with grave goods; frequent presence of red ocher in graves; large projectile points, of which 60 percent are of materials other than obsidian; rectangular *Haliotis* beads; *Olivella* shell beads (types A1a and L); rare use of bone; some use of baked clay objects; and well-fashioned charmstones, usually perforated.

The Cosumnes Culture (Middle Horizon) displays considerable changes from the preceding cultural expression. The burial mode is predominately flexed, with variable cardinal orientation and some cremations present. During the Middle Horizon, there is a lower percentage of burials with grave goods, and ocher staining is common in graves. *Olivella* beads of types C1, F and G predominate, and there is abundant use of green *Haliotis* sp. rather than red *Haliotis* sp. Other characteristic artifacts include perforated and canid teeth; asymmetrical and "fishtail" charmstones, usually

unperforated; cobble mortars and evidence of wooden mortars; extensive use of bone for tools and ornaments; large projectile points, with considerable use of rock other than obsidian; and use of baked clay.

The Hotchkiss Culture (Late Horizon) burial pattern retains the use of the flexed mode. There is wide spread evidence of cremation, and lesser use of red ocher, heavy use of baked clay, *Olivella* beads of Types E and M, extensive use of *Haliotis* ornaments of many elaborate shapes and forms, shaped mortars and cylindrical pestles, bird-bone tubes with elaborate geometric designs, clam shell disc beads, small projectile points indicative of the introduction of the bow and arrow, flanged tubular pipes of steatite and schist, and use of magnesite (Moratto 1984:181-183). The characteristics noted are not all-inclusive but cover the more important traits.

Schulz (1981), in an extensive examination of the central California evidence for the use of acorns, used the terms Early, Middle and Late Complexes, but the traits attributed to them remain the same. While it is not altogether clear, Schulz uses the term “Complex” to refer to the archeological entities (above called “Horizons”) as defined in this region. Ragir's (1972) cultures are the same as Schulz's complexes.

Bennyhoff and Hughes (1984) have presented alternative dating schemes for the Central California Archeological Sequence. The primary emphasis is a more elaborate division of the horizons to reflect what is seen as cultural/temporal changes within the three horizons and a compression of the temporal span.

There have been other chronologies proposed, including Fredrickson (1973), and because it is correlated with Bennyhoff's (1977) work, it merits discussion. The archeological cultural entities Fredrickson has defined, based upon the work of Bennyhoff, are patterns, phases, and aspects. Bennyhoff's (1977) work in the Plains Miwok area is the best definition of the Cosumnes District, which conforms to Fredrickson's pattern. Fredrickson also proposed periods of time associated heavily with economic modes, which provides a temporal term for comparing contemporary cultural entities. It corresponds with Willey and Phillips' (1958) earlier “tradition”, although it is tied more specifically to the archeological record in California.

Ethnography

The Project site lies within the northern portion of the ethnographic territory of the Yokuts people. The Yokuts were members of the Penutian language family which held all the Central Valley, San Francisco Bay Area, and the Pacific Coast from Marin County to near Point Sur. The Yokuts differed from other ethnographic groups in California as they had true tribal divisions with group names (Kroeber 1925; Latta 1949). Each tribe spoke a particular dialect, common to its members, but similar enough to other Yokuts that they were mutually intelligible (Kroeber 1925).

The Yokuts held portions of the San Joaquin Valley from the Tehachapi’s in the south to Stockton in the north. On the north they were bordered by the Plains Miwok, and on the west by the Saclan or Bay Miwok and Costonoan peoples. Although neighbors were often from distinct language families, differences between the people appear to have been more influenced by environmental factors as opposed to linguistic affinities. Thus, the Plains Miwok were more similar to the nearby

Yokuts than to foothill members of their own language group. Similarities in cultural inventory co-varied with distance from other groups and proximity to culturally diverse people. The material culture of the southern San Joaquin Yokuts was therefore more closely related to that of their non-Yokuts neighbors than to that of Delta members of their own language group.

Trade was well developed with mutually beneficial interchange of needed or desired goods. Obsidian, rare in the San Joaquin Valley, was obtained by trade with Paiute and Shoshoni groups on the eastern side of the Sierra Nevada, where numerous sources of this material are located, and to some extent from the Napa Valley to the north. Shell beads, obtained by the Yokuts from coastal people, and acorns, rare in the Great Basin, were among many items exported to the east by Yokuts traders (Davis 1961).

Economic subsistence was based on the acorn, with substantial dependency on gathering and processing of wild seeds and other vegetable foods. The rivers, streams, and sloughs that formed a maze within the valley provided abundant food resources such as fish, shellfish, and turtles. Game, wild fowl, and small mammals were trapped and hunted to provide protein augmentation of the diet. In general, the eastern portion of the San Joaquin Valley provided a lush environment of varied food resources, with the estimated large population centers reflecting this abundance (Cook 1955; Baumhoff 1963).

Settlements were oriented along the water ways and village sites were normally placed adjacent to these features for their nearby water and food resources. House structures varied in size and shape (Latta 1949; Kroeber 1925), with most constructed from the readily available tules found in the extensive marshes of the low-lying valley areas. The housepit depressions for the structures ranged in diameter from three to eighteen meters (Wallace 1978:470).

Historic Period

The Project area lies between Salida and Modesto. After the initial rush of the gold miners in the 1850s, many of those who did not make money at mining, instead discovered the value of the land for agriculture. Many small towns were created as service centers for a widespread population on ranches and farms. The towns were often associated with railroad lines, creating a method of sending farm products to a wider marketplace.

Salida Station started as a flag-stop on the railroad line. It was located on the property of John Murphy, one of the largest landowners in the region. By 1881, the town had a post office, restaurant, large warehouses, a blacksmith shop, church, and a public school (Elliott & Moore 1881). The Project area was owned by M.E. Byrum in 1906.

KNOWN CULTURAL RESOURCES

A summary of the record search, Native American consultation, and field survey that was performed for the Project site is included below.

Record Search

The purpose of the cultural records search is to identify all previously recorded cultural resources (prehistoric and historic archaeological sites, historic buildings, structures, objects, or districts) within the Project site. On May 9, 2025, a records search was conducted for the Project area and a 0.25-mile buffer zone through the Central California Information Center (CCIC) of the California Historical Resources Information System (CHRIS) (File No. 1333333448N). No resources have been reported for the Project area nor for the buffer area. Two reports cover a small portion of the southern portion of the Project, covering the proposed widening to Kiernan Avenue. Two other reports cover portions of the buffer area. Citations are included in Appendix 2 of Appendix C.

Native American Consultation

The NAHC was requested to check the Sacred Lands files and provide a list of suitable contacts for further information. Their reply indicated that there are no properties listed in the Sacred Lands files. The NAHC provided a list of individuals and groups to contact regarding the property. Letters were sent to the groups and individuals listed on June 25, 2025. The tribal groups identified for the Project include Amah Mutsun Tribal Band, Northern Valley Yokut / Ohlone Tribe, Southern Sierra Miwuk Nation, and Tule River Indian Tribe. To date, one tribal group, the Wilton Rancheria, has responded. Wilton Rancheria stated that the Project site is outside of their current focus area.

Field Assessment

Peak & Associates completed a mixed-strategy field survey of the Project site on May 15, 2025. The southern portion of the Project survey area, which contains an orchard, was covered in ten to fifteen meter wide transects. Ground visibility was good to fair. The northern portion was covered in dense alfalfa crop with extremely poor ground visibility. As such, only the dirt roads surrounding the various fields on the northern portion of the Project site could be inspected. No cultural resources were found or observed during the survey efforts.

3.5.2 REGULATORY SETTING

FEDERAL

National Historic Preservation Act

The National Historic Preservation Act was enacted in 1966 to protect cultural resources that are eligible to be listed on the National Register of Historic Places (NRHP). The law sets forth criterion that is used to evaluate the eligibility of cultural resources. The NRHP is composed of districts, sites, buildings, structures, objects, architecture, archaeology, engineering, and culture that are significant to American History.

Any physical evidence of past human activity can be considered a cultural resource. Although not all such resources are significant and eligible for listing, they often provide the only means of reconstructing the human history of a given site or region, particularly where there is no written history of that area or that period. Consequently, their significance is judged in terms of their

historical or archaeological interpretive values. Along with research values, cultural resources can be significant, in part, for their aesthetic, educational, cultural, and religious values.

National Register of Historic Places

The eligibility criteria for the NRHP are as follows (36 CFR 60.4):

> *The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess aspects of integrity of location, design, setting, materials, workmanship, feeling, association, and*
>
> *(A) that are associated with events that have made a significant contribution to the broad patterns of our history and cultural heritage; or*
> *(B) that are associated with the lives of persons significant in our past; or*
> *(C) that embody the distinctive characteristics of a type, period, region, or method of construction, or that represent the work of a master, or that possess high artistic values or that represent a significant and distinguishable entity whose components may lack individual distinction; or*
> *(D) that have yielded, or may be likely to yield, information important in prehistory or history.*

American Indian Religious Freedom Act and Native American Graves and Repatriation Act

The American Indian Religious Freedom Act recognizes that Native American religious practices, sacred sites, and sacred objects have not been properly protected under other statutes. It establishes as national policy that traditional practices and beliefs, sites (including right of access), and the use of sacred objects shall be protected and preserved. Additionally, Native American remains are protected by the Native American Graves and Repatriation Act of 1990.

Other Federal Legislation

Historic preservation legislation was initiated by the Antiquities Act of 1966, which aimed to protect important historic and archaeological sites. It established a system of permits for conducting archaeological studies on federal land, as well as setting penalties for noncompliance. This permit process controls the disturbance of archaeological sites on federal land. New permits are currently issued under the Archaeological Resources Protection Act (ARPA) of 1979. The purpose of ARPA is to enhance preservation and protection of archaeological resources on public and Native American lands. The Historic Sites Act of 1935 declared that it is national policy to "Preserve for public use historic sites, buildings, and objects of national significance."

STATE

California Register of Historic Resources

The CRHR was established in 1992 and codified in the Public Resource Code §5020, 5024 and 21085. The program creates several categories of properties that may be eligible for the CRHR. Certain properties are included in the program automatically, including properties listed in the NRHP; properties eligible for listing in the NRHP; and certain classes of State Historical Landmarks.

Cultural resources, under CRHR guidelines, are defined as buildings, sites, structures, or objects that may have historical, architectural, archaeological, cultural, or scientific importance. A cultural resource may be eligible for listing on the CRHR if it:

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

California Environmental Quality Act

The California Environmental Quality Act (CEQA) Guidelines §15064.5 provides guidance for determining the significance of impacts to archaeological and historical resources. Demolition or material alteration of a historical resource, including archaeological sites, is considered a significant impact. Determining the CEQA eligibility of historic and prehistoric properties is guided by CCR §§15064.5(b) and PRC §§21083.2 and 21084.1.

CEQA also provides for the protection of Native American human remains (CCR §15064.5[d]). Native American human remains are also protected under the Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001 et seq.), which requires federal agencies and certain recipients of federal funds to document Native American human remains and cultural items within their collections, notify Native American groups of their holdings, and provide an opportunity for repatriation of these materials. This act also requires plans for dealing with potential future collections of Native American human remains and associated funerary objects, sacred objects, and objects of cultural patrimony that might be uncovered because of development projects overseen or funded by the federal government.

If a prehistoric or historic period cultural resource does not meet any of the four CRHR criteria, but does meet the definition of a "unique" site as outlined in PRC §21083.2(g), it may still be treated as a significant resource if it is: 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 meets any of the following criteria:

- It contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information,
- It has a special and quality such as being the oldest of its type or the best available example of its type, or
- It is directly associated with a scientifically recognized important prehistoric or historic event.

California Health and Safety Code

Section 7050.5 of the California Health and Safety Code requires that construction or excavation be stopped in the vicinity of discovered human remains until the county coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner must contact the California Native American Heritage Commission. The CEQA Guidelines (Section 15064.5[e]) specify the procedures to be followed in case of the discovery of human remains on non-federal land. The disposition of Native American burials falls within the jurisdiction of the NAHC.

Senate Bill 18 (Burton, Chapter 905, Statutes 2004)

SB 18, authored by Senator John Burton and signed into law by Governor Arnold Schwarzenegger in September 2004, requires local (city and county) governments to consult with California Native American tribes to aid in the protection of traditional tribal cultural places ("cultural places") through local land use planning. This legislation, which amended §65040.2, §65092, §65351, §65352, and §65560, and added §65352.3, §65352.4, and §65562.5 to the Government Code; also requires the Governor's Office of Planning and Research to include in the General Plan Guidelines advice to local governments for how to conduct these consultations. The intent of SB 18 is to provide California Native American tribes an opportunity to participate in local land use decisions at an early planning stage, for the purpose of protecting, or mitigating impacts to, cultural places. These consultation and notice requirements apply to adoption and amendment of both general plans (defined in Government Code §65300 et seq.) and specific plans (defined in Government Code §65450 et seq.).

Assembly Bill 978 (Steinberg, Chapter 818, Statutes 2001)

In 2001, AB 978, the California Native American Graves Protection and Repatriation Act of 2001, expanded the reach of Native American Graves Protection and Repatriation Act of 1990 and established a state commission with statutory powers to assure that federal and state laws regarding the repatriation of Native American human remains and items of patrimony are fully complied with. In addition, AB 978 also included non-federally recognized tribes for repatriation.

Assembly Bill 52 (Gatto, Chapter 532, Statutes 2014)

AB 52, approved in September 2014, creates a formal role for California Native American tribes by creating a formal consultation process and establishing that a substantial adverse change to a tribal cultural resource has a significant effect on the environment. "Tribal cultural resources" are defined as:

1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
    A) Included or determined to be eligible for inclusion in the CRHR.
    B) Included in a local register of historical resources as defined in PRC Section 5020.1(k).
2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in PRC Section 5024.1 (c). In applying the criteria set forth in PRC Section 5024.1 (c) the lead agency shall consider the significance of the resource to a California Native American tribe.

A cultural landscape that meets the criteria above is also a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape. In addition, a historical resource described in PRC Section 21084.1, a unique archaeological resource as defined in PRC Section 21083.2(g), or a "nonunique archaeological resource" as defined in PRC Section 21083.2(h) may also be a tribal cultural resource if it conforms with above criteria.

AB 52 requires a lead agency, prior to the release of a negative declaration, mitigated negative declaration, or environmental impact report for a project, to begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project if: (1) the California Native American tribe requested to the lead agency, in writing, to be informed by the lead agency through formal notification of proposed projects in the geographic area that is traditionally and culturally affiliated with the tribe, and (2) the California Native American tribe responds, in writing, within 30 days of receipt of the formal notification, and requests the consultation.

LOCAL

City of Modesto Urban Area General Plan

A discrete reference number is assigned to each policy to facilitate its identification elsewhere in this Program EIR (e.g., policies are designated as AH-*X,* where *X* is the discrete number).

> **AH-1:** Implement regulations that identify important historic resources and preserve the important aspects of those resources. Encourage adaptive reuse of National Register of Historic Places (NRHP) and California Register of Historical Resources (CRHR) eligible or potentially eligible buildings, and local landmarks, including historically sensitive restoration. (UAGP Policy VII.F.2[a]**)**
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> **AH-2:** Perform restoration and renovation of landmark buildings in accordance with the "Secretary of the Interior's Standards for the Treatment of Historic Properties" and the State Historic Building Code. The standards serve as guidelines for rehabilitation, restoration, preservation, retaining, and preserving the historic character of a property. (UAGP Policy VII.F.2[b])

AH-3: Ensure that zoning provisions for structures of historical significance are sufficiently flexible to ensure that parking or other structures requirements of the Zoning Ordinance allow the historic structures to remain viable in the future. (UAGP Policy VII.F.2[c])

AH-4: The modification of historic structures and places can be mitigated through the application of existing regulations and consultation with the State Historic Preservation Officer (SHPO), an interim procedure whereby the City evaluates proposals to modify historic structures and the proposed program(s) to reduce the impacts, if any, to a less than significant level in accordance with CEQA Guidelines Section 15064.5. If an historical resource evaluation has not been prepared for any such proposal, prepare one for the purpose of determining whether the proposed mitigation would reduce the impacts to a less than significant level. If the project has impacts on eligible or potentially eligible structures, the project proponent will resolve adverse effects through consultation with the SHPO. (UAGP Policy VII.F.2[d])

AH-5: When structures or areas of historical significance more than 50 years old are proposed for alteration or demolition, or where construction is proposed on property adjacent to that structure or area and within 100 feet of it, the property owner is to submit data to the City that has been prepared by a qualified architectural historian regarding the structure's history or locations. Evaluate the historical significance of the proposal and require policies to be applied to preserve all structures and places deemed historically significant. (UAGP Policy VII.F.2[e])

AH-6: Maintain professional standard inventories of historic resources, with the findings of those inventories concurred by the SHPO and kept on file with the State Office of Historic Preservation. The records will provide a preliminary assessment of eligibility at the initial study stage to indicate whether CEQA regulations would apply in the case of a project application or whether the resource has previously been determined ineligible. When no previous survey has been conducted or an historical context prepared, buildings and structures more than 50 years old and/or otherwise potentially significant must be evaluated by a professional historian or architectural historian prior to project approval to determine whether the resource is a historically significant resource, for purposes of CEQA. (UAGP Policy VII.F.2[f])

AH-7: When a landmark is established, have the character-defining elements of the landmark identified by a qualified architectural historian, qualified City staff member, or other professional qualified under Secretary of Interior Standards to convey the historic significance of the property and to facilitate review of future changes and the identification of potentially significant impacts to the property. Actions or activities that follow Secretary of Interior Standards, in consultation with SHPO, can be considered to have mitigated any potential adverse impacts to a less-than-significant level. (UAGP Policy VII.F.2[g])

AH-8: When proposed development lies within the archaeological resource study area (defined as the Riparian and Vernal Pool Locations shown on MEIR Figure V-7-1), analyze the area to determine whether it has a high potential to have been used by Native

Americans or contain prehistoric deposits. Resources to be utilized include archival research through the Central California Information Center at CSU Stanislaus, preliminary surface field reconnaissance, consultations with the Native American Heritage Commission (NAHC) and individuals and organizations identified by the NAHC. Any archaeological resources discovered shall be recorded and mapped.

Require an evaluation of the significance of any such resources only when proposed development might affect the resources. (UAGP Policy VII.F.2[h])

AH-9: If land designated or proposed to be designated for development is discovered through archival research, consultation or by chance, to contain a sacred or traditional place, consult with the NAHC and the appropriate Native American groups and individuals for the purpose of determining the level of confidentiality required to protect the cultural place and for the purpose of developing treatment with appropriate dignity of the cultural place in any corresponding management plan. Avoid and preserve sacred sites whenever feasible. (UAGP Policy VII.F.2[i])

AH-10: Consistent with AB 52 of 2014, conduct consultations with the Native American Heritage Commission and the appropriate Native American Tribes for the purpose of determining the level of confidentiality required to protect identified cultural place(s), if any, and for the purpose of developing treatment with appropriate dignity of said cultural place(s) in any corresponding management plan. Avoid and preserve sacred sites whenever feasible. (UAGP Policy VII.F.2[j])

AH-11: For any project that involves earth-disturbing activities within the archaeological resource study area (defined as the Riparian and Vernal Pool Locations shown on MEIR Figure V-7-1), or on a site determined to be archaeologically or culturally sensitive by City staff through consultation with Native American tribes or bands and a qualified archaeologist, require the project applicant to implement the following mitigation measures, at a minimum:

1. Where excavation or construction would occur outside of areas where development has occurred, or where excavation / construction would occur at depths greater than existing foundations, roads, and/or trenches in the immediate vicinity, evaluate the site via a qualified archaeologist retained by the project applicant. Said evaluation would include at minimum a records search, a Phase I pedestrian survey, and preparation of an archaeological report containing the results of this cultural resources inventory identification effort for submittal to the Central California Information Center. If a Phase II archaeological evaluation is recommended, complete a report of the survey and any excavations with recommendations prior to project approval;
2. In the event of the discovery of a burial, human bone, or suspected human bone, immediately halt all excavation or grading in the vicinity of the find and protect the area of the find. The project applicant shall immediately notify the Modesto Police Department and County Coroner of the find and comply with the provisions

of California Health and Safety Code Section 7050.5, including California Public Resources Code Section 5097.98, if applicable. If human remains are identified, also retain a Native American monitor at the applicant's expense;

3. A qualified archaeological monitor will be present and will have the authority to stop and redirect grading activities, in consultation with the Native Americans and their designated monitors, to evaluate the significance of any Native American archaeological resources discovered on the property; and,
4. Relinquish ownership of all Native American human remains and/or artifacts that are found within the project area, to the appropriate Native American Most Likely Descendent (MLD), as assigned by the Native American Heritage Commission, for proper treatment and disposition. The MLD will decide whether or not standard archaeological analysis will be allowed on human remains and associated artifacts from burials.
5. If paleontological resources are discovered during earth-moving activities, the construction crew shall immediately cease work in the vicinity of the find, and the City's Planning Manager shall be notified. A qualified paleontologist shall evaluate the resource to determine if it is significant. If the resource is significant, prepare a proposed mitigation plan in accordance with Society of Vertebrate Paleontology guidelines. The proposed mitigation plan may include a field survey of additional construction areas, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations determined by the lead agency to be necessary and feasible shall be implemented before construction activities can resume at the site where the paleontological resources were discovered. (UAGP Policy VII.F.2[k])

AH-12: Whenever possible, avoid disturbing or damaging archaeological resources. Preservation in place to maintain the relationship between the artifacts and the archaeological context is the preferred manner of mitigating impacts to archaeological sites. Preservation may be accomplished by:

1. Planning construction to avoid archaeological sites;
2. Incorporating sites within parks, green space, or other open space;
3. Covering the sites with a layer of chemically stable soil; and/or,
4. Deeding the site into a permanent conservation easement.

When in-place mitigation is not feasible, data recovery through excavation may be necessary. A data recovery plan, which makes provisions for adequately recovering the scientifically consequential information about the site, shall be prepared and adopted prior to any excavation being undertaken. Such studies must be deposited with the Central California Information Center in Turlock, California. Special rules apply to any archaeological sites known to contain human remains (Health and Safety Code Section 7050.5; Guidelines Section 15126.4(b)).

Data recovery shall not be required if the lead agency determines that testing or studies already completed have adequately recovered the necessary data, provided that the data

have already been documented in another EIR and are available for review at the California Historical Resource Regional Information Center (Guidelines Section 15126.4(b)). (UAGP Policy VII.F.2[l])

AH-13: Allow reasonable time for the qualified archaeologist to notify the proper authorities for a more detailed inspection and examination of the exposed cultural resources. During this time, excavation and construction would not be allowed in the immediate vicinity of the find; however, those activities could continue in other areas of the project site. (UAGP Policy VII.F.2[m])

AH-14: If any find is determined to be significant by the qualified archaeologist, representatives of the construction contractor and the City, the qualified archaeologist, and a representative of the Native American community (if the discovery is an aboriginal burial) will meet to determine the appropriate course of action. (UAGP Policy VII.F.2[n])

AH-15: All cultural materials recovered as part of a monitoring program are subject to scientific analysis, professional museum curation, and a report prepared according to current professional standards. (UAGP Policy VII.F.2[o])

AH-16: Any project subject to CEQA that involves substantial earth-disturbing activities should require consultation by the applicant for the purposes of determining the potential for archaeological and cultural resources impacts and creating appropriate mitigation to address any such impacts. (UAGP Policy VII.F.3[a])

AH-17: Any project that involves earth-disturbing activities within previously undisturbed soils in an area determined to be archaeologically or culturally sensitive by the City of Modesto through consultation with Native American tribes or bands and a qualified archaeologist should be subject to archaeological and Native American monitoring during all ground-disturbing activities. (UAGP Policy VII.F.3[b])

AH-18 Any project that involves earth-disturbing activities within previously undisturbed soils in an area determined to be archaeologically or culturally sensitive by the City of Modesto through consultation with Native American tribes or bands and a qualified archaeologist should be required to carry out the following mitigation measures, at a minimum:

1. If prehistoric archaeological remains are discovered during project construction (inadvertent discoveries), all work in the area of the find shall cease, and a qualified archaeologist should be retained by the project sponsor to investigate the find, and make recommendations as to treatment and mitigation. In the event of the discovery of a burial, human bone, or suspected human bone all excavation or grading in the vicinity of the find should halt immediately and the area of the find should be protected and the project applicant immediately should notify the County Coroner of the find and comply with the provisions of California Health and Safety Code Section 7050.5, including California Public Resources Code Section

5097.98, if applicable. If human remains are identified, the project sponsor should also retain a Native American monitor;

2. A qualified archaeological monitor should be present and should have the authority to stop and redirect grading activities, in consultation with the Native Americans and their designated monitors, to evaluate the significance of any Native American archaeological resources discovered on the property;
3. Native American monitors from the appropriate Native American Tribes, as determined by the NAHC should be allowed to monitor all groundbreaking activities, including all archaeological testing and data recovery excavations that are likely to affect Native American resources, as determined by a qualified archaeologist. The project proponent should be responsible for compensating Native American monitors. If human remains are discovered, the NAHC should assign a Most Likely Descendent (MLD); and,
4. The landowner agrees to relinquish ownership of all Native American human remains and associated burial artifacts that are found within the project area, to the appropriate Native American MLD, as assigned by the NAHC, for proper treatment and disposition. The MLD will decide whether or not standard archaeological analysis will be allowed on human remains and associated artifacts from burials.
5. If paleontological resources are discovered during earth-moving activities, the construction crew shall immediately cease work in the vicinity of the find, and the City's Planning Manager shall be notified. A qualified paleontologist shall evaluate the resource and prepare a proposed mitigation plan in accordance with Society of Vertebrate Paleontology guidelines. The proposed mitigation plan may include a field survey of additional construction areas, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations determined by the lead agency to be necessary and feasible shall be implemented before construction activities can resume at the site where the paleontological resources were discovered. (UAGP Policy VII.F.3[c])

City of Modesto Municipal Code

The City of Modesto Landmark Preservation Ordinance establishes the recognition, preservation, enhancement, perpetuation, and use of structures, natural features, sites, and areas within the City of Modesto that have historic, architectural, archaeological, structural engineering, or aesthetic significance. The eligibility of a site is determined after public hearings by Modesto Landmark Preservation Commission recommendation, plus public hearing, and final determination by the City Council. (Municipal Ordinance No. 2619)

3.5.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed Project is considered to have a significant impact on cultural or tribal resources if it will:

- Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5.
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.
- Disturb any human remains, including those interred outside of formal cemeteries.
- Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:
    - 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).
    - 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 resources to a California Native American tribe.

IMPACTS AND MITIGATION MEASURES

Impact 3.5-1: The proposed Project, with mitigation, would not cause a substantial adverse change to a significant historical resource, as defined in CEQA Guidelines §15064.5 (Less than Significant with Mitigation)

The proposed Project site consists of approximately 145 acres located at the northwest corner of Kiernan Avenue and Dale Road intersection, within the unincorporated Community of Salida. The Project site and surrounding properties are in agricultural use. There are also light industrial developments east and west of the Project site, along Kiernan Avenue. Joseph A. Gregori High School is located northwest of the site, and the Kaiser Permanente Modesto Medical Center and similar business park uses are located immediately south, within the City of Modesto. There are no buildings or structures located on-site.

As noted previously, a records search was conducted for the Project area and a 0.25-mile buffer zone through the Central California Information Center (CCIC) of the California Historical Resources Information System (CHRIS) (File No. 1333333448N). No resources have been reported for the Project area nor for the buffer area. Two reports cover a small portion of the southern portion of the Project, covering the proposed widening to Kiernan Avenue. Two other reports cover portions of the buffer area. Citations are included in Appendix 2 of Appendix C.

No historical resources were found during the site survey of the southern half of the site. There is always a possibility that a site may exist in the project and be obscured by vegetation, siltation, or historic activities such as plowing and levelling for the establishment of an orchard, leaving no surface evidence. The Project would develop the entire Project site with industrial and commercial uses. The entire Project site would be disturbed in some capacity, whether for development of the basin on the western portion of the site, the industrial warehouses throughout the site, and commercial uses on the southeastern corner of the site. To assist in the recognition of cultural resources, a training session for all construction crew members should be conducted in advance of the initiation of any construction activities at the site. The training session will provide information on recognition of artifacts, human remains, and cultural deposits to help in the recognition of potential issues. Additionally, after the cutting of the next crop on the northern half of the site, the northern half should be re-surveyed to ensure full coverage. These requirements are included in Mitigation Measures 3.5-1 and 3.5-2. Further, Mitigation Measure 3.5-3 includes steps to follow should any cultural resources, including prehistoric or historic artifacts, or other indications of archaeological resources, be found during grading and construction activities.

With implementation of mitigation, construction of the proposed Project would have a ***less than significant*** impact on historical resources.

MITIGATION MEASURE(S)

Mitigation Measure 3.5-1: *Prior to any ground-disturbing activities on the Project site, all construction workers shall receive a cultural resources sensitivity training session before they begin site work to identify potentially significant cultural or similar resources that may result during construction. The sensitivity training session shall be instructed by a professional archaeologist and shall include discussion of the statutory criteria for defining unique archaeological resources, historical resources of an archaeological nature, and tribal cultural resources. The sensitivity training shall inform the workers of their responsibility to identify and protect any cultural resources, including prehistoric or historic artifacts, or other indications of archaeological resources, discovered during construction. The sensitivity training shall cover laws pertaining to cultural resources, examples of cultural resources that may be discovered, and what to do if a cultural resource, or anything that may be a cultural resource, is discovered.*

Mitigation Measure 3.5-2: *Prior to any ground-disturbing activities on the northern half of the Project site (alfalfa field), a qualified archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards in prehistoric or historical archaeology, as appropriate, shall perform a second survey the northern half of the Project site to determine whether any cultural resources, including prehistoric or historic artifacts, or other indications of archaeological resources, are located on-site. The second survey shall occur after the alfalfa cutting when the ground is more visible to ensure full coverage. The results of the second survey shall be submitted to the City's Community Development Division. No ground-disturbing activities may occur on the northern half of the Project site until the second survey has been completed and results submitted to the City Community Development Division*

If any cultural resources are found, and are determined to be potentially significant, the City shall require the preparation of a treatment plan and report of findings for cultural and tribal cultural resources. The City and the applicant shall consult and agree to implement all measures the City deems feasible. Such measures may include avoidance, preservation in place, excavation, documentation, curation, data recovery, or other appropriate measures. The applicant shall be required to implement measures necessary for the protection and documentation of cultural resources.

Mitigation Measure 3.5-3: *If any cultural resources, including prehistoric or historic artifacts, or other indications of archaeological resources, are found during grading and construction activities during any phase of the Project, all work shall be halted immediately within a 200-foot radius of the discovery until an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards in prehistoric or historical archaeology, as appropriate, has evaluated the find(s).*

The following notifications and measures shall apply to potential unique archaeological resources, potential historical resources of an archaeological nature, and potential tribal cultural resources, depending on the nature of the find:

- *If the professional archaeologist determines that the find clearly does not represent a cultural resource that might qualify as a unique archaeological resource, an historical resource of an archaeological nature, or a tribal cultural resource, work may resume immediately and no agency notifications are required.*

- *If the professional archaeologist determines that the find does represent a cultural resource that might qualify as a unique archaeological resource, an historical resource of an archaeological nature, or a tribal cultural resource, he or she shall immediately notify the City's Community Development Division (CDD) and applicable landowner, and, in the case of a potential tribal cultural resource, a tribal representative from an ethnically appropriate group in order to give such a person an opportunity to participate.*

- *With respect to finds that may qualify as a unique archaeological resource or an historical resource of an archaeological nature (but not a tribal cultural resource), the professional archaeologist and a representative from the City CDD shall consult to determine whether any unique archaeological resources or historical resources of an archaeological nature are present, in part based on a finding of eligibility for inclusion in the NRHP or CRHR. If it is determined that unique archaeological resources or historical resources of an archaeological nature are present, the qualified archaeologist shall develop mitigation or treatment measures for consideration and approval by the City CDD. Mitigation shall be developed and implemented in accordance with Public Resources Code Section 21083.2 and Section 15126.4 of the CEQA Guidelines, with a preference for preservation in place. Consistent with Section 15126.4(b)(3), preservation in place may be accomplished through planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement. If approved by the City CDD, such measures shall be implemented and*

completed prior to commencing further work for which grading or building permits were issued, unless otherwise directed by the City CDD. Avoidance or preservation of unique archaeological resources or historical resources of an archaeological nature shall not be required where such avoidance or preservation in place would preclude the construction of important structures or infrastructure or require exorbitant expenditures, as determined by the City CDD. Where avoidance or preservation are not appropriate for these reasons, the professional archaeologist, in consultation with the City CDD, shall prepare a detailed treatment plan for consideration and approval by the City CDD, which may include data recovery. If employed, data recovery strategies for unique archaeological resources that do not also qualify as historical resources of an archaeological nature shall follow the applicable requirements and limitations set forth in Public Resources Code Section 21083.2. Data recovery will normally consist of (but would not be limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim of recovering important scientific data contained within the unique archaeological resource or historical resource of an archaeological nature. The data recovery plan shall include provisions for analysis of data in a regional context, reporting of results within a timely manner, curation of artifacts and data at an approved facility, and dissemination of reports to local and State repositories, libraries, and interested professionals. If data recovery is determined by the City CDD to not be appropriate, then equally effective treatment shall be proposed and implemented. Work may not resume within the no-work radius until the City CDD, in consultation with the professional archaeologist, determines that the site either: 1) does not contain unique archaeological resources or historical resources of an archaeological nature; or 2) that the preservation and/or treatment measures have been completed to the satisfaction of the City CDD.

- *With respect to finds that may qualify as a tribal cultural resource, the professional archaeologist and a representative from the City CDD shall consult with a tribal representative from an ethnically appropriate group, if one has chosen to participate, to determine whether any tribal cultural resources are present, in part based on the criteria set forth in Public Resources Code section 21074. If it is determined that tribal cultural resources are present, the qualified archaeologist, in consultation with any participating tribal representative, shall develop mitigation or treatment measures for consideration and approval by the City CDD. In doing so, the qualified archaeologist shall give great weight to the wishes of the tribal representative, if one is participating. Mitigation shall be developed with a preference for preservation in place and with reference to the Guidelines for Monitors/Consultants of Native American Cultural, Religious, and Burial Sites established by the Native American Heritage Commission. Preservation in place may be accomplished through planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement. If approved by the City CDD, measures involving avoidance and/or preservation in place shall be implemented and completed prior to commencing further work for which grading or building permits were issued, unless otherwise directed by the City CDD. Avoidance or preservation of a tribal cultural resource shall not be required where such avoidance or preservation in place would preclude the construction of important*

structures or infrastructure or require exorbitant expenditures, as determined by the City CDD. Where avoidance or preservation are not appropriate for these reasons, the professional archaeologist, in consultation with the City CDD and any participating tribal representative, whose input shall be given great weight, shall prepare a detailed treatment plan for consideration and approval by the City CDD, which may include data recovery. Data recovery may consist of (but would not be limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim of recovering important scientific data contained within the unique archaeological resource or historical resource of an archaeological nature. The data recovery plan shall include provisions for analysis of data in a regional context, reporting of results within a timely manner, curation of artifacts and data to an institution identified by the participating tribal representative, if any, or at an approved facility, and dissemination of reports to local and State repositories, libraries, and interested professionals. If data recovery is determined by the City CDD to not be appropriate, then equally effective treatment shall be proposed and implemented. Work may not resume within the no-work radius until the City CDD, in consultation with the professional archaeologist, determines that the site either: 1) does not contain tribal cultural resources; or 2) that the preservation and/or treatment measures have been completed to the satisfaction of the City CDD.

Impact 3.5-2: The proposed Project, with mitigation, would not cause a substantial adverse change to a significant archaeological resource, as defined in CEQA Guidelines §15064.5, or a significant tribal cultural resource, as defined in Public Resources Code §21074 (Less than Significant with Mitigation)

The Project site is in an area known to have archaeological, cultural, and tribal cultural resources. As noted above, a records search was conducted for the Project area and a 0.25-mile buffer zone through the CCIC of the CHRIS (File No. 1333333448N). No resources have been reported for the Project area nor for the buffer area.

Additionally, a letter was sent to the NAHC requesting a check of the Sacred Lands files. The Sacred Lands file check did not reveal any resources on the Project site. The NAHC also provided a list of individuals and tribal groups to contact regarding the site. As noted previously, letters were sent to the groups and individuals listed on June 25, 2025. The tribal groups identified for the Project include Amah Mutsun Tribal Band, Northern Valley Yokut / Ohlone Tribe, Southern Sierra Miwuk Nation, and Tule River Indian Tribe. To date, one tribal group, the Wilton Rancheria, has responded. Wilton Rancheria stated that the Project site is outside of their current focus area.

As with most projects in the region that involve ground-disturbing activities, there is the potential for discovery of previously unknown archaeological resources and cultural resources, including prehistoric or historic artifacts. Implementation of Mitigation Measures 3.5-1 through 3.5-4 would ensure that the potential impact to tribal resources is ***less than significant***.

MITIGATION MEASURE(S)

Mitigation Measure 3.5-4: *If human remains are discovered during the course of construction during any phase of the Project, work shall be halted at the site and at any nearby area reasonably suspected to overlie adjacent human remains until the Stanislaus County Coroner has been informed and has determined that no investigation of the cause of death is required. If the remains are of Native American origin, either of the following steps will be taken:*

- *The coroner shall contact the Native American Heritage Commission to ascertain the proper descendants from the deceased individual. The coroner shall make a recommendation to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods, which may include obtaining a qualified archaeologist or team of archaeologists to properly excavate the human remains.*
- *The landowner shall retain a Native American monitor, and an archaeologist, if recommended by the Native American monitor, and rebury the Native American human remains and any associated grave goods, with appropriate dignity, on the property and in a location that is not subject to further subsurface disturbance when any of the following conditions occurs:*
    - *The Native American Heritage Commission is unable to identify a descendent.*
    - *The descendant identified fails to make a recommendation.*
    - *The City of Modesto or its authorized representative rejects the recommendation of the descendant, and the mediation by the Native American Heritage Commission fails to provide measures acceptable to the landowner.*

Impact 3.5-3: The proposed Project, with mitigation, would not disturb human remains, including those interred outside of formal cemeteries (Less than Significant with Mitigation)

Indications suggest that humans have occupied Stanislaus County for over 10,000 years and it is not always possible to predict where human remains may occur outside of formal burials. Therefore, excavation and construction activities, regardless of depth, may yield human remains that may not be interred in marked, formal burials.

Under CEQA, human remains are protected under the definition of archaeological materials as being "any evidence of human activity." Additionally, Public Resources Code Section 5097.98 has specific stop-work and notification procedures to follow if human remains are inadvertently discovered during Project implementation.

While no human remains are documented on or near the Project site, implementation of the following mitigation measure would ensure that all construction activities which inadvertently discover human remains implement state-required consultation methods to determine the disposition and historical significance of any discovered human remains. The following mitigation measure would reduce this impact to a ***less-than-significant*** level.

MITIGATION MEASURE(S)

*Implement **Mitigation Measure 3.5-4.***

CUMULATIVE IMPACTS

The geography of cultural and tribal resources impacts can be defined by region, by political subdivision, or by the geography of the cultural resources present in an area where sufficient inventory data is available to define it. The cumulative setting for cultural and tribal resources includes all of Stanislaus County. There are extensive cultural sites located in the region.

Impact 3.5-4: Cumulative Impacts on Known and Undiscovered Cultural and Tribal Resources (Less than Significant)

Cumulative development anticipated in the City of Modesto, including growth projected by adopted future projects, may result in the discovery and removal of cultural resources, including archaeological, paleontological, historical, and Native American resources and human remains. Each individual project is subject to review under CEQA and is required to obtain necessary permits and approvals from federal and state resource agencies. As a result of these processes, each project would be required to avoid, minimize, and compensate for its impact on sensitive cultural resources, such that the cumulative impact would be reduced, though not eliminated. Because not all such impacts from these other projects have been or can be reduced with certainty to less-than-significant levels, the loss of any cultural or tribal cultural resources would result in a potentially significant cumulative impact.

The Cultural Resource Assessment concluded that there is a possibility that the Project site possesses the potential to contain previously unrecorded prehistoric and/or historic era cultural resources. There is no indication that the Project site contains human remains; however, the possibility cannot be entirely discounted. The discovery of previously unknown archaeological resources or human remains, including those that could qualify as tribal cultural resources, is possible given the history of the area.

Implementation of Mitigation Measures 3.5-1 through 3.5-4 would establish protocols for the avoidance and safe handling of any cultural and tribal cultural resources encountered during implementation of the proposed Project. With implementation of these Project-level mitigation measures, the proposed Project's impact would be ***less than significant***.

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The purpose of this section is to disclose and analyze the potential impacts associated with the geology of the Project site and regional vicinity, and to analyze issues such as the potential exposure of people and property to geologic hazards, landform alteration, and erosion. This section also evaluates impacts related to mineral resources. This section is based in part on the following:

- *City of Modesto General Plan* (City of Modesto, 2019).
- *Public Draft Environmental Impact Report for the Modesto Urban Area General Plan* (City of Modesto, 2025).
- *California Geological Survey (CGS) Information Warehouse: Regulatory Maps* (California Department of Conservation, 2020).
- Modesto Municipal Code (City of Modesto, 2024).
- *Natural Resources Conservation Service (NRCS) Web Soil Survey* (NRCS, 2025).
- *Interactive Fault Map provided by the U.S. Geological Survey* (USGS, 2020).

One comment was received during the public review period or scoping meeting for the Notice of Preparation regarding this topic from Anita Young (March 24, 2025), which is addressed within this section. Full comments received are included in Appendix A.

KEY TERMS

Earthquake activity is associated with several types of seismic hazards. The State of California divides these into primary seismic hazards (surface fault rupture and ground shaking) and secondary seismic hazards (liquefaction and other types of seismically induced ground failure, along with seismically induced landslides). Key terms are defined below.

Surface fault rupture. Surface fault rupture refers to rupture, breakage, or disruption at the ground surface that occurs because of movement (slip) along an active fault.

Ground shaking. Ground shaking results from the release of energy during an earthquake. Ground shaking is most intense at the earthquake epicenter; in general, ground shaking decreases with increasing distance from the epicenter. The nature of subsurface materials also influences the strength and duration of ground shaking in an earthquake.

The intensity of ground shaking in an earthquake can be described in terms of the Modified Mercalli Intensity Scale, which assigns a range of intensity values based on the observed effects of ground shaking on people, buildings, and the natural environment. The scale's intensities are denoted by Roman numerals ranging from I (shaking that is imperceptible) to XII (total damage).

The "size" of an earthquake also can be described in terms of its *magnitude*. Commonly used scales for earthquake magnitude include Richter magnitude and moment magnitude. The Richter magnitude scale is based on the degree of ground motion experienced because of the first seismic waves to affect an area. The moment magnitude scale relies on an event's seismic moment, a measure of earthquake strength as a function of the extent (area) of fault rupture, the average displacement or slip on the ruptured surface, and the rigidity of the rock materials ruptured.

Liquefaction. Liquefaction is a phenomenon in which unconsolidated materials (soil or sediment) lose cohesion and behave like a liquid, typically because of earthquake shaking.

Liquefaction typically occurs in sandy materials that are saturated with groundwater and is restricted to the upper fifty feet below ground surface. Liquefaction poses a hazard to structures (hence to life and safety) because liquefied materials lose their strength and may become unable to support structures built on them. This can result in severe structural damage, particularly in poorly designed or constructed structures.

3.6.1 ENVIRONMENTAL SETTING

GEOLOGIC SETTING

Regional Geology

Modesto is situated at the northern end of the San Joaquin Valley, a deep, structurally controlled trough that is bounded on the north by the Sacramento Valley, on the east by the Sierra Nevada, on the south by the San Emigdio and Tehachapi Mountains, and on the west by the Coast Ranges uplift.

The San Joaquin Valley is floored by a complexly layered sequence of sedimentary deposits that reaches an estimated thickness of 11,000 feet in the vicinity of Modesto. Under the eastern and central portions of the valley, the base of the sequence likely rests on Mesozoic crystalline rock allied to the plutons of the Sierra Nevada; to the west, basement rocks are believed to be mafic and ultramafic rocks of Jurassic age. These basement rocks are immediately overlain by marine and continental (nonmarine) sedimentary rocks of Cretaceous and Tertiary age consisting of sandstone, sand, siltstone, and shale, which in turn are overlain by Quaternary (Pleistocene and Holocene) alluvial and fluvial deposits of sand, gravel, silt, and clay.

Modesto is situated primarily on alluvial fan deposits of Pleistocene age, but limited areas in the southeastern portion of Modesto are within the active floodplains of the Tuolumne River and Dry Creek and are underlain by younger (Holocene) alluvium. To the west of the City, the central portion of the Coast Ranges uplift is formed by exposed Franciscan Complex rocks of Jurassic through early Tertiary age. The range front to the west consists of a narrow belt of marine and nonmarine sedimentary rocks of post-Franciscan Tertiary age.

To the east of Modesto, the exposed ridges and slopes of the Sierra Nevada are composed primarily of Mesozoic and plutonic rocks, flanked along the valley margin by deeply dissected exposures of marine and nonmarine sedimentary rocks of Tertiary age.

Local Setting

The Scannell Industrial Project (proposed Project) consists of approximately 145 acres located at the northwest corner of Kiernan Avenue and Dale Road intersection, within the unincorporated Community of Salida. The Project site is located within the Stanislaus County Salida Community Plan (SCP) and is zoned for development as Salida Community Plan Industrial/Business Park (SCP-

IBP) and Salida Community Plan Planned Industrial (SCP-PI). The City of Modesto General Plan designates the Project site Salida Community Plan (SCP). Figures 2.0-1 and 2.0-2 in Chapter 2.0, Project Description, show the Project's regional location and vicinity.

The Project site and surrounding properties are in agricultural use. There are also light industrial developments east and west of the Project site, along Kiernan Avenue. Joseph A. Gregori High School is located northwest of the Project site, and the Kaiser Permanente Modesto Medical Center and similar business park uses are located immediately south, within the City of Modesto.

The Project site is flat and ranges in elevation from 75 to 82 feet above mean sea level.

A Custom Soil Survey was completed for the Project site using the NRCS Web Soil Survey program. The NRCS Soils Map provided in Figure 3.2-2 in Section 3.2, Agricultural Resources, identifies the type and range of soils found in the Project site, which is summarized below in Table 3.6-1. As shown, most of the Project site contains Hanford fine sandy loam, moderately deep over silt, 0 to 1% slopes. The southeastern corner of the site contains Hanford sandy loam, 0 to 3 % slopes, and Dinuba fine sandy loam, 0 to 1% slope.

TABLE 3.6-1: PROJECT SITE SOILS

NAME	*ACRES IN AOI*
Dinuba fine sandy loam, 0-1% slope	8.5
Hanford fine sandy loam, moderately deep over silt, 0-1% slopes	119.6
Hanford sandy loam, 0-3 % slopes	16.2

SOURCE: NRCS CUSTOM SOIL SURVEY 2025.

Dinuba Series: These soils are imperfectly drained and moderately coarse-textured. They are very gently sloping to level. These soils are located north and northwest of Modesto. They are cultivated, primarily for irrigated pasture and grain and vine crops.

Hanford Series: These soils are well-drained and moderately coarse-textured. They have smooth, very gentle slopes. These soils are found along the Stanislaus and Tuolumne Rivers and on broad alluvial fans in the Modesto vicinity. They are important for a wide variety of irrigated orchards and field and truck crops.

FAULTS AND SEISMICITY

Faults

A fault is a fracture in the crust of the earth along which rocks on one side have moved relative to those on the other side. A fault trace is the line on the earth's surface defining the fault. Displacement of the earth's crust along faults releases energy in the form of earthquakes and in some cases in fault creep. Most faults are the result of repeated displacements over an extended period of time.

Surface rupture occurs when movement on a fault deep within the earth breaks through to the surface. Surface ruptures have been known to extend to fifty miles with displacements of an inch

to twenty feet. Fault rupture always follows preexisting faults, which are zones of weakness. Rupture may occur suddenly during an earthquake or slowly in the form of fault creep. Sudden displacements are more damaging to structures because they are accompanied by shaking.

The State of California designates faults as active, potentially active, and inactive depending on how recent the movement that can be substantiated for a fault. Table 3.6-2 presents the California fault activity rating system.

TABLE 3.6-2: FAULT ACTIVITY RATING

FAULT ACTIVITY RATING	*GEOLOGIC PERIOD OF LAST RUPTURE*	*TIME INTERVAL (YEARS)*
Active (A)	Holocene	Within last 11,000 years
Potentially Active (PA)	Quaternary	11,000-1.6 million Years
Inactive (I)	Pre-Quaternary	Greater than 1.6 million

SOURCE: CALIFORNIA GEOLOGICAL SURVEY

Figure 3.6-1 provides a map of known area faults. No known faults traverse through the Project site or City limits. Additionally, according to the City's General Plan EIR, no faults in the Modesto area are recognized as active by the State of California and zoned pursuant to the Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act), nor is the Modesto area traversed by any faults recognized by the Uniform Building Code (UBC) as active.

The only active fault reported in Stanislaus County is the Tesla-Ortigalita fault, which is located approximately twenty miles west of Modesto. Based on geomorphic evidence and results of trench studies, the Ortigalita fault is believed to experience right-lateral strike-slip motion and can generate earthquakes with a Richter scale magnitude of 6.5 to 6.75. The recurrence interval for large magnitude events on the Ortigalita is inferred to be 2,000–5,000 years on the fault as a whole and 10,000– 25,000 years on individual fault segments (see Table V-17-1). The UBC (International Conference of Building Officials 1997) characterizes the Ortigalita fault as a Type B seismic source. The UBC evaluates the risk associated with active faults based on their potential to generate large earthquakes (measured as the moment magnitude for the largest earthquake anticipated on the fault) and their degree of seismic activity (measured as average annual slip rate). Under this system, a Type A seismic source is a fault that can produce large-magnitude events (> M 7.0) and is highly active (has a high average annual slip rate). A Type B seismic source is associated with smaller maximum events and/or is less active but still constitutes a substantial seismic threat. It is not known to experience fault creep.

Other active faults in the surrounding region include: the Greenville fault, located approximately thirty-five miles northwest of Modesto; the Calaveras and Concord faults, approximately fifty miles west of Modesto; the Hayward fault, about sixty miles to the west; and, the San Andreas fault, approximately seventy-five miles west.

Based on information furnished by the Department of Mines and Geology (now the California Geological Survey) and the Office of Emergency Services, earthquakes typical of surrounding-area faults can produce ground shaking to an intensity of VI or VII on the Modified Mercalli Intensity Scale (Stanislaus County 1987). Based on this scale, slight structural damage would occur because of an intensity-VI earthquake. Damage from an intensity-VII earthquake would be negligible in

buildings of good construction and design, slight to moderate in well-built ordinary structures, and considerable in poorly built or badly designed structures.

Seismicity

The amount of energy available to a fault is determined by considering the slip-rate of the fault, its area (fault length multiplied by down-dip width), maximum magnitude, and the rigidity of the displaced rocks. These factors are combined to calculate the moment (energy) release on a fault. The total seismic energy release for a fault source is sometimes partitioned between two different recurrence models, the characteristic and truncated Gutenberg-Richter (G-R) magnitude-frequency distributions. These models incorporate our knowledge of the range of magnitudes and relative frequency of different magnitudes for a particular fault. The partition of moment and the weights for multiple models are given in the following summary.

Earthquakes are expressed in terms of intensity and magnitude. Intensity is based on the observed effects of ground shaking on people, buildings, and natural features. By comparison, magnitude is based on the amplitude of the earthquake waves recorded on instruments, which have a common calibration. The Richter scale, a logarithmic scale ranging from 0.1 to 9.0, with 9.0 being the strongest, measures the magnitude of an earthquake relative to ground shaking. Table 3.6-3 provides a description and a comparison of intensity and magnitude.

TABLE 3.6-3: MODIFIED MERCALLI INTENSITY SCALE FOR EARTHQUAKES

RICHTER MAGNITUDE	*MODIFIED MERCALLI*	*EFFECTS OF INTENSITY*
0.1 – 0.9	I	Earthquake shaking not felt
1.0 – 2.9	II	Shaking felt by those at rest.
3.0 – 3.9	III	Felt by most people indoors, some can estimate duration of shaking.
4.0 – 4.5	IV	Felt by most people indoors. Hanging objects rattle, wooden walls, and frames creak.
4.6 – 4.9	V	Felt by everyone indoors, many can estimate duration of shaking. Standing autos rock. Crockery clashes, dishes rattle and glasses clink. Doors open, close, and swing.
5.0 – 5.5	VI	Felt by all who estimate duration of shaking. Sleepers awaken, liquids spill, objects are displaced, and weak materials crack.
5.6 – 6.4	VII	People are frightened and walls unsteady. Pictures and books thrown, dishes and glass are broken. Weak chimneys break. Plaster, loose bricks and parapets fall.
6.5 – 6.9	VIII	Difficult to stand. Waves on ponds, cohesionless soils slump. Stucco and masonry walls fall. Chimneys, stacks, towers, and elevated tanks twist and fall.
7.0 – 7.4	IX	General fright as people are thrown down, hard to drive. Trees broken, damage to foundations and frames. Reservoirs damaged, underground pipes broken.
7.5 – 7.9	X	General panic. Ground cracks, masonry and frame buildings destroyed. Bridges destroyed; railroads bent slightly. Dams, dikes, and embankments damaged.
8.0 – 8.4	XI	Large landslides, water thrown, general destruction of buildings. Pipelines destroyed; railroads bent.
8.5 +	XII	Total nearby damage, rock masses displaced. Lines of sight/level distorted. Objects thrown into air.

SOURCE: UNITED STATES GEOLOGICAL SURVEY

As noted previously, the UBC (International Conference of Building Officials 1997) characterizes the Ortigalita fault as a Type B seismic source. The UBC evaluates the risk associated with active faults based on their potential to generate large earthquakes (measured as the moment magnitude for the largest earthquake anticipated on the fault) and their degree of seismic activity (measured as average annual slip rate). Under this system, a Type A seismic source is a fault that can produce large-magnitude events (> M 7.0) and is highly active (has a high average annual slip rate). A Type B seismic source is associated with smaller maximum events and/or is less active but still constitutes a substantial seismic threat. It is not known to experience fault creep.

SEISMIC HAZARDS

Seismic Ground Shaking

The potential for seismic ground shaking in California is expected. As a result of the foreseeable seismicity in California, the State requires special design considerations for all structural improvements in accordance with the seismic design provisions in the California Building Code. These seismic design provisions require enhanced structural integrity based on several risk parameters. Seismic ground shaking in the Project site is expected during the life of the proposed Project. Therefore, all structures will be built in accordance with the California Building Code's seismic design standards.

Fault Rupture

A fault rupture occurs when the surface of the earth breaks because of an earthquake, although this does not happen with all earthquakes. These ruptures occur in a weak area of an existing fault. Ruptures can be sudden (i.e., earthquake) or slow (i.e., fault creep). The Alquist-Priolo Fault Zoning Act requires active earthquake fault zones to be mapped, and it provides special development considerations within these zones. The Project site does not have surface expression of active faults and fault rupture is not anticipated.

Liquefaction

Liquefaction typically requires a significant sudden decrease of shearing resistance in cohesionless soils and a sudden increase in water pressure, which is typically associated with an earthquake of high magnitude. Liquefaction can cause foundation failure of buildings and other facilities due to the reduction of foundation bearing strength. The potential for liquefaction depends on the duration and intensity of earthquake shaking, particle size distribution of the soil, density of the soil, and elevation of the groundwater. Areas at risk of liquefaction are typified by a high groundwater table and underlying loose to medium-dense, granular sediments, particularly younger alluvium, and artificial fill. Clayey type soils are not subject to liquefaction.

According to the Modesto General Plan Update Draft EIR, the potential for liquefaction to occur in the Modesto area has not yet been evaluated by the State of California under the Seismic Hazards Mapping Act. However, much of the substrate in the City's Planning Area consists of young, unconsolidated alluvial and fluvial (river) deposits, and groundwater data from wells in Modesto

show the depth to groundwater ranging from 11.7 to 62.5 feet. Such soil and groundwater conditions may present a liquefaction hazard in portions of the planning area.

Lateral Spreading

Lateral spreading typically results when ground shaking moves soil toward an area where the soil integrity is weak or unsupported, and it typically occurs on the surface of a slope, although it does not occur strictly on steep slopes. Oftentimes, lateral spreading is directly associated with areas of liquefaction. According to the Modesto General Plan Update Draft EIR, conditions exist in the planning area that could result in seismic-related ground failure such as lateral spreading (lurching).

Landslides

Landslides include rockfalls, deep slope failure, and shallow slope failure. Factors such as geological conditions, drainage, slope, vegetation, and others directly affect the potential for landslides. One of the most common causes of landslides is construction activity that is associated with road building (i.e., cut and fill). According to the Modesto General Plan Update Draft EIR, historically, landslides in Stanislaus County have occurred primarily in the Diablo Range in the western portion of the county, where steep slopes and unstable geologic conditions have presented a substantial limitation to development. By contrast, the regional slope in the vicinity of Modesto is on the order of 0.001 vertical foot of change per foot of horizontal distance (0.1% slope). Local slopes may approach 8% in areas where former sand dunes are located. Because the Project site is level, it is not subject to landslides.

NON-SEISMIC HAZARDS

Expansive Soils

Expansive soils can undergo significant volume change with changes in moisture content. They shrink and harden when dried and expand and soften when wet. If structures are underlain by expansive soils, it is important that foundation systems be capable of tolerating or resisting any potentially damaging soil movements. In addition, it is important to limit moisture changes in the surficial soils by using positive drainage away from buildings as well as limiting landscaping watering. According to the Modesto General Plan Update Draft EIR, information on the engineering properties of soils in Modesto is not readily available, but where soils are clay-rich, there may be some potential for expansive soils. Concerns related to development on expansive soils typically can be addressed through appropriate design.

Erosion

Erosion naturally occurs on the surface of the earth as surface materials (i.e., rock, soil, debris, etc.) is loosened, dissolved, or worn away, and transported from one place to another by gravity. Two common types of soil erosion include wind erosion and water erosion. The steepness of a slope is a key factor that affects soil erosion. Erosion potential in soils is influenced primarily by loose soil texture and steep slopes. Loose soil can be eroded by water or wind forces, whereas soils with high clay content are susceptible only to water erosion. The potential for erosion

increases because of human activity, primarily through the development of facilities and impervious surfaces and the removal of vegetative cover. Based on the soils on-site, it is anticipated that the Project site would be susceptible to only water erosion.

The NRCS Web Soil Survey identified the erosion potential for the soils in the Project site, including the hydrologic soil group, erosion factors Kf for the surface horizon, erosion factor T, and the representative percentage of sand, silt, and clay in the surface horizon. Erosion factor K indicates the susceptibility of soil to sheet and rill erosion by water. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water. Within the Project site, the erosion factor Kf varies from 0.24 to 0.28, which is considered a moderate potential for erosion. It is noted that the Project site is flat, which affects the erosion potential of the site soils.

Collapsible Soils

Collapsible soils undergo a rearrangement of their grains and a loss of cementation, resulting in substantial and rapid settlement under low loads. Collapsible soils occur at the base of mountain ranges, where Holocene-age alluvial fan and wash sediments have been deposited during rapid run-off events. Soils prone to collapse are commonly associated with manmade fill, wind-laid sands and silts, and alluvial fan and mudflow sediments deposited during flash floods. During an earthquake, even slight settlement of fill materials can lead to a differentially settled structure and significant repair costs. Differential settlement of structures typically occurs when heavily irrigated landscape areas are near a building foundation. Examples of common problems associated with collapsible soil include tilting floors, cracking or separation in structures, sagging floors, and nonfunctional windows and doors. Collapsible soils have not been identified in the Modesto General Plan as an issue in the Modesto area. However, in areas subject to potential liquefaction, the potential for liquefaction induced settlement is present.

Subsidence

Land subsidence is the gradual settling or sinking of an area with little or no horizontal motion due to changes taking place underground. It is a natural process, although it can also occur (and is accelerated) because of human activities. Common causes of land subsidence from human activity include: pumping water, oil, and gas from underground reservoirs; dissolution of limestone aquifers (sinkholes); collapse of underground mines; drainage of organic soils; and initial wetting of dry soils. Subsidence has not been identified in the Modesto General Plan as an issue in the Modesto area. Therefore, the probability of subsidence occurring on the Project site is low.

PALEONTOLOGICAL RESOURCES

Paleontological resources consist of the fossilized remains of plants and animals, including vertebrates (animals with backbones) and invertebrates (e.g., starfish, clams, ammonites, and coral). Fossils of microscopic plants and animals, or microfossils, are also considered in this analysis. The age and abundance of fossils depend on the location, topographic setting, and particular geologic formation in which they are found. The geologic formations containing most fossils in the county are considered geologically young; the oldest fossil-bearing formation dates to

the Paleocene epoch (sixty-five million years old). Most of the fossil-bearing geologic units in the county were formed in ancient marine environments such as inland embayments, coastal areas, and extensive inland seas.

Paleontological resources in the San Joaquin Region are most prevalent in geologic formations located along the western margin of the San Joaquin Valley, many miles away from the Project site. These formations include the marine sandstone, mudstone, siltstone, and shale of the San Pablo Formation, various undivided conglomerate, sandstone, and siltstone units, and the Moreno Formation. The Moreno Formation, which is present along the western margin of the Great Valley as an elongated and continuous, northwest-trending unit, consists of shale, sandstone, and siltstone that were once deposited in a deep-marine environment.

MINERAL RESOURCES

Historic mineral production in Stanislaus County has included construction materials (sand and gravel), industrial minerals (diatomite, clay, mineral pigments, magnesite, quartz, and dimension stone), and metallic minerals (chromite, placer gold, manganese, mercury, platinum, and silver. However, the only mineral commodities that are mined actively in Stanislaus County are sand and gravel.

No areas classified as Mineral Resource Zones (MRZ-2a or MRZ-2b) under the Surface Mining and Reclamation Act—that is, areas where significant mineral deposits have been determined to exist—occur within the City of Modesto's General Plan Planning Area. Modesto is entirely within an area zoned MRZ- 3a for sand and gravel. This designation indicates areas containing known mineral occurrences of undetermined significance. As recently as 1998, there were five active sand and gravel operations and one specialty sand mining operation in Modesto. However, no mining activity occurs in Modesto, and data from the U.S. Geological Survey regarding mineral production in California indicate that no new mines or expansions of existing mines were approved in Modesto between 1999 and 2006.

3.6.2 REGULATORY SETTING

FEDERAL

Uniform Building Code

The purpose of the Uniform Building Code (UBC) is to provide minimum standards to preserve the public peace, health, and safety by regulating the design, construction, quality of materials, certain equipment, location, grading, use, occupancy, and maintenance of all buildings and structures. UBC standards address foundation design, shear wall strength, and other structurally related conditions.

STATE

The State of California has established a variety of regulations and requirements related to seismic safety and structural integrity, including the California Building Code, the Alquist-Priolo Earthquake Fault Zoning Act, and the Seismic Hazards Mapping Act.

California Building Standards Code

The CBSC is included in Title 24 of the California Code of Regulations (CCR) and includes the California Building Code. Under state law, all building standards must be centralized in Title 24 or they are not enforceable.

The CBSC is a compilation of three types of building criteria from three different origins:

- Building standards that have been adopted by state agencies without change from building standards contained in national model codes.
- Building standards that have been adopted and adapted from the national model code standards to meet California conditions; and
- Building standards, authorized by the California legislature, which constitute extensive additions not covered by the model codes that have been adopted to address California concerns.

Through the CBSC, the state provides a minimum standard for building design and construction. The CBSC contains specific requirements for seismic safety, excavation, foundations, retaining walls, and site demolition. It also regulates grading activities, including drainage and erosion control.

California Building Code

The California Building Code, Title 24 of the CCR, Part 2, Chapter 16 addresses structural design, Chapter 17 addresses structural tests and special inspections, and Chapter 18 addresses soils and foundations. Section 1610 provides structural design standards for foundation walls and retaining walls to ensure resistance to lateral soil loads. Section 1613 provides structural design standards for earthquake loads. Section 1704.7 requires special inspections for existing site soil conditions, fill placement and load-bearing requirements during the construction as specified in Table 1705.7 of this section. Sections 1705.8 through 1705.16 provide inspection and testing requirements for various foundation types, and construction material types. Section 1803.1.1.1 requires each city and county to enact an ordinance which requires a preliminary soil report and that the report be based upon adequate test borings or excavations, of every subdivision, where a tentative and final map is required pursuant to Section 66426 of the Government Code. Section 1803.5.3 defines expansive soils and specifies that in areas likely to have expansive soil, the building official shall require soil tests to determine where such soils do exist. Section 1803.5.4 specifies that a subsurface soil investigation must be performed to determine whether the existing ground-water table is above or within five feet (1524 mm) below the elevation of the lowest floor level where such floor is located below the finished ground level adjacent to the foundation. Section 1803.5.8 provides specific standards where shallow foundations will bear on compacted fill material more than twelve inches (305 mm) in depth. Section 1803.5.11 and 1803.5.12 provide requirements for geotechnical investigations for structures assigned varying Seismic Design Categories in accordance with Section 1613. Section 1804 provides standards and requirements for excavation, grading, and fill. Section 1808, 1809, and 1810 provides standards and requirements for the construction of varying foundations.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act of 1972, codified in the California Public Resources Code, Division 2, Chapter 7.5, sets forth the policies and criteria of the State Mining and Geology Board, which governs the exercise of governments' responsibilities to prohibit the location of developments and structures for human occupancy across the trace of active faults. The policies and criteria are limited to potential hazards resulting from surface faulting or fault creep within Earthquake Fault Zones, as delineated on maps officially issued by the State Geologist. Working definitions include:

- Fault – a fracture or zone of closely associated fractures along which rocks on one side have been displaced with respect to those on the other side.
- Fault Zone – a zone of related faults, which commonly are braided and sub parallel, but may be branching and divergent. A fault zone has a significant width (with respect to the scale at which the fault is being considered, portrayed, or investigated), ranging from a few feet to several miles.
- Sufficiently Active Fault – a fault that has evidence of Holocene surface displacement along one or more of its segments or branches (last 11,000 years); and
- Well-Defined Fault – a fault whose trace is clearly detectable by a trained geologist as a physical feature at or just below the ground surface. The geologist should be able to locate the fault in the field with sufficient precision and confidence to indicate that the required site-specific investigations would meet with some success.

"Sufficiently Active" and "Well Defined" are the two criteria used by the State to determine if a fault should be zoned under the Alquist-Priolo Act.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990, codified in the California Public Resources Code §§2690-2699.6, addresses non-surface fault rupture earthquake hazards, including liquefaction and seismically induced landslides. Under the Act, seismic hazard zones are to be mapped by the State Geologist to assist local governments in land use planning. The program and actions mandated by the Seismic Hazards Mapping Act closely resemble those of the Alquist-Priolo Earthquake Fault Zoning Act (which addresses only surface fault-rupture hazards) and are outlined below:

The State Geologist is required to delineate the various "seismic hazard zones."

- Cities and Counties, or other local permitting authority, must regulate certain development "projects" within the zones. They must withhold the development permits for a site within a zone until the geologic and soil conditions of the site are investigated and appropriate mitigation measures, if any, are incorporated into development plans.
- The State Mining and Geology Board provides additional regulations, policies, and criteria, to guide cities and counties in their implementation of the law. The Board also provides guidelines for preparation of the Seismic Hazard Zone Maps and for evaluating and mitigating seismic hazards.

- Sellers (and their agents) of real property within a mapped hazard zone must disclose that the property lies within such a zone at the time of sale.

Caltrans Seismic Design Criteria

The California Department of Transportation (Caltrans) has Seismic Design Criteria (SDC), which is an encyclopedia of new and currently practiced seismic design and analysis methodologies for the design of new bridges in California. The SDC adopts a performance-based approach specifying minimum levels of structural system performance, component performance, analysis, and design practices for ordinary standard bridges. The SDC has been developed with input from the Caltrans Offices of Structure Design, Earthquake Engineering and Design Support, and Materials and Foundations. Memo to Designers 20-1 (July 2010) outlines the bridge category and classification, seismic performance criteria, seismic design philosophy and approach, seismic demands and capacities on structural components and seismic design practices that collectively make up Caltrans' seismic design methodology.

National Pollutant Discharge Elimination System (NPDES)

National Pollutant Discharge Elimination System (NPDES) permits are required for discharges of pollutants to navigable waters of the United States, which includes any discharge to surface waters, including lakes, rivers, streams, bays, the ocean, dry stream beds, wetlands, and storm sewers that are tributary to any surface water body. NPDES permits are issued under the Federal Clean Water Act, Title IV, Permits and Licenses, Section 402 (33 USC 466 et seq.)

The Regional Water Quality Control Board (RWQCB) issues these permits in lieu of direct issuance by the Environmental Protection Agency, subject to review and approval by the Environmental Protection Agency Regional Administrator. The terms of these NPDES permits implement pertinent provisions of the Federal Clean Water Act and the Act's implementing regulations, including pre-treatment, sludge management, effluent limitations for specific industries, and anti- degradation. In general, the discharge of pollutants is to be eliminated or reduced as much as practicable to achieve the Clean Water Act's goal of "fishable and swimmable" navigable (surface) waters. Technically, all NPDES permits issued by the RWQCB are also Waste Discharge Requirements issued under the authority of the California Water Code.

These NPDES permits regulate discharges from publicly owned treatment works, industrial discharges, stormwater runoff, dewatering operations, and groundwater cleanup discharges. NPDES permits are issued for five years or less and are therefore to be updated regularly. The rapid and dramatic population and urban growth in the Central Valley Region have caused a significant increase in NPDES permit applications for new waste discharges. To expedite the permit issuance process, the RWQCB has adopted several general NPDES permits, each of which regulates numerous discharges of similar types of wastes. The California State Water Resources Control Board (SWRCB) issues general permits for stormwater runoff from construction sites statewide. Stormwater discharges from industrial and construction activities in the Central Valley Region can be covered under these general permits, which are administered jointly by the SWRCB and RWQCB.

In accordance with the NPDES General Construction Permit requirements, a Storm Water Pollution Prevention Plan (SWPPP) is required for projects that disturb at least one acre of soil. The SWPPP must be submitted to the RWQCB.

Water Quality Control Plan for the Central Valley Region

The Water Quality Control Plan for the Central Valley Region (Basin Plan) includes a summary of beneficial water uses, water quality objectives needed to protect the identified beneficial uses, and implementation measures. The Basin Plan establishes water quality standards for all the ground and surface waters of the region. The term "water quality standards," as used in the Federal Clean Water Act, includes both the beneficial uses of specific water bodies and the levels of quality that must be met and maintained to protect those uses. The Basin Plan includes an implementation plan describing the actions by the RWQCB and others that are necessary to achieve and maintain water quality standards.

The RWQCB regulates waste discharges to minimize and control their effects on the quality of the region's ground and surface water. Permits are issued under several programs and authorities. The terms and conditions of these discharge permits are enforced through a variety of technical, administrative, and legal means. Water quality problems in the region are listed in the Basin Plan, along with the causes where they are known. For water bodies with quality below the levels necessary to allow all the beneficial uses of the water to be met, plans for improving water quality are included. The Basin Plan reflects, incorporates, and implements applicable portions of several national and statewide water quality plans and policies, including the California Water Code and the Clean Water Act.

Surface Mining and Reclamation Act of 1975 (SMARA)

The Surface Mining and Reclamation Act of 1975 (SMARA), codified in the California Public Resources Code Section 2710 et. seq., was enacted in response to land use conflicts between urban growth and essential mineral production. It requires the California Geological Survey (formerly the California Division of Mines and Geology) to classify California lands into MRZs. The MRZ classifications are defined as follows.

- MRZ-1: areas where adequate information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence.
- MRZ-2: areas where adequate information indicates that significant mineral deposits are present or where it is judged that a high likelihood for their presence exists.
- MRZ-3: areas containing mineral deposits, the significance of which cannot be evaluated from available data.
- MRZ-4: areas where available information is inadequate for assignment into any other MRZ.

Based on the MRZ zoning system, SMARA creates a framework for local government to consider the impacts of new development on the availability of mineral resources.

Government Code Article 10.5 (Sections 65560-65570) requires a general plan's open space element to protect "major mineral deposits."

Division of Mines and Geology

The California Division of Mines and Geology (DMG) operates within the Department of Conservation. The DMG is responsible for assisting in the utilization of mineral deposits and the identification of geological hazards.

State Geological Survey

Similar to the DMG, the California Geological Survey is responsible for assisting in the identification and proper utilization of mineral deposits, as well as the identification of fault locations and other geological hazards.

LOCAL

City of Modesto Urban Area General Plan

A discrete reference number is assigned to each policy to facilitate its identification elsewhere in this Program EIR (e.g., policies are designated as GSM-*X,* where *X* is the discrete number).

GSM-1: Continue to use building codes as the primary tool for reducing seismic risk in structures. The current version of the California Building Code, as adopted by the City of Modesto, is intended to ensure that buildings resist major earthquakes of the intensity or severity of the strongest experience in California, without collapse, but with some structural as well as nonstructural damage. In most structures, it is expected that structural damage could be limited to repairable damage, even in a major earthquake. (UAGP Policy VII.K[a])

GSM-2: Require all new buildings in the City to be built to the seismic requirements of the current adopted California Building Code. (UAGP Policy VII.K[b])

GSM-3: Continue to explore measures to induce building owners to upgrade and retrofit structures to render them seismically safe. (UAGP Policy VII.K[c])

GSM-4: Enforce provisions of the Alquist-Priolo Earthquake Fault Zoning Act. (UAGP Policy VII.K[d])

GSM-5: Any construction that occurs as a result of the General Plan must conform to the current California Building Code regulations, which address seismic safety of new structures and slope requirements. As appropriate, require a geotechnical analysis prior to tentative map approval in order to ascertain site-specific subsurface information necessary to estimate foundation conditions. These geotechnical studies should reference and make use of the most recent regional geologic maps available from the California Department of Conservation Division of Mines and Geology. (UAGP Policy VII.N[a])

GSM-6: Discourage development on lands that are subject to landslides. (UAGP Policy VII.N[b])

GSM-7: New public roads in areas subject to landslides should be designed to minimize landslide risks. (UAGP Policy VII.N[c])

GSM-8: All building permits should be reviewed to ensure compliance with the current adopted edition of the California Fire Code, California Building Code, California Mechanical Code, California Electrical Code, California Plumbing Code, Title 19, Title 24, and the City of Modesto Municipal Code. (UAGP Policy VII.N[d])

GSM-9: Include "best management practices" in the erosion control program, as appropriate, given the specific circumstances of the site and/or project. Table 9-2 in the Program Environmental Impact Report presents examples of best management practices. (UAGP Policy VII.N.[f])

GSM-10: Design sediment control basins to capture eroded sediments and contain them on the project sites shall be designed consistent with the criteria outlined in Table 9-3 in the Program Environmental Impact Report. (UAGP Policy VII.N[g])

GSM-11: Promote public awareness of the following local routes for the public's use in evacuating the City in the event of an emergency.

1. State Highways 99, 132, 219, and 108
2. Briggsmore Avenue
3. Claus Road
4. Standiford/Sylvan Avenue
5. Scenic Drive
6. Pelandale Avenue
7. Ninth Street
8. Paradise Road
9. Carpenter Road (UAGP Policy VII.N[h])

GSM-12: City plans and policies shall not interfere with any emergency evacuation and response plans. This would include the continued maintenance of adequate police and fire services, and identified emergency evacuation routes (UAGP Figure VII-3). (UAGP Policy VII.N[i])

GSM-13: Ensure the provision of adequate and accessible evacuation routes. (UAGP Policy VII.N[j])

City of Modesto Municipal Code

The City has adopted the California Building Code, as have Stanislaus County (the County) and numerous other cities within the county. Portions of the California Building Code and UBC that have been adopted by the City and that are particularly relevant to geology and geologic hazards include California Building Code Chapter 16 (Structural Design), and Chapter 33 (Safeguards During Construction), in addition to Appendix J (Grading).

Stanislaus County, including Modesto, is within the UBC Seismic Zone 3; accordingly, any future development in the planning area is required to comply with all UBC Seismic Zone 3 design standards.

The City's Grading and Erosion Control Ordinance (Section 5-10.301 et seq., Modesto Municipal Code) requires a grading and erosion control permit before any grading may occur that involves 350 cubic yards of soil or clears more than 0.5 acre of land. The City can condition issuance of a permit to ensure that grading does not result in erosion or a release of soil off the site. Erosion is controlled further through the City's "Erosion and Sediment control Standards for Construction Activities" adopted as part of the City's National Pollutant Discharge Elimination System (NPDES) permit from the Regional Water Quality Control Board (RWQCB). This establishes best management practices (BMPs) to avoid erosion.

3.6.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed Project will have a significant impact on geology and soils if it will:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
    - i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.
    - ii) Strong seismic ground shaking.
    - iii) Seismic-related ground failure, including liquefaction.
    - iv) Landslides.
- Result in substantial soil erosion or the loss of topsoil;
- 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.
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.
- Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water; or
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Additionally, consistent with Appendix G of the CEQA Guidelines, the proposed project may have a significant impact on mineral resources if it would:

- Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; or
- Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

IMPACTS AND MITIGATION MEASURES

Impact 3.6-1: The proposed Project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: rupture of a known earthquake fault, strong seismic ground shaking, seismic related ground failure, or landslides (Less than Significant)

As previously mentioned, the Project site consists of active agricultural fields and orchards. The proposed Project will result in the construction of up to 2,503,230 square feet (sf) of warehouse, distribution, and manufacturing space (maximum development scenario). In addition, a small two- to three-acre retail site is proposed at the corner of Dale Road and Kiernan Avenue (SR 219) to provide retail services for the project. The proposed Project requires approval of a Tentative Subdivision Map for the division of the Project site into eight parcels for the development of the proposed industrial and retail buildings. The following describes the potential for the loss, injury, or death due to ground rupture, strong ground shaking, liquefaction, or landslides on the Project site.

GROUND RUPTURE

The California Geologic Survey (CGS) evaluates faults and determines if a fault should be zoned as active, potentially active, or inactive. All active faults are incorporated into a Special Studies Zone, also referred to as an Alquist-Priolo Special Study Zone. As shown in Figure 3.6-1, the Project site is not within an Alquist-Priolo Special Study Zone, and no faults are located within the Modesto Planning Area. The Project site does not have surface expression of active faults and fault rupture is not anticipated. Therefore, because no faults are located on the Project site, the potential for ground rupture (cracking or breaking of the ground during an earthquake) would be less than significant.

GROUND SHAKING

As previously discussed, according to the City's General Plan EIR, no faults in the Modesto area are recognized as active by the State of California and zoned pursuant to the Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act, defined further under State Policies), nor is the Modesto area traversed by any faults recognized by the Uniform Building Code (UBC) as active. Nevertheless, the Uniform Building Code places all of California in the zone of greatest earthquake severity because recent studies indicate high potential for severe ground shaking.

To reduce the impact of seismic ground shaking on the development, the Project would be required to be constructed using standard engineering and seismic safety design techniques of the California Building Code. Seismic design provisions of current building codes prescribe minimum lateral forces, applied statically to the structure, combined with the gravity forces of dead-and-live loads. The code-prescribed lateral forces are smaller than the comparable forces that would be associated with a major earthquake. Therefore, structures would be able to: (1) resist minor earthquakes without damage, (2) resist moderate earthquakes without structural damage but with

some nonstructural damage, and (3) resist major earthquakes without collapse but with some structural as well as nonstructural damage. Design in accordance with these standards and policies would reduce any potential impact to a less than significant level.

LANDSLIDES

The Project site is flat; therefore, the potential for a landslide on the Project site is non-existent. Some limited potential for slope instability risk could arise during grading and construction activities, where slopes could be over-steepened. However, this risk is mitigated by adhering to relevant California Building Code requirements. Additionally, according to the CGS Information Warehouse: Regulatory Maps, the site is not located within a Landslide and Liquefaction Zone. As a result, the probability of landslides causing substantial adverse effects on people or structures is less than significant.

CONCLUSION

The City, as with virtually all sites within the State of California, will always be subject to potential ground shaking caused by seismic activity anywhere in California, including the Project site. To minimize potential damage to the buildings and site improvements, all construction in California is required to be designed in accordance with the latest seismic design standards of the California Building Code. As discussed under Section 3.6.2 Regulatory Setting, the California Building Code, Title 24, C.C.R., Part 2, Chapter 16 addresses structural design and Chapter 18 addresses soils and foundations. Collectively, these state requirements, which have been adopted by the City of Modesto, include design standards and requirements that are intended to minimize impacts on structures in seismically active areas of California. Section 1613 specifically provides structural design standards for earthquake loads. Section 1803.5.11 and 1803.5.12 provide requirements for geotechnical investigations for structures assigned varying Seismic Design Categories in accordance with Section 1613. Design in accordance with these standards and policies would reduce any potential impact to a less than significant level. Because all development in the Project site must be designed in conformance with these state and local standards and policies, any potential impact would be considered ***less than significant***.

Impact 3.6-2: Implementation and construction of the proposed Project would not result in substantial soil erosion or the loss of topsoil (Less than Significant)

The potential for erosion increases because of human activity, primarily through the development of facilities and impervious surfaces and the removal of vegetative cover; thus, there is the potential for erosion associated with construction activities or through the operational phase of a project.

As noted previously, the NRCS Web Soil Survey identified the erosion potential for the soils in the Project site, including the hydrologic soil group, erosion factors Kf for the surface horizon, erosion factor T, and the representative percentage of sand, silt, and clay in the surface horizon. Erosion factor K indicates the susceptibility of soil to sheet and rill erosion by water. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to

sheet and rill erosion by water. Within the Project site, the erosion factor Kf varies from 0.24 to 0.28, which is considered a moderate potential for erosion. It is noted that the Project site is flat, which affects the erosion potential of the site soils.

Regardless of the potential for erosion, there is always the potential for human caused erosion associated with construction activities or through the operational phase of a project. However, grading, excavation, removal of vegetation cover, and loading activities associated with construction could temporarily increase runoff, erosion, and sedimentation. Construction activities also could result in soil compaction and wind erosion effects that could adversely affect soils and reduce the revegetation potential at construction sites and staging areas. Additionally, there is the potential for erosion associated with stormwater runoff throughout the operational phase of the project. The potential for erosion is associated with the design of the improvements, structures, and landscaping.

The proposed Project would be subject to the provisions of the City's Grading and Erosion Control Ordinance (Section 5-10.301 et seq., Modesto Municipal Code). The City can condition issuance of a permit to ensure that grading does not result in erosion or a release of soil off the site. Erosion is controlled further through the City's "Erosion and Sediment control Standards for Construction Activities" adopted as part of the City's National Pollutant Discharge Elimination System (NPDES) permit from the Regional Water Quality Control Board (RWQCB). This establishes best management practices (BMPs) to avoid erosion. Compliance with all applicable erosion control measures outlined in the City's Grading and Erosion Control Ordinance would assist in minimizing any impacts related to topsoil erosion.

Additionally, in accordance with the NPDES Stormwater Program, projects in California must prepare a Stormwater Pollution Prevention Plan (SWPPP) containing Best Management Practices (BMPs) to reduce erosion and sediments to meet water quality standards. Such BMPs may include: temporary erosion control measures such as silt fences, staked straw bales/wattles, silt/sediment basins, and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover. The BMPs and overall SWPPP is reviewed by the Regional Water Quality Control Board as part of the permitting process. An approved SWPPP would be required for the Project and would be designed to control erosion and the loss of topsoil to the extent practicable using BMPs that the RWQCB has deemed effective in controlling erosion, sedimentation, runoff during construction activities. The RWQCB has stated that these erosion control measures are only examples of what should be considered and should not preclude new or innovative approaches currently available or being developed. The specific controls are subject to review and approval by the RWQCB and are existing regulatory requirements.

Overall, compliance with the City's Grading and Erosion Control Ordinance coupled with the implementation of a SWPPP would ensure that the proposed Project would have a ***less than significant*** impact relative to this topic.

Impact 3.6-3: The proposed Project, with mitigation would not be located on a geologic unit or soil that is unstable, or that would become unstable as a result of Project implementation, and potentially result in landslide, lateral spreading, subsidence, liquefaction or collapse (Less than Significant with Mitigation)

LANDSLIDE AND LIQUEFACTION

The Project site is flat and, to date, the potential for liquefaction to occur in the Modesto area has not yet been evaluated by the State of California under the Seismic Hazards Mapping Act. However, much of the substrate in the City's Planning Area consists of young, unconsolidated alluvial and fluvial (river) deposits, and groundwater data from wells in Modesto show the depth to groundwater ranging from 11.7 to 62.5 feet. Such soil and groundwater conditions may present a liquefaction hazard in portions of the planning area.

While the probability of a landslide or liquefaction on the Project sites is low, to minimize potential damage to the buildings and site improvements because of liquefaction, all construction in California is required to be designed in accordance with the latest construction design standards of the California Building Code. As discussed under Section 3.6.2 Regulatory Setting, the California Building Code, Title 24, C.C.R., Part 2, Chapter 16 addresses structural design and Chapter 18 addresses soils and foundations. Collectively, these state requirements, which have been adopted by the City of Modesto, include design standards and requirements that are intended to minimize impacts to structures in California. Design in accordance with these standards and policies would reduce any potential impact to a less than significant level.

LATERAL SPREADING

Lateral spreading typically occurs on the surface of a slope and is oftentimes directly associated with areas of liquefaction. As stated, the Project site is flat and there are no slopes on-site or within the surrounding area. According to the Modesto General Plan Update Draft EIR, conditions exist in the planning area that could result in seismic-related ground failure such as lateral spreading (lurching). Overall, the potential for lateral spreading on the Project site is also low.

COLLAPSIBLE SOILS

Collapsible soils or soil collapse occur when any unsaturated soils go through a radical rearrangement of particles and decrease in volume upon wetting, additional loading, or both. Collapsible soils occur at the base of mountain ranges, where Holocene-age alluvial fan and wash sediments have been deposited during rapid run-off events. As stated, the Project site is flat and is on the valley floor away from the bases of mountain ranges. Further, collapsible soils have not been identified in the Modesto General Plan as an issue in the Modesto area. Therefore, the potential for soil collapse at the Project site is also low.

SUBSIDENCE

Land subsidence is the gradual settling or sinking of an area with little or no horizontal motion due to changes taking place underground. It is a natural process, although it can also occur (and is accelerated) because of human activities. Subsidence has not been identified in the Modesto General Plan as an issue in the Modesto area. Therefore, the probability of subsidence occurring on the Project site is low.

CONCLUSION

Based on the analysis above, the Project site does not have a significant risk of becoming unstable as a result landslide, liquefaction, subsidence, or soil collapse; however, the potential does still exist. Mitigation Measure 3.6-1 requires the preparation of a final geotechnical evaluation of soils at a design-level, consistent with the requirements of the CBC. Implementation of this mitigation measure would ensure that all on-site fill soils are properly compacted and comply with the applicable safety requirements established by the CBC to reduce risks associated with unstable soils and excavations and fills, and that any issues associated with unstable soils are addressed at the design level. Therefore, implementation of Mitigation Measure 3.6-1 would ensure the proposed Project would have a ***less than significant*** impact relative to this topic.

MITIGATION MEASURE(S)

Mitigation Measure 3.6-1*: Prior to earthmoving activities for each phase of the Project, a certified geotechnical engineer, or equivalent, shall be retained to perform a final geotechnical evaluation of the soils at a design-level as required by the requirements of the California Building Code Title 24, C.C.R., Part 2, Chapter 18, Section 1803.1.1.2 related to expansive soils and other soil conditions. The evaluation shall be prepared in accordance with the standards and requirements outlined in California Building Code, Title 24, C.C.R., Part 2, Chapter 16, Chapter 17, and Chapter 18, which addresses structural design, tests and inspections, and soils and foundation standards. The final geotechnical evaluation shall include design recommendations to ensure that soil conditions do not pose a threat to the health and safety of people or structures, including threats from liquefaction or lateral spreading. The grading and improvement plans, as well as the storm drainage and building plans for each phase of the Project shall be designed in accordance with the recommendations provided in the final geotechnical evaluation.*

Impact 3.6-4: The proposed Project, with mitigation, would not have the potential for expansive soils to create substantial risks to life or property (Less than Significant with Mitigation)

Expansive soils are those that undergo volume changes as moisture content fluctuates, swelling substantially when wet or shrinking when dry. Soil expansion can damage structures by cracking foundations, causing settlement, and distorting structural elements. Expansion is a typical characteristic of certain varieties of clay-type soils. Expansive soils shrink and swell in volume during changes in moisture content, such because of seasonal rain events, and can cause damage to foundations, concrete slabs, roadway improvements, and pavement sections.

According to the Modesto General Plan Update Draft EIR, information on the engineering properties of soils in Modesto is not readily available, but where soils are clay-rich, there may be some potential for expansive soils. Concerns related to development on expansive soils typically can be addressed through appropriate design. As shown in Table 3.6-1, most of the Project site contains Hanford fine sandy loam, moderately deep over silt, 0 to 1% slopes. The southeastern corner of the site contains Hanford sandy loam, 0 to 3 % slopes, and Dinuba fine sandy loam, 0 to 1% slope.

As discussed in Impact 3.6-3, the California Building Code Title 24, C.C.R., Part 2, Chapter 18, Section 1803.1.1.2 is a uniformly applied development standard that requires specific geotechnical evaluation when expansive or other special soil conditions are present, which, if not corrected, would lead to structural defects. The City of Modesto also requires a final geotechnical evaluation to be performed at a design-level to ensure that the foundations, structures, roadway sections, sidewalks, and other improvements can accommodate the specific soils, including expansive soils, at those locations. Mitigation Measure 3.6-1, presented above, provides the requirement for a final geotechnical evaluation in accordance with the standards and requirements outlined in the California Building Code, Title 24, C.C.R., Part 2, Chapter 16, Chapter 17, and Chapter 18, which addresses structural design, tests and inspections, and soils and foundation standards. The final geotechnical evaluation would include design recommendations to ensure that soil conditions do not pose a threat to the health and safety of people or structures. The grading and improvement plans, as well as the storm drainage and building plans, are required to be designed in accordance with the recommendations provided in the final geotechnical evaluation. With the implementation of Mitigation Measure 3.6-1 (requiring a final Geotechnical Evaluation, and site recommendations) the proposed Project would have a ***less than significant*** impact relative to this topic.

MITIGATION MEASURE(S)

*Implement **Mitigation Measure 3.6-1**.*

Impact 3.6-5: The proposed Project, with mitigation, would not directly or indirectly destroy a unique geological feature or paleontological resource (Less than Significant with Mitigation)

The Project site is in an area known to have paleontological resources. Paleontological resources in the San Joaquin Region are most prevalent in geologic formations located along the western margin of the San Joaquin Valley, many miles away from the Project site. These formations include the marine sandstone, mudstone, siltstone, and shale of the San Pablo Formation, various undivided conglomerate, sandstone, and siltstone units, and the Moreno Formation. The Moreno Formation, which is present along the western margin of the Great Valley as an elongated and continuous, northwest-trending unit, consists of shale, sandstone, and siltstone that were once deposited in a deep-marine environment. There are no known paleontological resources on the Project site, however, it is possible that undiscovered paleontological resources could be encountered during ground-disturbing activities from development of the Project site.

Damage to or destruction of a paleontological resource would be considered a potentially significant impact under local, state, or federal criteria. Implementation of Mitigation Measure 3.6-2 would ensure steps would be taken to reduce impacts to paleontological resources if they are discovered during construction, including stopping work in the event potential resources are found, evaluation of the resource by a qualified paleontologist and appropriate handling of any potential resource. This mitigation measure would reduce this impact to a ***less-than-significant*** level.

MITIGATION MEASURE(S)

Mitigation Measure 3.6-2: *If any paleontological resources are found during grading and construction activities of the Project, all work shall be halted immediately within a 200-foot radius of the discovery until a qualified paleontologist has evaluated the find.*

Work shall not continue at the discovery site until the paleontologist evaluates the find and makes a determination regarding the significance of the resource and identifies recommendations for conservation of the resource, including preserving in place or relocating on the Project site, if feasible, or collecting the resource to the extent feasible and documenting the find with the University of California Museum of Paleontology.

Impact 3.6-6: The proposed Project would not be located on soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water (No Impact)

The proposed Project would connect to the municipal sewer system for wastewater disposal. Septic tanks or septic systems are not proposed as part of the Project. Therefore, ***no impact*** would occur related to this topic.

Impact 3.6-7: The proposed Project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state, or result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan (Less than Significant)

No areas classified as Mineral Resource Zones (MRZ-2a or MRZ-2b) under the Surface Mining and Reclamation Act—that is, areas where significant mineral deposits have been determined to exist—occur within the City of Modesto's General Plan Planning Area. Modesto is entirely within an area zoned MRZ- 3a for sand and gravel. This designation indicates areas containing known mineral occurrences of undetermined significance. As recently as 1998, there were five active sand and gravel operations and one specialty sand mining operation in Modesto. However, no mining activity occurs in Modesto, and data from the U.S. Geological Survey regarding mineral production in California indicate that no new mines or expansions of existing mines were approved in Modesto between 1999 and 2006.

In the absence of major mineral resources on the Project site, the Project would not result in a significant loss, and no mitigation is required. Impacts on this topic would be ***less than significant***.

CUMULATIVE IMPACTS

Impacts related to geology and soil are not inherently cumulative. Geology and soils concerns are related to risks, hazards or development constraints that are site-specific. However, seismic hazards are regional, and management of seismic hazards is vested with the local planning and building authority. For these reasons, the potential for cumulative geology and soils impacts are considered in the context of the City of Modesto and vicinity.

Impact 3.6-8: Cumulative Impact on Geologic and Soils Resources (Less than Significant)

Seismic Hazards: Potentially adverse environmental effects associated with seismic hazards are usually site-specific and do not result in cumulative effects. Cumulative projects could be exposed to considerable ground shaking during seismic events, but the development of individual projects would not increase the potential for impacts to occur. Individual development proposals within the vicinity of the Project site would be reviewed separately by the appropriate public agency (i.e., City or County) and undergo environmental review if appropriate. If future cumulative development would result in impacts related to geologic or seismic impacts, those potential project or site-specific impacts would be addressed in accordance with the requirements of CEQA. New buildings would be constructed utilizing current design and construction methodologies for earthquake resistant design as required by relevant regulations. Thus, the cumulative impact regarding strong seismic ground shaking or seismic-related ground failure, including liquefaction, would be ***less than significant***.

Soil Erosion: Potentially adverse environmental effects associated with topographic alteration and erosion are usually site-specific and do not result in cumulative effects. Development of the proposed Project and cumulative projects would involve some land clearing, mass grading, and other ground-disturbing activities that could temporarily increase soil erosion rates during and shortly after project construction. Site specific geology and soil conditions would be evaluated on a project-by-project basis, and each project would be required to comply with stormwater runoff and pollution control requirements required by the RWQCB and implemented by the specific jurisdiction in which the development occurs. Construction activities for projects in the City would also be subject to the City's Grading and Erosion Control Ordinance. The existing regulatory environment would reduce potential impacts associated with soil erosion or the loss of topsoil during short-term construction activities and long-term operation of individual and cumulative development projects. Thus, the cumulative impact to soil erosion or the loss of topsoil would be ***less than significant***.

Unstable or Expansive Soils: Potentially adverse environmental effects associated with seismic hazards, as well as those associated with expansive soils, topographic alteration, and erosion, are usually site-specific and do not result in cumulative effects. Cumulative projects could be exposed to considerable ground shaking during seismic events, but the development of individual projects

would not increase the potential for impacts to occur. Individual development proposals within the vicinity of the Project site would be evaluated on a project-by-project basis and by the appropriate public agency (i.e., City or County) and undergo environmental review if appropriate. If future cumulative development would result in impacts associated with unstable geologic units or soils, those potential project or site-specific impacts would be addressed in accordance with the requirements of CEQA. New buildings would be constructed utilizing current design and construction methodologies as required by relevant regulations. Thus, the cumulative impact involving a geologic unit or soil that is unstable, potentially resulting in on or off-site landslide, lateral spreading, subsidence, liquefaction or collapse, would be ***less than significant***.

Potentially adverse environmental effects associated with expansive soils, topographic alteration, and erosion, are usually site-specific and do not result in cumulative effects. Individual development proposals within the vicinity of the Project site would be evaluated on a project-by-project basis and by the appropriate public agency (i.e., City or County) and undergo environmental review if appropriate. If future cumulative development would result in impacts associated with expansive soils, those potential project or site-specific impacts would be addressed in accordance with the requirements of CEQA. New buildings would be constructed utilizing current design and construction methodologies as required by relevant regulations. Thus, the cumulative impact involving expansive soils, creating substantial direct or indirect risks to life or property would be ***less than significant***.

Paleontological Resources: Any project involving earth-moving activity could potentially result in inadvertent discovery and disturbance of paleontological resources during grading and excavation work; these inadvertent discoveries could create potentially significant impacts.

As previously mentioned, the Project site is in an area known to have paleontological resources. Paleontological resources in the San Joaquin Region are most prevalent in geologic formations located along the western margin of the San Joaquin Valley, many miles away from the Project site. These formations include the marine sandstone, mudstone, siltstone, and shale of the San Pablo Formation, various undivided conglomerate, sandstone, and siltstone units, and the Moreno Formation. The Moreno Formation, which is present along the western margin of the Great Valley as an elongated and continuous, northwest-trending unit, consists of shale, sandstone, and siltstone that were once deposited in a deep-marine environment. There are no known paleontological resources on the Project stie, however, it is possible that undiscovered paleontological resources could be encountered during ground-disturbing activities from development of the Project site.

Future ground disturbing activities associated with Project implementation and cumulative projects could have potential to cumulatively impact paleontological resources, and the Project would have a cumulatively considerable contribution to that impact. However, all development, infrastructure, and other ground-disturbing projects in the City, including the Project, would be required to comply with the General Plan. Compliance with applicable City regulations would ensure that cumulative impacts associated with paleontological resources or unique geologic features are ***less than significant***.

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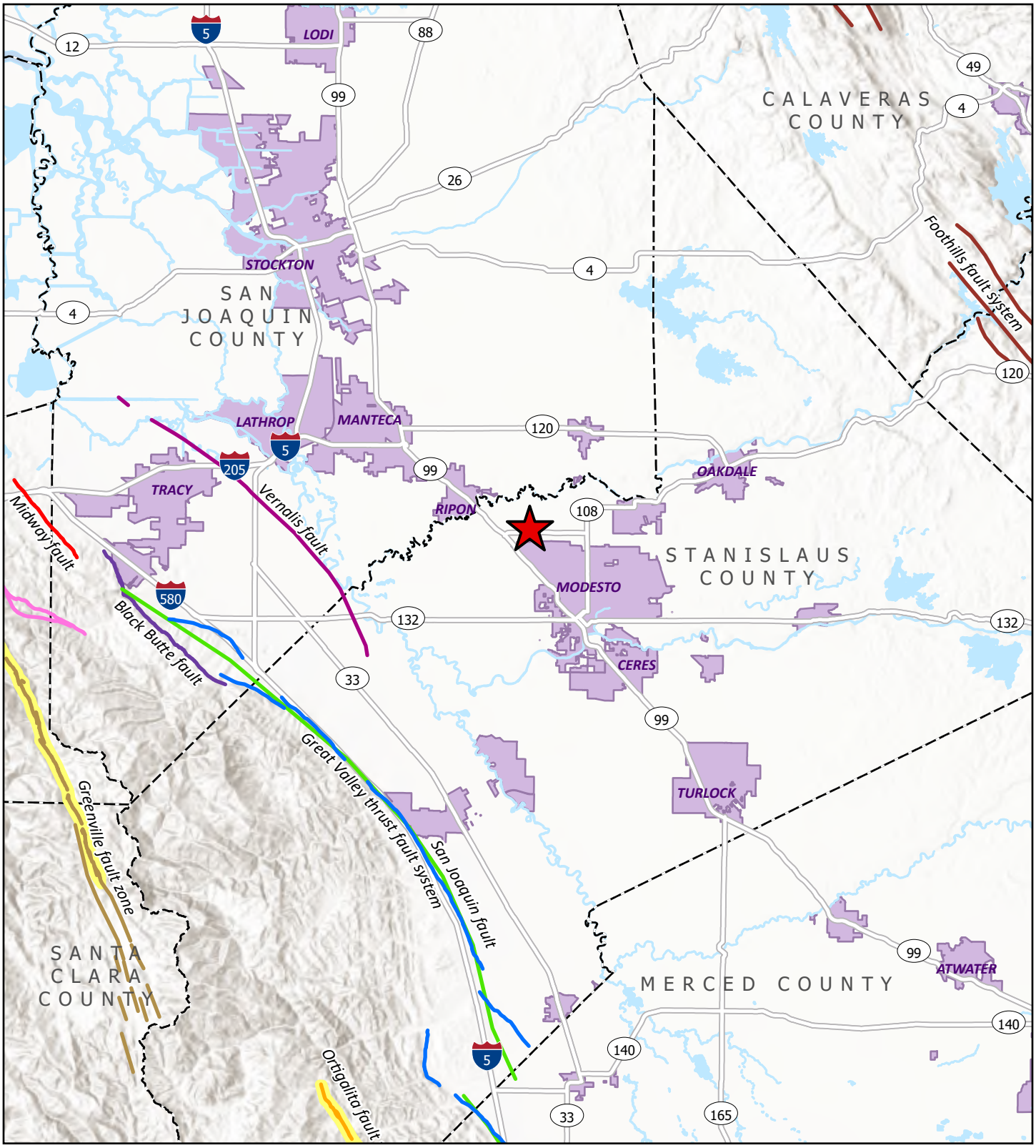

Legend

- Project Location
- County Area
- Incorporated Area
- Alquist-Priolo Zone of Required Investigation
- Black Butte fault
- Corral Hollow-Carnegie fault zone
- Foothills fault system
- Great Valley thrust fault system
- Greenville fault zone
- Midland fault zone
- Midway fault
- San Joaquin fault
- Vernalis fault
- Ortigalita fault zone

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 3.6-1. Earthquake Faults

0 2½ 5 Miles

Sources: California State Geoportal; USGS Quaternary Faults Database; California Geologic Survey Alquist-Priolo Zones. Map Date: April 10, 2025.

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This section discusses regional greenhouse gas (GHG) emissions, climate change, and energy impacts that could result from Project implementation. The analysis contained in this section is intended to be at a Project level, and covers impacts associated with the conversion of the entire site to urban uses. This section provides a background discussion of greenhouse gases and climate change linkages and effects of global climate change. This section is organized with an existing setting, regulatory setting, approach/methodology, and impact analysis. The analysis and discussion of the GHG, climate change, and energy conservation impacts in this section focuses on the proposed Project's consistency with local, regional, and statewide climate change planning efforts and discusses the context of these planning efforts as they relate to the proposed Project. Disclosure and discussion of the Project's estimated energy usage and greenhouse gas emissions are provided.

Comments were received during the public review period or scoping meeting for the Notice of Preparation regarding this topic from the following individuals and organizations:

- Anita Young (resident) (March 24, 2025),
- San Joaquin Valley Air Pollution Control District (SJVAPCD) (March 25, 2025)
- Stanislaus County Environmental Review Committee (March 27, 2025); and
- Alaura McGuire, acting as legal counsel for the Stanislaus County Residents for Responsible Development (March 27, 2025)

Each of the comments is addressed within this section. Full comments received are included in Appendix A.

3.7.1 ENVIRONMENTAL SETTING

GREENHOUSE GASES AND CLIMATE CHANGE LINKAGES

Various gases in the Earth's atmosphere, classified as atmospheric GHGs, play a critical role in determining the Earth's surface temperature. Solar radiation enters Earth's atmosphere from space, and a portion of the radiation is absorbed by the Earth's surface. The Earth emits this radiation back toward space, but the properties of the radiation change from high-frequency solar radiation to lower-frequency infrared radiation.

Naturally occurring GHGs include water vapor (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and ozone (O_3). Several classes of halogenated substances that contain fluorine, chlorine, or bromine are also GHGs, but they are solely a product of industrial activities. Although the direct GHGs CO_2, CH_4, and N_2O occur naturally in the atmosphere, human activities have changed their atmospheric concentrations. From the pre-industrial era (i.e., ending about 1750) to 2019, concentrations of these three GHGs have increased globally by 47, 156, and 23 percent, respectively (IPCC, 2023).

GHGs, which are transparent to solar radiation, are effective in absorbing infrared radiation. As a result, this radiation that otherwise would have escaped back into space is now retained, resulting in a warming of the atmosphere. This phenomenon is known as the greenhouse effect. Among the

prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), ozone (O_3), water vapor, nitrous oxide (N_2O), and chlorofluorocarbons (CFCs).

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. In California, the transportation sector is the largest emitter of GHGs, followed by the industrial and electricity generation sectors (California Energy Commission, 2023).

As the name implies, global climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern, respectively. California produced 369 million gross metric tons of carbon dioxide equivalents ($MMTCO_2e$) in 2022 (California Air Resources Board, 2023).

Carbon dioxide equivalents are a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. This potential, known as the global warming potential of a GHG, is also dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. Expressing GHG emissions in carbon dioxide equivalents takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted.

Consumption of fossil fuels in the transportation sector was the single largest source of California's GHG emissions in 2022, accounting for 38% of total GHG emissions in the State. This category was followed by the industrial sector (23%), the electricity generation sector (including both in-state and out of-state sources) (16%), the agriculture and forestry sector (9%), the residential energy consumption sector (8%), and the commercial energy consumption sector (6%) (California Air Resources Board, 2023).

EFFECTS OF GLOBAL CLIMATE CHANGE

The effects of increasing global temperature are far-reaching and extremely difficult to quantify. The scientific community continues to study the effects of global climate change. In general, increases in the ambient global temperature because of increased GHGs are anticipated to result in rising sea levels, which could threaten coastal areas through accelerated coastal erosion, threats to levees and inland water systems and disruption to coastal wetlands and habitat.

If the temperature of the ocean warms, it is anticipated that the winter snow season would be shortened. Snowpack in the Sierra Nevada provides both water supply (runoff) and storage (within the snowpack before melting), which is a major source of supply for the State. The snowpack portion of the supply could potentially decline by 50% to 75% by the end of the 21st century (National Resources Defense Council, 2014). This phenomenon could lead to significant challenges securing an adequate water supply for a growing state population. Further, the increased ocean temperature could result in increased moisture flux into the State; however, since this would likely increasingly come in the form of rain rather than snow in the high elevations, increased precipitation could lead to increased potential and severity of flood events, placing more pressure on California's levee/flood control system.

Sea level has risen approximately seven inches during the last century, and it is predicted to rise an additional 22 to 35 inches by 2100, depending on the future GHG emissions levels (California Environmental Protection Agency, 2010). If this occurs, resultant effects could include increased coastal flooding, saltwater intrusion, and disruption of wetlands. As the existing climate throughout California changes over time, mass migration of species, or failure of species to migrate in time to adapt to the perturbations in climate, could also result. According to the Indicators of Climate Change in California report (OEHHA, 2022), the impacts of global warming in California are anticipated to include, but are not limited to, those discussed below.

Public Health

Higher temperatures are expected to increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to ozone formation are projected to increase from 25% to 35% under the lower warming range and to 75% to 85% under the medium warming range. In addition, if global background ozone levels increase as predicted in some scenarios, it may become impossible to meet local air quality standards. Air quality could be further compromised by increases in wildfires, which emit fine particulate matter that can travel long distances depending on wind conditions. The Climate Scenarios report indicates that large wildfires could become up to 55% more frequent if GHG emissions are not significantly reduced.

In addition, under the higher warming scenario, there could be up to one hundred more days per year with temperatures above 90°F in Los Angeles and 95°F in Sacramento by 2100. This is a significant increase over historical patterns and twice the increase projected if temperatures remain within or below the lower warming range. Rising temperatures will increase the risk of death from dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat.

Water Resources

A vast network of man-made reservoirs and aqueducts capture and transport water throughout the State from northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada snowpack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snowpack, increasing the risk of summer water shortages.

The State's water supplies are also at risk from rising sea levels. An influx of saltwater would degrade California's estuaries, wetlands, and groundwater aquifers. Saltwater intrusion caused by rising sea levels is a major threat to the quality and reliability of water within the southern edge of the Sacramento/San Joaquin River Delta, a major State fresh water supply. Global warming is also projected to seriously affect agricultural areas, with California farmers projected to lose as much as 25% of the water supply they need; decrease the potential for hydropower production within the State (although the effects on hydropower are uncertain); and seriously harm winter tourism. Under the lower warming range, the snow dependent winter recreational season at lower elevations could be reduced by as much as one month. If temperatures reach the higher warming range and precipitation declines, there might be many years with insufficient snow for skiing, snowboarding, and other snow dependent recreational activities.

If GHG emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70% to 90%. Under the lower warming scenario, snowpack losses are expected to be only half as large as those expected if temperatures were to rise to the higher warming range. How much snowpack will be lost depends in part on future precipitation patterns, the projections for which remain uncertain. However, even under the wetter climate projections, the loss of snowpack would pose challenges to water managers, hamper hydropower generation, and nearly eliminate all skiing and other snow-related recreational activities.

Agriculture

Increased GHG emissions are expected to cause widespread changes to the agriculture industry, reducing the quantity and quality of agricultural products statewide. Although higher carbon dioxide levels can stimulate plant production and increase plant water-use efficiency, California's farmers will face greater water demand for crops and a less reliable water supply as temperatures rise.

Plant growth tends to be slow at low temperatures, increasing with rising temperatures up to a threshold. However, faster growth can result in less-than-optimal development for many crops, so rising temperatures are likely to worsen the quantity and quality of yield for several of California's agricultural products. Products likely to be most affected include wine grapes, fruits and nuts, and milk.

Crop growth and development will be affected, as will the intensity and frequency of pest and disease outbreaks. Rising temperatures will aggravate ozone pollution, which makes plants more susceptible to disease and pests and interferes with plant growth.

In addition, continued global warming will shift the ranges of existing invasive plants and weeds and alter competition patterns with native plants. Range expansion is expected in many species while range contractions are less likely in rapidly evolving species with significant populations already established. Should range contractions occur, it is likely that new or different weed species will fill the emerging gaps. Continued global warming is also likely to alter the abundance and types of many pests, lengthen pests' breeding season, and increase pathogen growth rates.

Forests and Landscapes

Global warming is expected to alter the distribution and character of natural vegetation thereby resulting in a possible increased risk of large wildfires. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55%, which is twice the increase expected if temperatures stay in the lower warming range. However, since wildfire risk is determined by a combination of factors, including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the State. For example, if precipitation increases as temperatures rise, wildfires in southern California are expected to increase by approximately 30% toward the end of the century. In contrast, precipitation decreases could increase wildfires in northern California by up to 90%.

Moreover, continued global warming will alter natural ecosystems and biological diversity within the State. For example, alpine and sub-alpine ecosystems are expected to decline by as much as 60% to 80% by the end of the century because of increasing temperatures. The productivity of the State's forests is also expected to decrease because of global warming.

Rising Sea Levels

Rising sea levels, more intense coastal storms, and warmer water temperatures will increasingly threaten the State's coastal regions. Under the higher warming scenario, sea level is anticipated to rise 22 to 35 inches by 2100. Elevations of this magnitude would inundate coastal areas with saltwater, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats.

ENERGY CONSUMPTION

Energy in California is consumed from a wide variety of sources. Fossil fuels (including gasoline and diesel fuel, natural gas, and energy used to generate electricity) are the most widely used form of energy in the State. However, renewable sources of energy (such as solar and wind) are growing in proportion to California's overall energy mix. A large driver of renewable sources of energy in California is the State's current Renewable Portfolio Standard (RPS), which requires the State to derive at least 60 percent of electricity generated by 2030, and to achieve zero-carbon emissions by 2045 (as passed in September 2018, under Senate Bill 100). The 2021 SB 100 Joint Agency Report was published in 2021, which found that the long-term goals contained in SB 100 are technically achievable through multiple pathways, although achieving 100 percent clean electricity would increase the total annual electricity system cost by 6% relative to the cost under the state's Renewables Portfolio Standard requirement of having at least 60 percent clean electricity by the end of 2030. These estimates will change over time as markets change, modern technologies are commercialized, and additional factors such as grid reliability are included in future analyses.

Overall, in 2019, California's per capita energy usage was ranked second lowest in the nation (U.S. EIA, 2020b). California's per capita rate of energy usage has remained constant since the 1970's. Many State regulations since the 1970s, including new building energy efficiency standards, vehicle fleet efficiency measures, as well as growing public awareness, have helped to keep per capita energy usage in the State in check.

The consumption of non-renewable energy (i.e., fossil fuels) associated with the operation of passenger, public transit, and commercial vehicles results in GHG emissions that contribute to global climate change. Alternative fuels such as natural gas, ethanol, and electricity (unless derived from solar, wind, nuclear, or other energy sources that do not produce carbon emissions) also result in GHG emissions and contribute to global climate change.

Electricity Consumption

California relies on a regional power system composed of a diverse mix of natural gas, renewable, hydroelectric, and a small amount of nuclear generation resources. In 2020, one-half of the electricity supply came from facilities outside of the State. Much of the power delivered to California

from states in the Pacific Northwest was generated by wind. States in the Southwest delivered power generated at coal-fired power plants, at natural gas-fired power plants, and from nuclear generating stations (U.S. EIA, 2022). In 2020, approximately 41 percent of California's utility-scale net electricity generation was fueled by natural gas. In addition, about 48 percent of the State's utility-scale net electricity generation came from renewable sources, such as solar, wind, geothermal, hydropower, and biomass. Nuclear energy powered an additional 11 percent. The amount of electricity generated from coal was effectively zero (U.S. EIA, 2022). The percentage of renewable resources as a proportion of California's overall energy portfolio is increasing over time, as directed by the State's Renewable Portfolio Standard (RPS).

According to the California Energy Commission (CEC), total statewide electricity consumption increased from 166,979 gigawatt-hours (GWh) in 1980 to 228,038 GWh in 1990, which is an estimated annual growth rate of 3.66 percent. The statewide electricity consumption in 1997 was 246,225 GWh, reflecting an annual growth rate of 1.14 percent between 1990 and 1997 (U.S. EIA, 2023b). Statewide consumption was 274,985 GWh in 2010, an annual growth rate of 0.9 percent between 1997 and 2010. In 2022, electricity consumption in Stanislaus County was 5,245 GWh (California Energy Commission, 2025).

PG&E is a publicly traded utility company that, under contract with the California Public Utilities Commission (CPUC), generates, purchases, and distributes energy. PG&E's service area covers 70,000 square miles, extending north to south from Eureka to Bakersfield and east to west from the Sierra Nevada to the Pacific Ocean. PG&E's electricity distribution system consists of 106,681 circuit miles of electric distribution lines and 18,466 circuit miles of interconnected transmission lines.

PG&E's electricity is generated from a combination of traditional sources, such as coal-fired plants, nuclear power plants, and hydroelectric dams, as well as newer sources of energy, such as wind turbines and photovoltaic plants, or "solar farms." "The grid," or bulk electric grid, is a network of high-voltage transmission lines that link power plants to the PG&E system. The distribution system, comprising lower-voltage secondary lines, is at the street and neighborhood level. It consists of overhead or underground distribution lines, transformers, and individual service "drops" that connect to individual customers.

In addition to its base plan, PG&E has three plan options, known as Solar Choice options and Green Saver, which give customers the option of purchasing energy from solar sources. The first Solar Choice option provides up to 50 percent of a customer's energy from solar resources, while the other option provides up to 100 percent of a customer's energy from solar resources, and the Green Saver option provides up to 90 percent of a customer's energy from solar resources.

Table 3.7-1 outlines PG&E's power mix in 2023, compared to the power mix for the state. The table identifies the renewable and non-renewable energy sources for PG&E. It should be noted that some GHG free sources are not considered renewable (e.g., nuclear is GHG free but not renewable).

TABLE 3.7-1. PG&E AND THE STATE OF CALIFORNIA POWER MIX IN 2023

ENERGY RESOURCES	*PG&E OPTION: BASE*	*PG&E OPTION: 50% SOLAR*	*PG&E OPTION: 100% SOLAR*	*PG&E OPTION: GREEN SAVER*	*CALIFORNIA POWER MIX*
Eligible Renewable	32.8%	65.5%	100%	100%	36.9%
Biomass and waste	3.4%	1.8%	0%	0%	2.1%
Geothermal	0.3%	0.2%	0%	0%	4.8%
Small hydroelectric	2.5%	1.3%	0%	0%	1.8%
Solar	20.2%	59%	100%	100%	17%
Wind	6.3%	3.2%	0%	0%	11.2%
Coal	0%	0%	0%	0%	1.8%
Large Hydroelectric	13.8%	7.1%	0%	0%	11.7%
Natural Gas	0%	0%	0%	0%	36.6%
Nuclear	53.4%	27.4%	0%	0%	9.3%
Other	0%	0%	0%	0%	0.1%
Unspecified	0%	0%	0%	0%	3.7%

SOURCE: PG&E. 2023. 2023 POWER CONTENT LABEL. AVAILABLE: HTTPS://WWW.ENERGY.CA.GOV/FILEBROWSER/DOWNLOAD/7281. ACCESSED: JUNE 10, 2025.

[A.] ELECTRICITY FROM TRANSACTIONS THAT ARE NOT TRACEABLE TO SPECIFIC GENERATION SOURCES ARE CLASSIFIED AS UNSPECIFIED SOURCES OF POWER.

In 2022, electricity consumption in Stanislaus County was 5,245 GWh (California Energy Commission, 2025).

Oil

The primary energy source for the United States is oil, which is refined to produce fuels like gasoline, diesel, and jet fuel. Oil is a finite, nonrenewable energy source. World consumption of petroleum products has grown steadily in the last several decades. As of 2019, world consumption of oil reached approximately ninety-eight million barrels per day. The United States, with approximately five percent of the world's population, accounts for approximately 19 percent of world oil consumption, or approximately 18.6 million barrels per day (U.S. EIA, 2020c). The transportation sector relies heavily on oil. In California, petroleum-based fuels currently provide approximately 95 percent of the State's transportation energy needs.

Natural Gas/Propane

The State produces approximately 12 percent of its natural gas, while obtaining 22 percent from Canada and 65 percent from the Rockies and the Southwest (California Energy Commission, 2012). PG&E is the largest publicly traded utility in California and provides natural gas for residential, industrial, and agency consumers within the Stanislaus County area. PG&E's natural gas (i.e., methane) delivery system includes 42,000 miles of natural gas distribution pipelines and 6,700 miles of transmission pipelines. PG&E's gas transmission system serves approximately fifteen million energy customers in California. The system is operated under an inspection and monitoring program in real time on a 24-hour basis, with leak inspections, surveys, and patrols continuously taking place

along the pipelines. Gas delivered by PG&E originates in gas fields in California, the Southwest, the Rocky Mountains, and Canada. Transmission pipelines send natural gas from the fields and storage facilities. The smaller distribution pipelines deliver gas to individual businesses or residences.

In As of March 2022, California produced 11.4 billion cubic feet of natural gas per month (U.S. EIA, 2022). PG&E is the largest publicly owned utility in California and provides natural gas for residential, industrial, and agency consumers within the Stanislaus County area. In 2022, natural gas consumption in Stanislaus County was 203 million therms (California Energy Commission, 2025).

3.7.2 REGULATORY SETTING

FEDERAL

Clean Air Act

The Federal Clean Air Act (FCAA) was first signed into law in 1970. In 1977, and again in 1990, the law was amended. The FCAA is the foundation for a national air pollution control effort, and it is composed of the following basic elements: National Ambient Air Quality Standards (NAAQS) for criteria air pollutants, hazardous air pollutant standards, State attainment plans, NAAQS motor vehicle emissions standards, stationary source emissions standards and permits, acid rain control measures, stratospheric ozone protection, and enforcement provisions.

The EPA is responsible for administering the FCAA. The FCAA requires the EPA to set NAAQS for several problem air pollutants based on human health and welfare criteria. Two types of NAAQS were established: primary standards, which protect public health, and secondary standards, which protect the public welfare from non-health-related adverse effects such as visibility reduction.

In 2007, in the court case of *Massachusetts et al. vs. the USEPA et al*. (549 U.S. 497), the U.S. Supreme Court found that GHGs are air pollutants covered by the federal Clean Air Act (42 USC Sections 7401-7671q). The Supreme Court held that the Administrator of the United States Environmental Protection Agency must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In making these decisions, the Administrator is required to follow the language of Section 202(a) of the Clean Air Act. On December 7, 2009, the Administrator signed two distinct findings regarding GHGs under Section 202(a) of the Clean Air Act:

- Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed GHGs (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) in the atmosphere threaten the public health and welfare of current and future generations.
- Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution, which threatens public health and welfare.

These findings do not themselves impose any requirements on industry or other entities. However, this action was a prerequisite for implementing GHG emission standards for vehicles. In collaboration with the National Highway Traffic Safety Administration (NHTSA) and CARB, the USEPA developed emission standards for light-duty vehicles (2012-2025 model years), and heavy-duty vehicles (2014-2027 model years).

Energy Policy and Conservation Act

The Energy Policy and Conservation Act of 1975 sought to ensure that all vehicles sold in the U.S. would meet certain fuel economy goals. Through this Act, Congress established the first fuel economy standards for on-road motor vehicles in the United States. Pursuant to the Act, the National Highway Traffic and Safety Administration, which is part of the U.S. Department of Transportation (USDOT), is responsible for establishing additional vehicle standards and for revising existing standards.

Since 1990, the fuel economy standard for new passenger cars has been 27.5 mpg. Since 1996, the fuel economy standard for new light trucks (gross vehicle weight of 8,500 pounds or less) has been 20.7 mpg. Heavy-duty vehicles (i.e., vehicles and trucks over 8,500 pounds gross vehicle weight) are not currently subject to fuel economy standards. Compliance with federal fuel economy standards is determined based on each manufacturer's average fuel economy for the portion of its vehicles produced for sale in the U.S. The Corporate Average Fuel Economy (CAFE) program, which is administered by the EPA, was created to determine vehicle manufacturers' compliance with the fuel economy standards. The EPA calculates a CAFE value for each manufacturer based on city and highway fuel economy test results and vehicle sales. Based on the information generated under the CAFE program, the USDOT is authorized to assess penalties for noncompliance.

Federal Climate Change Policy

According to the U.S. EPA, "the United States government has established a comprehensive policy to address climate change" that includes slowing the growth of emissions; strengthening science, technology, and institutions; and enhancing international cooperation. To implement this policy, "the Federal government is using voluntary and incentive-based programs to reduce emissions and has established programs to promote climate technology and science." The U.S. EPA administers multiple programs that encourage voluntary GHG reductions, including "ENERGY STAR," "Climate Leaders," and Methane Voluntary Programs.

The following are actions taken at the federal level relating to GHG emissions.

Clean Vehicles. Congress first passed the Corporate Average Fuel Economy law in 1975 to increase the fuel economy of cars and light duty trucks. The law has become more stringent over time. On May 19, 2009, President Obama put in motion a new national policy to increase fuel economy for all new cars and trucks sold in the United States. On April 1, 2010, the U.S. EPA and the Department of Transportation's National Highway Safety Administration announced a joint final rule establishing a national program that would reduce GHG emissions and improve fuel economy for new cars and trucks sold in the United States.

The first phase of the national program applies to passenger cars, light duty trucks, and medium duty passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile, equivalent to 35.5 miles per gallon if the automobile industry were to meet this CO_2 level solely through fuel economy improvements. The U.S. EPA and the National Highway Safety Administration issued final rules on a second phase joint rulemaking, establishing national standards for light duty vehicles for model years 2017 through 2025 in August 2012.[1] The standards for model years 2017 through 2025 apply to passenger cars, light duty trucks, and medium duty passenger vehicles. The final standards are projected to result in an average industry fleetwide level of 163 grams/mile of CO2 in model year 2025, which is equivalent to 54.5 miles per gallon (mpg) if achieved exclusively through fuel economy improvements.

The U.S. EPA and the U.S. Department of Transportation issued final rules for the first national standards to reduce GHG emissions and improve fuel efficiency of heavy-duty trucks and buses on September 15, 2011, which became effective November 14, 2011. For combination tractors, the agencies adopted engine and vehicle standards that began in the 2014 model year and achieved up to a 20 percent reduction in CO2 emissions and fuel consumption by the 2018 model year. For heavy-duty pickup trucks and vans, the agencies adopted separate gasoline and diesel truck standards, which phased in starting in the 2014 model year.

Mandatory Reporting of Greenhouse Gases. The Consolidated Appropriations Act of 2008, passed in December 2007, requires the establishment of mandatory GHG reporting requirements. On September 22, 2009, the U.S. EPA issued the Final Mandatory Reporting of Greenhouse Gases Rule, which became effective January 1, 2010. The rule requires reporting of GHG emissions from large sources and suppliers in the United States and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions are required to submit annual reports to the U.S. EPA.

Cap and Trade. Cap and trade refer to a policy tool where emissions are limited to a certain amount and can be traded or provide flexibility on how the emitter can comply. There is no federal GHG cap-and-trade program currently; however, some states have joined to create initiatives to provide a mechanism for cap and trade.

The Western Climate Initiative partner jurisdictions have developed a comprehensive initiative to reduce regional GHG emissions to 15 percent below 2005 levels by 2020. The partners are California, British Columbia, Manitoba, Ontario, and Quebec. Currently, only California and Quebec are participating in the cap-and-trade program.

Compliance with the state's cap and trade program cannot credit towards the mitigation of GHG emission, as a mitigation measure, because such compliance "provides no additional emissions

[1] United States Environmental Protection Agency (EPA). 2012. EPA and NHTSA Set Standards to Reduce Greenhouse Gases and Improve Fuel Economy for Model Years 2017-2025 Cars and Light Trucks. Website: https://nepis.epa.gov/Exe/ZyPDF.cgi/P100EZ7C.PDF?Dockey=P100EZ7C.PDF. Accessed January 21, 2021.

reductions for the project." (*Center for Biological Diversity v. County of Los Angeles* (2025) 112 Cal.App.5th 317, 345.)

STATE

The California Legislature has enacted a series of statutes in recent years addressing the need to reduce GHG emissions across the State. These statutes can be categorized into four broad categories: (i) statutes setting numerical statewide targets for GHG reductions, and authorizing CARB to enact regulations to achieve such targets; (ii) statutes setting separate targets for increasing the use of renewable energy for the generation of electricity throughout the State; (iii) statutes addressing the carbon intensity of vehicle fuels, which prompted the adoption of regulations by CARB; and (iv) statutes intended to facilitate land use planning consistent with statewide climate objectives. The discussion below will address each of these key sets of statutes, as well as Executive Orders and CARB "Scoping Plans" intended to achieve GHG reductions under the first set of statutes and recent building code requirements intended to reduce energy consumption.

Statutes Setting Statewide GHG Reduction Targets

ASSEMBLY BILL 32 (GLOBAL WARMING SOLUTIONS ACT)

In 2006, the California State Legislature enacted the California Global Warming Solutions Act of 2006 (Health & Safety Code Section 38500 et seq.), also known as Assembly Bill (AB) 32 (Stats. 2006, ch. 488). AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and a cap on statewide GHG emissions. AB 32 required that statewide GHG emissions be reduced to 1990 levels by 2020. This reduction was accomplished through an enforceable statewide cap on GHG emissions that was phased in starting in 2012. To effectively implement the cap, AB 32 directed the California Air Resources Board (CARB) to develop and implement regulations to reduce statewide GHG emissions from stationary sources.

SENATE BILL 32

SB 32 (Stats. 2016, ch. 249) added Section 38566 to the Health and Safety Code. It provides that "[i]n adopting rules and regulations to achieve the maximum technologically feasible and cost-effective greenhouse gas emissions reductions authorized by [Division 25.5 of the Health and Safety Code], [CARB] shall ensure that statewide greenhouse gas emissions are reduced to at least 40 percent below the statewide greenhouse gas emissions limit no later than December 31, 2030." In other words, SB 32 requires California, by 2030, to reduce its statewide GHG emissions so that they are 40 percent below those that occurred in 1990.

EXECUTIVE ORDERS S-3-05, B-30-15, AND B-55-18

The 2020 statewide GHG reduction target in AB 32 was consistent with the second of three statewide emissions reduction targets set forth in former Governor Arnold Schwarzenegger's 2005 Executive Order known as S-3-05, which is expressly mentioned in AB 32. (See Health & Safety Code Section 38501, subd. (i).) That Executive Branch document included the following GHG emission reduction targets: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions

to 1990 levels; by 2050, reduce GHG emissions to 80 percent below 1990 levels. To meet the targets, the Governor directed several State agencies to cooperate in the development of a climate action plan. The Secretary of Cal-EPA leads the Climate Action Team, whose goal is to implement global warming emission reduction programs identified in the Climate Action Plan and to report on the progress made toward meeting the emission reduction targets established in the executive order.

In 2015, Governor Brown issued Executive Order, B-30-15, which created a "new interim statewide GHG emission reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030 is established in order to ensure California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050." SB 32 codified this target.

In 2018, the Governor issued Executive Order B-55-18, which established a statewide goal to "achieve carbon neutrality as soon as possible, and no later than 2045, and maintain and achieve negative emissions thereafter." The order directs the CARB to work with other State agencies to identify and recommend measures to achieve those goals. As discussed below, the 2022 Scoping Plan lays out a path towards achieving carbon neutrality by 2045.

SB 350

Senate Bill 350 (SB 350) (Stats. 2015, ch. 547) added to the Public Utilities Code language that puts into statute the 2050 GHG reduction target identified in Executive Order S-3-05, albeit in the limited context of new state policies (i) increasing the overall share of electricity that must be produced through renewable energy sources and (ii) directing certain State agencies to begin planning for the widespread electrification of the California vehicle fleet. Section 740.12(a)(1)(D) of the Public Utilities Code states that "[t]he Legislature finds and declares [that] … [r]educing emissions of [GHGs] to 40 percent below 1990 levels by 2030 and to 80 percent below 1990 levels by 2050 will require widespread transportation electrification." Furthermore, Section 740.12(b) states that the California Public Utilities Commission (CPUC), in consultation with CARB and the California Energy Commission (CEC), must "direct electrical corporations to file applications for programs and investments to accelerate widespread transportation electrification to reduce dependence on petroleum, meet air quality standards, … and reduce emissions of greenhouse gases to 40 percent below 1990 levels by 2030 and to 80 percent below 1990 levels by 2050."

AB 1279

In September 2022, the Legislature enacted AB 1279 (Stats. 2022, ch. 337), which added Section 38562.2 to the Health and Safety Code. The bill declares the policy of the state to achieve net zero GHG emissions as soon as possible, but no later than 2045, and achieve and maintain net negative GHG emissions thereafter. Additionally, the bill requires that by 2045, statewide anthropogenic GHG emissions be reduced to at least 85% below 1990 levels.

Statutes Setting Target for the Use of Renewable Energy for the Generation of Electricity

CALIFORNIA RENEWABLES PORTFOLIO STANDARD

Senate Bill X1-2 (Stats. 2011, 1st Ex. Sess., ch. 1) set aggressive statutory targets for renewable electricity, culminating in the requirement that 33 percent of the State's electricity come from renewables by 2020. This legislation applies to all electricity retailers in the State, including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. All these entities were required to meet renewable energy goals of 20 percent of retail sales from renewables by the end of 2013, 25 percent by the end of 2016, and 33 percent by the end of 2020. (See Pub. Utility Code, Section 399.11 et seq. [subsequently amended].) SB 350, discussed below, increases the Renewable Portfolio Standard to require 50 percent of electricity generated to be from renewables by 2030. (Pub. Utility Code, Section 399.11, subd (a); see also Section 399.30, subd. (c)(2).) In 2018, Senate Bill 100 (Stats. 2018, ch. 312) revised the above-described deadlines and targets so that the State will have to achieve a 50% renewable resources target by December 31, 2026 (instead of by 2030) and achieve a 60% target by December 31, 2030. The legislation also establishes a State policy that eligible renewable energy resources and zero-carbon resources supply 100% of retail sales of electricity to California end-use customers and 100% of electricity procured to serve all State agencies by December 31, 2045.

Statutes and CARB Regulations Addressing the Carbon Intensity of Petroleum-based Transportation Fuels

ASSEMBLY BILL 1493, PAVLEY CLEAN CARS STANDARDS

In 2002, the Legislature enacted Assembly Bill 1493 ("Pavley Bill") (Stats. 2002, ch. 200), which directed CARB to develop and adopt regulations that achieve the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty trucks beginning with model year 2009. (See Health and Safety Code Section 43018.5.) In September 2004, pursuant to this directive, CARB approved regulations to reduce GHG emissions from new motor vehicles beginning with the 2009 model year. These regulations created what are commonly known as the "Pavley standards." In September 2009, CARB adopted amendments to the Pavley standards to reduce GHG emissions from new motor vehicles through the 2016 model year. These regulations created what are commonly known as the "Pavley II standards." (See California Code of Regulations, Title 13, Sections 1900, 1961, and 1961.1 et seq.)

In 2012, CARB adopted an Advanced Clean Cars (ACC) program aimed at reducing both smog-causing pollutants and GHG emissions for vehicles model years 2017-2025. This historic program, developed in coordination with the USEPA and NHTSA, combined the control of smog-causing (criteria) pollutants and GHG emissions into a single coordinated set of requirements for model years 2015 through 2025. The regulations focus on increasing the number of plug-in hybrid cars and zero-emission vehicles in the vehicle fleet and on making fuels such as electricity and hydrogen readily available for these vehicle technologies. The components of the ACC program are the Low-Emission Vehicle (LEV) regulations that reduce criteria pollutants and GHG emissions from light- and medium-

duty vehicles, and the Zero-Emission Vehicle (ZEV) regulation, which requires manufacturers to produce an increasing number of pure ZEVs (meaning battery electric and fuel cell electric vehicles), with provisions to also produce plug-in hybrid electric vehicles in the 2018 through 2025 model years. (See California Code of Regulations, Title 13, Sections 1900, 1956.8, 1960.1, 1960.5, 1961, 1961.1, 1961.2, 1961.3, 1961.4, 1962, 1962.1, 1962.2, 1962.3, 1962.4, 1962.5, 1962.6, 1962.7, 1962.8, 1965, 1976, 1978, 2037, 2038, 2062, 2101, and 2235, as of November 30, 2022).

It is expected that the Pavley regulations will reduce GHG emissions from California passenger vehicles by about 34 percent below 2016 level by 2025, all while improving fuel efficiency and reducing motorists' costs.

Statute Intended to Facilitate Land Use Planning Consistent with Statewide Climate Objectives

CALIFORNIA SENATE BILL 375 (STATS. 2008, CH. 728) (SUSTAINABLE COMMUNITIES STRATEGY)

This 2008 legislation built on AB 32 by setting forth a mechanism for coordinating land use and transportation on a regional level for the purpose of reducing GHGs. The focus is to reduce miles traveled by passenger vehicles and light trucks. CARB is required to set GHG reduction targets for each metropolitan region for 2020 and 2035. Each of California's metropolitan planning organizations then prepares a sustainable communities strategy that demonstrates how the region will meet its GHG reduction target through integrated land use, housing, and transportation planning. Once adopted by the metropolitan planning organizations, the sustainable communities strategy is to be incorporated into that region's federally enforceable regional transportation plan. If a metropolitan planning organization is unable to meet the targets through the sustainable communities strategy, then an alternative planning strategy must be developed that demonstrates how targets could be achieved, even if meeting the targets is deemed to be infeasible.

Climate Change Scoping Plans

2022 SCOPING PLAN UPDATE

In accordance with AB 32, the CARB developed the first Scoping Plan in 2008 to outline the State's strategy to achieve 1990 level emissions by year 2020. In May 2014, the CARB released and adopted the *First Update to the Climate Change Scoping Plan* to identify the next steps in reaching AB 32 goals and evaluate the progress that has been made between 2000 and 2012. A newer version of the Scoping Plan was then adopted by the CARB in December 2017 (entitled *California's 2017 Climate Change Scoping Plan*). Lastly, the most recent version of the Scoping Plan was adopted by the CARB in November 2022 (entitled *Final 2022 Scoping Plan for Achieving Carbon Neutrality*) (2022 Scoping Plan), which was designed consistently with the long-term GHG reduction targets embedded in AB 1279. Since adoption of the 2008 Scoping Plan and the subsequent updates in 2014, 2017, and 2022, State agencies have adopted programs identified in the plan, and the Legislature has passed additional legislation to achieve the GHG reduction targets. Statewide strategies to reduce GHG emissions include the Low Carbon Fuel Standard, California Appliance Energy Efficiency regulations, California Building Standards (e.g., CALGreen and the 2022 Building and Energy

Efficiency Standards), zero carbon electricity by 2045, and changes in the corporate average fuel economy standards (e.g., Pavley I and California Advanced Clean Cars)).

Statutes Intended to Reduce Emissions of Short-lived Climate Pollutants

SB 605 AND SB 1383

SB 605 (Stats. 2014, ch. 523) required CARB to complete a comprehensive strategy to reduce emissions of short-lived climate pollutants in the state, and SB 1383 (Stats. 2016, ch. 395) required CARB to approve and implement that strategy by January 1, 2018. SB 1383 also establishes specific targets for the reduction of short-lived climate pollutants (40% below 2013 levels by 2030 for methane and HFCs, and 50% below 2013 levels by 2030 for anthropogenic black carbon) and provides direction for reductions from dairy and livestock operations and landfills. Accordingly, CARB adopted its Short-Lived Climate Pollutant Reduction Strategy (Reduction Strategy) in March 2017. The Reduction Strategy establishes a framework for the statewide reduction of emissions of black carbon, methane, and fluorinated gases.

Statute Intended to Achieve Carbon Neutrality and Foster Climate Adaptation and Resilience

ASSEMBLY BILL 1757

AB 1757 (Stats. 2022, ch. 341) requires the California Natural Resources Agency (CNRA) to determine a range of targets for natural carbon sequestration, and for nature-based climate solutions that reduce GHG emissions for future years 2030, 2038, and 2045. These targets are to be determined by no later than January 1, 2024, and are established to support the state's goals to achieve carbon neutrality and foster climate adaptation and resilience.

Building Code Requirements Intended to Reduce GHG Emissions

CALIFORNIA ENERGY CODE

The California Energy Code (CCR Title 24, Part 6), which is incorporated into the Building Energy Efficiency Standards, was first established in 1978 in response to a legislative mandate to reduce California's energy consumption. Although these standards were not originally intended to reduce GHG emissions, increased energy efficiency results in decreased GHG emissions because energy efficient buildings require less electricity and thus less consumption of fossil fuels, which emit GHGs. The standards are updated periodically to allow consideration and incorporation of new energy efficiency technologies and methods.

The most recent Title 24 standards are the 2022 Title 24 standards. Buildings permitted on or after January 1, 2023, must comply with the 2022 Standards. The California Energy Commission updates the standards every three years. The CEC estimates that the 2022 Title 24 standards will reduce ten million metric tons of GHG over 30 years. When compared to the 2019 Title 24 standards, the 2022 update focuses on: encouraging electric heat pump technology and use; establishing electric-ready requirements when natural gas is installed; expanding solar photovoltaic (PV) system and battery storage standards; and strengthening ventilation standards to improve indoor air quality.

CALIFORNIA GREEN BUILDING STANDARDS CODE

The purpose of the California Green Building Standards Code (CalGreen) (CCR Title 24, Part 11) is to improve public health and safety and to promote the general welfare by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction practices in the following categories: 1) planning and design; 2) energy efficiency; 3) water efficiency and conservation; 4) material conservation and resource efficiency; and 5) environmental quality. CalGreen, which became effective on January 1, 2011, instituted mandatory minimum environmental performance standards for all ground-up new construction of commercial, low-rise residential uses, and State-owned buildings, as well as schools and hospitals. The mandatory standards require the following:

- Twenty percent mandatory reduction in indoor water use relative to baseline levels.
- Fifty percent construction/demolition waste must be diverted from landfills.
- Mandatory inspections of energy systems to ensure optimal working efficiency; and
- Low-pollutant emitting exterior and interior finish materials such as paints, carpets, vinyl flooring, and particle boards.

The voluntary standards require the following:

- Tier I: 15 percent improvement in energy requirements, stricter water conservation requirements for specific fixtures, 65 percent reduction in construction waste, 10 percent recycled content, 20 percent permeable paving, 20 percent cement reduction, and cool/solar reflective roof.
- Tier II: 30 percent improvement in energy requirements, stricter water conservation requirements for specific fixtures, 75 percent reduction in construction waste, 15 percent recycled content, 30 percent permeable paving, 30 percent cement reduction, and cool/solar reflective roof.

The latest version of CalGreen is the 2022 CalGreen Code, which became effective on January 1, 2023. Between 2010 and 2022, continuous updates and additions have been made to CALGreen, including water conservation and recycling, electric vehicle infrastructure and charging, and changes intended to eliminate conflicts with the California Energy Code, which is Part 6 of Title 24.

TITLE 20

CCR Title 20 requires manufacturers of appliances to meet state and federal standards for energy and water efficiency. The CEC certifies an appliance based on a manufacturer's demonstration that the appliance meets the standards. New appliances regulated under Title 20 include refrigerators, refrigerator-freezers, and freezers; room air conditioners and room air-conditioning heat pumps; central air conditioners; spot air conditioners; vented gas space heaters; gas pool heaters; plumbing fittings and plumbing fixtures; fluorescent lamp ballasts; lamps; emergency lighting; traffic signal modules; dishwaters; clothes washers and dryers; cooking products; electric motors; low-voltage dry-type distribution transformers; power supplies; televisions and consumer audio and video equipment; and battery charger systems. Title 20 presents protocols for testing each type of

appliance covered under the regulations, and appliances must meet the standards for energy performance, energy design, water performance, and water design. Title 20 contains three types of standards for appliances: federal and state standards for federally regulated appliances, state standards for federally regulated appliances, and state standards for non-federally regulated appliances.

SENATE BILL 1

SB 1 (Murray) (Stats. 2006, ch. 132) established a $3 billion rebate program to support the goal of the state to install rooftop solar energy systems with a generation capacity of 3,000 megawatts through 2016. SB 1 added sections to the Public Resources Code, including Chapter 8.8 (California Solar Initiative), that require building projects applying for ratepayer-funded incentives for photovoltaic systems to meet minimum energy efficiency levels and performance requirements. Section 25780 established that it is a goal of the state to establish a self-sufficient solar industry. The goals included establishing solar energy systems as a viable mainstream option for homes and businesses within 10 years of adoption and placing solar energy systems on 50% of new homes within 13 years of adoption. SB 1, also termed "Go Solar California," was previously titled "Million Solar Roofs."

SOLID WASTE

AB 939, AB 341, and AB 1826. In 1989, AB 939, known as the Integrated Waste Management Act (PRC Sections 40000 et seq.), was passed because of the increase in waste stream and the decrease in landfill capacity. The statute established the California Integrated Waste Management Board, which oversees a disposal reporting system. AB 939 mandated a reduction of waste being disposed where jurisdictions were required to meet diversion goals of all solid waste through source reduction, recycling, and composting activities of 25% by 1995 and 50% by 2000.

AB 341 (Chapter 476, Statutes of 2011 [Chesbro]) amended the California Integrated Waste Management Act of 1989 to include a provision declaring that it is the policy goal of the state that not less than 75% of solid waste generated be source-reduced, recycled, or composted by 2020, and annually thereafter. In addition, AB 341 required the California Department of Resources Recycling and Recovery (CalRecycle) to develop strategies to achieve the state's policy goal (CalRecycle, 2012).

AB 1826 (Chapter 727, Statutes of 2014, effective 2016) requires businesses to recycle their organic waste (i.e., food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed in with food waste) depending on the amount of waste they generate per week. This law also requires local jurisdictions across the state to implement an organic waste recycling program to divert organic waste generated by businesses, including multifamily residential dwellings that consist of five or more units. The minimum threshold of organic waste generation by businesses subject to the law decreases over time, which means an increasingly greater proportion of the commercial sector will be required to comply.

REGIONAL

PG&E adopted the 2020 Integrated Resource Plan (IRP) on September 1, 2020, to provide guidance for serving the electricity and natural gas needs of residents and businesses within its service area while fulfilling regulatory requirements. The IRP contains the following objectives that are relevant to the Project:

- Clean Energy: In 2021, PG&E delivered 50 percent of its electricity from RPS-eligible renewable resources, such as solar, wind, geothermal, biomass, and small hydropower. In addition, PG&E's GHG-free energy production, which encompasses renewable resources, large hydropower, and nuclear, satisfied all PG&E's bundled retail sales in 2021.
- Reliability: PG&E's IRP analysis includes PG&E's contribution to system and local reliability, in compliance with the CPUC's resource adequacy requirements, especially as California transitions toward higher shares of GHG-free generation resources.
- Affordability: PG&E's IRP analysis selects resources to meet the state's clean energy and reliability goals and provides a system average rate forecast in compliance with the CPUC's requirements for investor-owned utilities.

SAN JOAQUIN AIR POLLUTION CONTROL DISTRICT

Climate Change Action Plan

On August 21, 2008, the Valley Air District Governing Board approved a proposal called the Climate Change Action Plan (CCAP). CCAP began with a public process bringing together stakeholders, land use agencies, environmental groups, and business groups to conduct public workshops to develop comprehensive policies for CEQA Guidelines, a carbon exchange bank, and voluntary GHG emissions mitigation agreements for the Governing Board's consideration. CCAP contains the following goals and actions:

- Develop GHG significance thresholds to address CEQA projects with GHG emission increases.
- Develop the San Joaquin Valley Carbon Exchange for banking and trading GHG reductions.
- Authorize use of the SJVAPCD [Valley Air District's] existing inventory reporting system to allow use for GHG reporting required by AB 32 regulations.
- Develop and administer GHG reduction agreements to mitigate proposed emission increases from new projects.
- Support climate protection measures that reduce greenhouse gas emissions as well as toxic and criteria pollutants. Oppose measures that result in a significant increase in toxic or criteria pollutant emissions in already impacted areas.

On December 17, 2009, the Valley Air District Governing Board adopted "Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA." The Valley Air District concluded that the existing science is inadequate to support quantification of the impacts that project-specific GHG emissions have on global climatic change. The Valley Air District found the effects of project-specific emissions to be cumulative.

The Valley Air District advises that the lead agency evaluate projects against performance-based standards and require the adoption of design elements, known as Best Performance Standards (BPS), to reduce GHG emissions. Since the BPS has not yet fully been established, the Valley Air District Guidance recommends that a CEQA lead agency:

> [R]equire quantification of project specific GHG emissions and demonstration that project specific GHG emissions would be reduced or mitigated by at least 29%, compared to Business-as-Usual (BAU), including GHG emission reductions achieved since the 2002-2004 baseline period. Projects achieving at least a 29% GHG emission reduction compared to BAU would be determined to have a less than significant individual and cumulative impact for GHG.

BAU represents the emissions that would occur in 2020 if the average baseline emissions during the 2002–2004 period were grown to 2020 levels, without control.

Nevertheless, it should be noted that, in *Center for Biological Diversity v. Department of Fish & Wildlife*, 62 Cal. 4th 204 (2015) (also known as the Newhall Ranch decision), the California Supreme Court concluded that in order for a lead agency to employ a BAU target as a threshold of significance to judge project-specific GHG emissions, such BAU threshold must be based upon substantial evidence to demonstrate what the required percentage reduction from BAU would be for an individual project as opposed to using statewide GHG figures. The court expressed skepticism that a percentage reduction goal applicable to the entire State would apply without change to an individual development project, regardless of its size or location. The Valley Air District has not updated its guidance to respond to the Supreme Court decision and to either provide evidence that its 29% BAU suggested threshold should be used or that another percentage reduction compared to BAU is supported by evidence for use to evaluate individual projects within the Air District. Therefore, the BAU analysis as identified by SJVAPCD is not employed for this EIR.

SJVAPCD Rule 2301

While the CCAP indicated that the GHG emission reduction program would be called the San Joaquin Valley Carbon Exchange, the Valley Air District incorporated a method to register voluntary GHG emission reductions into its existing Rule 2301-Emission Reduction Credit Banking through amendments of the rule. Amendments to the rule were adopted on January 19, 2012. The purposes of the amendments to the rule include the following:

- Provide an administrative mechanism for sources to bank voluntary GHG emission reductions for later use.
- Provide an administrative mechanism for sources to transfer banked GHG emission reductions to others for any use.
- Define eligibility standards, quantitative procedures, and administrative practices to ensure that banked GHG emission reductions are real, permanent, quantifiable, surplus, and enforceable.

LOCAL

City of Modesto General Plan

The City of Modesto General Plan includes several policies that are relevant to GHG emissions. General Plan policies applicable to the Project are identified below:

POLICIES: TRANSPORTATION

- **Policy V.A.1:** Gap Closures. Identify gaps in the pedestrian and bicycle transportation systems and plan facilities to close those gaps. (Air quality, public health, energy conservation, environmental justice) Planning for complete streets begins by planning first for pedestrian accessibility, second for bicycle accessibility, and third for automobiles, recognizing that travel by non-motorized modes takes more time and energy and is more sensitive to safety issues.
- **Policy V.A.2:** Encourage Pedestrians and Bicycle Use. Streets, pedestrian paths, and bike paths contribute to a system of fully-connected routes to all destinations. Their designs encourage pedestrian and bicycle use when small and spatially defined by buildings, trees, and lighting, and when high-speed traffic is discouraged. (Air quality, public health, energy conservation, environmental justice)
- **Policy V.A.3:** Transportation Improvement Program. Prepare and maintain a citywide transportation improvement program for all modes of travel, considering the development context when selecting which improvements should be included in the Capital Improvement Program. (Air quality, public health, energy conservation)
- **Policy V.A.4:** Capital Facilities Fee Program. Update and maintain a Capital Facilities Fee program to contribute to multi-modal transportation improvement projects of local and regional significance.
- **Policy V.A.5:** Mediating Mode Conflicts. In the case of conflict between motorized and non-motorized transportation modes, roadway or right-of-way features may be added or altered to protect pedestrians and bicyclists, consistent with Urban Area General Plan goals. (Air quality, public health, energy conservation, environmental justice)
- **Policy V.A.6:** Level of Service and Mitigating Travel Demand. Level of Service and Quality of Service (see Tables V-1 and V-2, respectively) for all transportation modes (vehicle, transit, bicycle and pedestrian) on City roadways should be improved over time consistent with the financial resources reasonably available to the City and without unreasonably burdening property owners or developers. On roadways where the automobile LOS is expected to be level F, consider mitigation measures other than road widening, such as the addition of bicycle lanes, improved pedestrian access, improved transit service, and the establishment of walkable development patterns to improve the quality of service for all travel modes. (Air quality, public health, energy conservation, environmental justice)
- **Policy V.B.1:** Street Grid. Design roadways and roadway connections to: provide a grid street system featuring short blocks and frequent connections to collectors and arterials to improve connectivity and accessibility for all modes; increase route choice; better accommodate public transit services; and, reduce trip lengths, traffic congestion, and

pollution. To promote walking, limit block size to no more than six hundred feet on a side, and provide internal access via alleys or walkways (any block-face less than four hundred feet long need not have alleys or walkways). Cul-de-sacs are discouraged, and when deemed necessary, cul-de-sacs should include pedestrian and bicycle connections to the greatest extent possible. (Air quality, public health, energy conservation, environmental justice)

- **Policy V.B.2:** Intersection Density. Frequent multiple-leg intersections increase street connectivity and walkability, while reducing trip lengths. Intersection density will be used to measure the degree of walkability of an area where streets have not yet been laid out. LEED ND defines walkability as a minimum threshold of 140 intersections per square mile. Higher intersection density indicates that an area is more walkable. For reference, Modesto's one-square-mile downtown grid contains approximately 140 intersections. (Air quality, public health, energy conservation, environmental justice)
- **Policy V.B.3:** Street or Alley Closures. Any street or alley closures or abandonments will be evaluated for their impact on walkability and vehicle miles traveled.
- **Policy V.D.1:** Median Refuges. Add median refuges along arterials and four-lane collectors in areas where pedestrian traffic is to be facilitated to give pedestrians a safe halfway point for street crossings. (Air quality, public health, energy conservation, environmental justice)
- **Policy V.D.2:** Bulbouts: Add sidewalk bulbouts in areas where pedestrian traffic is to be facilitated to reduce crossing distance and improve visibility of pedestrians to other roadway users. (Air quality, public health, energy conservation, environmental justice)
- **Policy V.D.3:** Network Deficiencies. Identify gaps, needs, and deficiencies in the pedestrian transportation network, and plan to correct them. (Air quality, public health, energy conservation, environmental justice)
- **Policy V.D.4:** Signal Timing. The green phase of traffic signals citywide should be timed to allow pedestrians of all ages and abilities to safely cross the street. The Federal Highway Administration's Best Practices Design Guide for Designing Sidewalks and Trails for Access suggests crossing times should allow for pedestrians traveling at 3.5 feet per second or slower. (Air quality, public health, energy conservation, environmental justice)
- **Policy V.E.2:** Funding for Bicycle Facilities. This policy recommends prioritizing the funding of bicycle facilities in the Capital Improvement Program. By investing in bike paths, lanes, and related infrastructure, communities can encourage more people to choose cycling over driving, thereby reducing vehicle miles traveled and lowering greenhouse gas (GHG) emissions. This policy supports improvements that contribute to better air quality, public health, energy conservation, and environmental justice.
- **Policy V.E.3:** Opportunities to Add Bicycle Facilities. This policy encourages the addition of bicycle facilities whenever streets are repaired or resurfaced. It suggests incorporating striping, stencils, and/or signage to create a safer and more connected bicycle network. By making bicycle travel more accessible and attractive, this policy helps shift transportation modes away from automobiles, reducing fossil fuel consumption and associated GHG emissions. It aligns with broader goals of improving air quality, public health, and energy efficiency.
- **Policy V.E.4:** Increase Ridership. The goal of this policy is to increase bicycle ridership for transportation purposes through the expansion of bicycle facilities and systems, including

bike-share programs. By supporting non-motorized travel, this policy helps decrease reliance on personal vehicles, thereby reducing GHG emissions from transportation. It also promotes environmental sustainability while addressing air quality, public health, and environmental justice concerns.

- **Policy V.F.1:** High-Frequency Service. Provide the most frequent service feasible in order to facilitate the highest quality public transportation. (Air quality, public health, energy conservation, environmental justice)
- **Policy V.F.3:** Minimum Service Density. This policy supports providing public transit service on a half-mile grid to increase accessibility and encourage transit use. By promoting compact development and reducing car dependency, it helps lower GHG emissions through improved air quality and energy conservation. (Air quality, public health, energy conservation, environmental justice)
- **Policy V.F.9:** Coordinate Transit Service. This policy calls for better coordination between bus services and other transit modes such as passenger rail and long-distance transit to reduce automobile use. Facilitating seamless transfers can significantly reduce GHG emissions by promoting public transit over individual vehicle travel. (Air quality, public health, energy conservation, environmental justice)
- **Policy V.H.4:** Transportation Demand Management. This policy calls for the preparation and maintenance of a Transportation Demand Management (TDM) Plan with a focus on the Downtown area to reduce automobile trips and single-occupancy vehicle use. By encouraging alternatives to driving alone, such as public transit, carpooling, walking, or biking, this policy contributes to a reduction in greenhouse gas emissions. (Air quality)

Stanislaus County General Plan

The Stanislaus County General Plan (Stanislaus County, 2015) establishes a framework to guide the physical development and growth of the County over the next 20 years. It outlines goals, policies, and programs related to land use, housing, transportation, noise, safety, agriculture, and environmental protection. The plan plans for development that meets the needs of current and future residents while balancing economic, social, and environmental factors.

Relevant greenhouse gas emissions policies noted in the Stanislaus County General Plan (Stanislaus County, 2015) include:

- Policy 6: The County shall strive to reduce motor vehicle emissions and vehicle miles traveled (VMT) by encouraging the use of alternatives to single occupant vehicles.
    5. Developers will construct or pay the cost of new pedestrian pathways, bikeways, rideshare facilities, transit amenities, and other improvements necessary to serve the development and to mitigate impacts to the existing circulation system caused by the development.
- Policy 8: Promote public transit as a viable transportation choice.
    3. Ensure that provisions are made in proposed development for access to current and future public transit services. In particular, continuous segments of walls or fences

should not impede pedestrian access to Expressways, Principal and Minor Arterials, and Major and Minor Collectors with transit service.

- Policy 19: The County will strive to accurately determine and fairly mitigate the local and regional air quality impacts of proposed projects.
    1. Require all development proposals, where appropriate, to include reasonable air quality mitigation measures.
    2. Minimize case-by-case analysis of air quality impacts through the use of standard criteria for determining significant environmental effects, a uniform method of calculating project emissions, and standard mitigation methods to reduce air quality impacts.
- Policy 20: The County shall strive to reduce motor vehicle emissions by reducing vehicle trips and vehicle miles traveled and increasing average vehicle ridership.
    1. Through strategies identified in the Circulation Element, ensure that circulation systems are designed and maintained to minimize traffic congestion and vehicle emissions.
    2. Support a broad range of transportation modes, including public transit, bicycling and pedestrian travel, through the strategies identified in the Circulation Element.
    3. Help achieve a jobs/housing balance by working with appropriate organizations to attract employers to Stanislaus County.
- Policy 21: The County will support efforts to increase public awareness of air quality problems and solutions.
    1. Support and participate in the air quality education programs of the SJVAPCD to the greatest extent possible.
    2. Support education programs that increase public awareness of techniques to reduce particulate matter emissions.
    3. Work with the local building industry, utilities, and the SJVAPCD to educate developers and builders on the benefits of energy-efficient designs and the use of low-emission equipment for new residential and commercial construction.

3.7.3 IMPACTS AND MITIGATION MEASURES

GREENHOUSE GAS EMISSIONS THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, climate change-related impacts are considered significant if implementation of the proposed Project would do any of the following:

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

Most individual projects do not generate sufficient GHG emissions to create a project-specific impact through a direct influence on climate change; therefore, the issue of climate change typically involves an analysis of whether a project's contribution towards an impact is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (CEQA Guidelines, Section 15355).For individual proposed projects, the significance of GHG emissions may be evaluated based on locally adopted quantitative thresholds, or consistency with a regional GHG reduction plan (such as a Climate Action Plan). However, the City of Modesto does not currently have a formal GHG emissions reduction plan or recommended emissions thresholds for determining significance associated with GHG emissions from development projects. As noted above, this EIR does not use the Air District's 2008 BAU threshold since it has not been updated in the wake of the *Newhall Ranch*[2] decision.

Since no other local or regional Climate Action Plan is in place, the Project is assessed based on its consistency with CARB's adopted Scoping Plans, including the Project's compliance with relevant Scoping Plan measures, as well as the latest RTP/SCS for the region within which the Project is located within (i.e., the Stanislaus Council of Governments (StanCOG) 2022 RTP/SCS). It should be noted that the Scoping Plan is consistent with the AB 1279 GHG reduction targets of achieving carbon neutrality by 2045 and reducing anthropogenic emissions to 85 percent below 1990 levels by 2045. Therefore, consistency with the CARB's most recent Scoping Plan would also demonstrate consistency with the carbon neutrality requirements encapsulated by AB 1279.

Therefore, this analysis provides a qualitative assessment of the Project's compliance with the applicable plans, policies, and regulations for the purposes of reducing greenhouse gas emissions to determine whether the project would have a significant impact on the environment relative to GHGs. Separately, disclosure of the Project's estimated construction and operation-related GHG emissions are provided for the purposes of disclosure.[3]

IMPACTS AND MITIGATION MEASURES

Impact 3.7-1: Project implementation would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment and would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases (Less than Significant)

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. Therefore, the cumulative global emissions of GHGs contributing to global climate change can be attributed to every nation, region, and city, and every individual on Earth. A project's GHG emissions are at a micro-scale relative to global emissions but could result in a

[2] *Center for Biological Diversity v. California Department of Fish and Wildlife* (2015) 62 Cal.4th 204

[3] Project GHG emissions were provided using the latest version of CalEEMod (v2022.1), which represents the Air District's recommended modeling tool for estimating emissions for projects under CEQA.

cumulatively considerable incremental contribution to a significant cumulative macro-scale impact. Implementation of the Project would contribute to increases of GHG emissions that are associated with global climate change. Estimated GHG emissions attributable to Project development would be primarily associated with increases of CO_2 and other GHG pollutants, such as methane (CH_4) and nitrous oxide (N_2O), from mobile sources and utility usage.

The Project's short-term construction-related and long-term operational GHG emissions were estimated using the California Emission Estimator Model (CalEEMod)™ (v.2022.1). CalEEMod is a statewide model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify GHG emissions from land use projects. The model quantifies direct GHG emissions from construction and operation (including vehicle use), as well as indirect GHG emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. Emissions are expressed in annual metric tons of CO_2 equivalent units of measure (i.e., MT CO_2e), based on the global warming potential of the individual pollutants.

SHORT-TERM CONSTRUCTION GHG EMISSIONS

Estimated maximum GHG emissions associated with construction of the proposed Project are summarized in Table 3.7-2. These emissions include all worker vehicles, vendor vehicles, hauler vehicles, and off-road construction vehicle GHG emissions. For the purposes of this analysis, based on input from the Project applicant, the proposed Project is assumed to commence construction in 2026 for Phase 1 and finish Phase 4 in 2035. The actual start and completion of each construction phase is speculative since it is dependent on a number of factors which include market conditions. The GHG emissions are combined for all construction phases to provide a reasonable worst-case condition. See Appendix A for further details.

TABLE 3.7-2: TOTAL CONSTRUCTION GHG EMISSIONS (MT CO_2E/YEAR)

CONSTRUCTION PHASE	*BIO-CO_2*	*NON-BIO-CO_2*	*TOTAL CO_2*	*CH_4*	*N_2O*	*REFRIGERANTS*	*CO_2E*
1	0	639	639	0.02	0.03	0.45	650
2	0	639	639	0.02	0.03	0.45	650
3	0	639	639	0.02	0.03	0.45	650
4	0	639	639	0.02	0.03	0.45	650
Total	**0**	**2,556**	**2,556**	**0.08**	**0.12**	**1.80**	**2,600**

SOURCES: CALEEMOD (V.2022.1)

As presented in the table, short-term construction emissions of GHGs are estimated to be a total of 2,600 MT CO_2e.

OPERATIONAL GHG EMISSIONS

The operational GHG emissions estimate for the proposed Project includes on-site area, energy, mobile, waste, and water emissions. Estimated GHG emissions associated with operation of the proposed Project are summarized in Table 3.7-3, below. It should be noted that CalEEMod does not account for Governor Newsom's Zero-Emission by 2035 Executive Order (N-79-20), which requires that all new cars and passenger trucks sold in California be zero-emission vehicles by 2035;

CalEEMod also does not account for the new CARB rules related to truck electrification (e.g. Advanced Clean Trucks Regulation). The new Executive Order and CARB rules are anticipated to reduce the operational emissions (i.e., mobile emissions) associated with passenger vehicles and freight trucks over time. The operational emissions results provided in Table 3.7-3 are an overestimate for mobile emissions, given the state's ongoing effort to increase electric vehicles and trucks. As shown in the following table, the annual GHG emissions associated with the proposed Project would be approximately 48,446 MT CO_2e.

TABLE 3.7-3: OPERATIONAL GHG EMISSIONS AT BUILDOUT (METRIC TONS/YEAR)

SOURCE	*BIO-CO_2*	*NON-BIO- CO_2*	*TOTAL CO_2*	*CH_4*	*N_2O*	*REFRIG.*	*CO_2E*
Mobile	<1	35,782	35,782	<1	3	44	36,743
Area	<1	37	37	<1	<1	<1	37
Energy	<1	7,441	7,441	<1	<1	<1	7,476
Water	184	330	514	19	<1	<1	1,123
Waste	236	<1	236	24	<1	<1	827
Refrig.	<1	<1	<1	<1	<1	2,240	2,240
Total	421	43,590	44,011	44	4	2,284	48,446

SOURCES: CALEEMOD (V.2022.1)

CONSISTENCY WITH 2022 SCOPING PLAN

The CARB's 2022 Scoping Plan (the latest version of the Scoping Plan) provides policies that are considered needed to meet the State's mid-term and long-term GHG emissions reduction targets. Specifically, the CARB's 2022 Scoping Plan identifies that it "…lays out the sector-by-sector roadmap for California, the world's fifth largest economy, to achieve carbon neutrality by 2045 or earlier…". The Scoping Plan addresses recent legislation and direction from Governor Newsom, by extending and expanding upon the earlier Scoping Plans with a target of reducing anthropogenic emissions to 85 percent below 1990 levels by 2045 and adding carbon neutrality as a science-based guide and touchstone for California's climate work. The Scoping Plan is therefore consistent with the AB 1279 GHG reduction targets of achieving carbon neutrality by 2045 and reducing anthropogenic emissions to 85 percent below 1990 levels by 2045. The Project's consistency with the applicable 2022 Scoping Plan policies is discussed in Table 3.7-4, below.

TABLE 3.7-4: PROJECT CONSISTENCY WITH THE 2022 SCOPING PLAN

POLICY	*PROJECT CONSISTENCY*
Transportation Electrification	
Convert local government fleets to ZEVs and provide EV charging at public sites	**No Conflict.** While this goal is not applicable to an individual commercial or industrial development project, Mitigation Measure 3.3-10 requires the Project applicant to install conduit as infrastructure for electric vehicle charging stations onsite to allow truck docks to charge electric trucks in the future. Such conduit would be provided on the site to serve a minimum of 50% of the number of truck docking stations, with the location of conduit at the discretion of the developer (e.g., truck trailer parking spaces or other locations).
Create a jurisdiction-specific ZEV ecosystem to support deployment of ZEVs statewide (such as building standards that exceed state building codes, permit streamlining, infrastructure siting, consumer education, preferential parking policies, and ZEV readiness plans)	

POLICY	*PROJECT CONSISTENCY*
	Additionally, Mitigation Measure 3.3-11 requires the Project applicant to install conduit as infrastructure for electric vehicle charging stations onsite to allow for truck docks to serve Transport Refrigeration Units (TRUs), so that those TRUs that can accept electric plug-ins will not be required to use the vehicle's TRUs to keep perishable items cold. Such conduit would be provided on the site to serve a minimum of 50% of the number of truck docking stations, with the location of conduit at the discretion of the developer (e.g., truck trailer parking spaces or other locations).
VMT Reduction	
Reduce or eliminate minimum parking standards	**No Conflict.** Although this goal is not applicable to an individual commercial or industrial development project, the Project has designed the facilities with efficient transportation access and circulation within site plan, including accessible loading bays, and logistics management. This ensures that offsite transportation systems can facilitate industrial traffic via designated truck routes. Additionally, refer to Section 3.13: Transportation and Circulation of this EIR, for further detail.
Implement Complete Streets policies and investments, consistent with general plan circulation element requirements	
Increase access to public transit by increasing density of development near transit, improving transit service by increasing service frequency, creating bus priority lanes, reducing, or eliminating fares, microtransit, etc.	
Increase public access to clean mobility options by planning for and investing in electric shuttles, bike share, car share, and walking	
Implement parking pricing or transportation demand management pricing strategies	
Amend zoning or development codes to enable mixed-use, walkable, transit-oriented, and compact infill development (such as increasing the allowable density of a neighborhood)	
Preserve natural and working lands by implementing land use policies that guide development toward infill areas and do not convert "greenfield" land to urban uses (e.g., green belts, strategic conservation easements)	
Building Decarbonization	
Adopt all-electric new construction reach codes for residential and commercial uses	**No Conflict.** Although this goal is not applicable to an individual commercial or industrial development project, Mitigation Measure 3.3-4 requires the Project applicant to install Energy Star certified appliances or equivalent. Furthermore, Mitigation Measure 3.3-5 requires the Project applicant to install energy efficient lighting that meets or exceeds Title 24 requirements.
Adopt policies and incentive programs to implement energy efficiency retrofits for existing buildings, such as weatherization, lighting upgrades, and replacing energy-intensive appliances and equipment with more efficient systems (such as Energy Star-rated equipment and equipment controllers)	
Adopt policies and incentive programs to electrify all appliances and equipment in existing buildings such as appliance rebates, existing building reach codes, or time of sale electrification ordinances	
Facilitate deployment of renewable energy production and distribution and energy storage on privately owned land uses (e.g., permit streamlining, information sharing)	
Deploy renewable energy production and energy storage directly in new public projects and on existing public facilities (e.g., solar photovoltaic systems on rooftops of municipal buildings and on canopies in public parking lots, battery storage systems in municipal buildings)	

SOURCE: 2022 SCOPING PLAN, TABLE 1, APPENDIX D

In addition to Project commitments discussed in Table 3.7-4, the proposed Project's operational emissions would be reduced as regulations are implemented by the CARB and other State agencies to comply with the statewide GHG reduction targets. Many of these regulations are already identified in the 2022 Scoping Plan. These statewide actions are anticipated to reduce operational GHG emissions even further below those identified in Table 3.7-2 and Table 3.7-3. For example, the proposed Project's transportation emissions would be expected to decline as vehicle efficiency standards are implemented beyond the Advanced Clean Cars II program and the Low Carbon Fuel Standard is strengthened. Furthermore, CalEEMod does not account for Governor Newsom's Zero-Emission by 2035 Executive Order (N-79-20) or CARB's subsequent regulations, which requires that all new cars and passenger trucks sold in California be zero-emission vehicles by 2035 and that heavy duty truck emissions be reduced by greater truck electrification. These programs are anticipated to reduce the operational emissions (i.e., mobile emissions) associated with passenger vehicles and freight trucks further, over time.

Overall, the proposed Project would not conflict with the 2022 Scoping Plan. The proposed Project incorporates a wide array of construction- and operation-related Project features that reduce Project emissions, as provided previously (see the list of Project features under the *Project Sustainability Features* discussion, above). Therefore, the Project would be considered consistent with the 2022 Scoping Plan. Since the proposed Project would be consistent with the CARB's 2022 Scoping Plan*,* buildout of the proposed Project would not interfere with the main programs the CARB has identified to support its conclusions that the State is on a trajectory to meet the 2045 GHG target. Overall, the proposed Project would not impede the 2022 Scoping Plan and would help the State to progress towards this target.

CONSISTENCY WITH STANCOG'S 2022 RTP/SCS

The Project's consistency with the applicable 2022 RTP/SCS measures is discussed in Table 3.7-5, below. As shown, the Project would be consistent with the GHG emissions reduction strategies contained in StanCOG's 2022 RTP/SCS, resulting in a ***less than significant*** impact.

TABLE 3.7-5: CONSISTENCY WITH THE STANCOG 2022 RTP/SCS

RTP/SCS GOALS	*PROJECT CONSISTENCY*
Goal 1: Mobility and Accessibility	**Consistent**. Implementation of the proposed Project will provide additional roadways and pedestrian amenities which link the Project site and other nearby developments. These connections provide regional and local accessibility between land uses within and adjacent to the Project site. Additionally, the proposed Project is in an area with an elevated level of accessibility. Further, the proposed Project is designed for efficient transportation access and circulation within site plan, including accessible loading bays, and logistics management. Therefore, the proposed Project is consistent with this goal.
Goal 2: Social Equity	**Consistent.** Implementation of the proposed Project provides local-area jobs, which provide opportunities for upward mobility in the local area and region. In addition, the proposed Project incorporates commercial use within the industrial area to provide opportunities for onsite employees to have access to retail services. Therefore, the proposed Project is consistent with this goal.
Goal 3: Economic and Community Vitality	**Consistent**. The proposed Project includes commercial and other employment-generating uses that would enhance economic opportunity for nearby residents. Additionally, the proposed Project establishes land use and zoning that is consistent with and facilitates the vision for new growth and development in the Salida Community Plan (SCP). This includes emphasizing Industrial uses planned in the eastern portion of the SCP adjacent to the City of Modesto limits. Therefore, the proposed Project is consistent with this goal. Furthermore, the Project strengthens the local economic base

RTP/SCS GOALS	*PROJECT CONSISTENCY*
	through job creation; development related investment; increased income opportunities; and increased property, and sales taxes through the development of the industrial and commercial uses. Therefore, the proposed Project is consistent with this goal.
Goal 4: Sustainable Development Pattern	**Consistent**. The proposed Project includes commercial and other employment-generating uses that would enhance economic opportunities for nearby residents, located in an area that is designed for such uses. Additionally, the proposed Project will install infrastructure improvements, including water, sewer, power, and stormwater systems that meet city standards, and integrate with existing utility network without diminishing services to existing residents. Moreover, the proposed Project is designed with efficient transportation access and circulation within site plan, including accessible loading bays, and logistics management, and ensures that offsite transportation systems can facilitate industrial traffic via designated truck routes. Therefore, the proposed Project is consistent with this goal.
Goal 5: Environmental Quality	**Consistent**. The proposed Project develops non-residential uses that adhere to the latest State standards, such as Title 24. More detail on what the proposed Project would do to reduce energy consumption is provided under Impact 3.7-2, below. Furthermore, the proposed Project is required to implement all mitigation measures provided within this EIR, including Mitigation Measures 3.3-1 through 3.3-14, which would reduce emissions relating primarily to air quality, as well as greenhouse gases and energy. Additionally, the proposed Project installs infrastructure improvements, including water, sewer, power, and stormwater systems that meet city standards, and integrate with existing utility network without diminishing services to existing residents. Therefore, the proposed Project is consistent with this goal. Refer to the various sections within Chapter 3 of this EIR for further detail. Therefore, the proposed Project is consistent with this goal.
Goal 6: Safety and Health	**Consistent**. The proposed Project establishes land use and zoning that is consistent with and facilitates the vision for new growth and development in the Salida Community Plan (SCP), ensuring that the proposed Project is located within an area that has been planned for such development. Furthermore, the proposed Project is required to implement various mitigation measures to reduce risks to human health, including Mitigation Measures 3.3-1 through 3.3-14, relating to air quality emissions. For example, Mitigation Measure 3.3-2 requires the Project applicant to ensure that diesel generators, if needed, shall not be used on site during project operations, except in emergency situations, in which case such generators shall have Best Available Control Technology (BACT) that meets CARB's final Tier IV emission standards. An additional example is Mitigation Measure 3.3-9, which requires the Project applicant to ensure that all landscape equipment used on-site shall be electric or zero-emission vehicles. The Project applicant is also required to provide on-site electrical charging facilities to adequately service such electric vehicles. These proposed Project goals serve to enhance the health of the proposed Project residents. Therefore, the proposed Project is consistent with this goal.
Goal 7: System Preservation	**Consistent**. The proposed Project establishes land use and zoning that is consistent with and facilitates the vision for new growth and development in the Salida Community Plan (SCP), ensuring that the proposed Project is located within an area that has been planned for such development. Overall, the proposed Project provides development consistent with local, regional, and State requirements that are designed to preserve the efficiency of the existing transportation system. Therefore, the proposed Project is consistent with this goal.
Goal 8: Smart Infrastructure	**Consistent**. The proposed Project is designed in such a way as to promote smart infrastructure. The proposed Project installs infrastructure improvements, including water, sewer, power, and stormwater systems that meet city standards, and integrate with existing utility network without diminishing services to existing residents. Additionally, Mitigation Measure 3.3-9 requires the Project applicant to ensure that all landscape equipment used on-site shall be electric or zero-emission vehicles. The Project applicant is also required to provide on-site electrical charging facilities to adequately service such electric vehicles. Furthermore, Mitigation Measure 3.3-10 requires the Project applicant to install conduit as infrastructure for electric vehicle charging stations onsite to allow for truck docks to charge electric trucks in the future. Such conduit shall be provided on the site to serve a minimum of 50% of the number of truck docking stations, with the location of conduit at the discretion of the developer (e.g., truck trailer parking spaces or other locations). In addition, Mitigation Measure 3.3-11 requires the Project applicant to install conduit as infrastructure for electric vehicle charging stations onsite to allow for truck docks to serve Transport Refrigeration Units

RTP/SCS GOALS	*PROJECT CONSISTENCY*
	(TRUs) so that those TRUs that can accept electric plug-ins will not be required to use the vehicle's TRUs to keep perishable items cold. Therefore, the proposed Project is consistent with this goal.
Goal 9: Resiliency and Reliability	**Consistent**. The proposed Project is designed in such a way as to promote smart infrastructure. The proposed Project installs infrastructure improvements, including water, sewer, power, and stormwater systems that meet city standards, and integrate with existing utility network without diminishing services to existing residents. Moreover, the Project is in an area that is consistent with and facilitates the vision for new growth and development in the Salida Community Plan (SCP). This includes emphasizing Industrial uses planned in the eastern portion of the SCP adjacent to the City of Modesto limits. Therefore, the proposed Project is consistent with this goal.
Goal 10: Congestion Management	**Consistent**. Implementation of the proposed Project will provide additional roadways which link the Project site and other nearby developments. Moreover, the proposed Project is in an area that is consistent with and facilitates the vision for new growth and development in the Salida Community Plan (SCP). Overall, the Project site is in an area with a high degree of physical accessibility. Furthermore, the Project has been designed with facilities that emphasize efficient transportation access and circulation within site plan, including accessible loading bays, and logistics management. Ensure that offsite transportation systems can facilitate industrial traffic via designated truck routes. Therefore, the proposed Project is consistent with this goal.

SOURCE: STANISLAUS COUNCIL OF GOVERNMENTS, CALIFORNIA. 2022. ADOPTED AUGUST 17, 2022. RTP/SCS. WEBSITE: HTTPS://STANCOG.ORG/187/REGIONAL-TRANSPORTATION-PLAN-RTP#TAB9E41856D-C05F-4597-A577-CF56280BE16C_0. ACCESSED JULY 16, 2025.

As shown in Table 3.7-5, above, the Project would not conflict with any of the GHG emissions reduction strategies contained in StanCOG's 2022 RTP/SCS. Therefore, the Project is consistent with StanCOG's 2022 RTP/SCS.

EXECUTIVE ORDER S-3-05

The Executive Order S-3-05 2050 target has not been codified by legislation. However, studies have shown that, to meet the 2050 target, aggressive pursuit of technologies in the transportation and energy sectors, including electrification and the decarbonization of fuel, will be required. Because of the technological shifts required and the unknown parameters of the regulatory framework in 2050, quantitatively analyzing the project's impacts further relative to the 2050 goal is speculative for purposes of CEQA.[4]

The CARB recognizes that AB 32 establishes an emissions reduction trajectory that will allow California to achieve the more stringent 2050 target: "These [greenhouse gas emission reduction] measures also put the State on a path to meet the long-term 2050 goal of reducing California's GHG emissions to 80 percent below 1990 levels. This trajectory is consistent with the reductions that are needed globally to stabilize the climate." In addition, the CARB's First Update to the Scoping Plan "lays the foundation for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050," and many of the emission reduction strategies recommended by the CARB would serve to reduce the proposed project's post-2020 emissions level to the extent applicable by law:

[4] California Air Resources Board (CARB). 2014. First Update to the Climate Change Scoping Plan. Website: http://www.arb.ca.gov/cc/scopingplan/document/updatedscopingplan2013.htm. Accessed July 16, 2025.

- Energy Sector: Continued improvements in California's appliance and building energy efficiency programs and initiatives, such as the State's zero net energy building goals, would serve to reduce the proposed project's emissions level. Additionally, further additions to California's renewable resource portfolio would favorably influence the project's emissions level.
- Transportation Sector: Anticipated deployment of improved vehicle efficiency, zero-emission technologies, lower carbon fuels, and improvement of existing transportation systems all will serve to reduce the project's emissions level.
- Water Sector: The project's emissions level will be reduced because of further utilization of water conservation technologies.
- Waste Management Sector: Plans to further improve recycling, reuse and reduction of solid waste will beneficially reduce the project's emissions level.

In his January 2015 inaugural address, Governor Brown expressed a commitment to achieve "three ambitious goals" that he wanted to see accomplished by 2030 to reduce the State's GHG emissions:

- Increasing the State's Renewable Portfolio Standard from 33 percent in 2020 to 50 percent in 2030.
- Cutting the petroleum use in cars and trucks in half; and
- Doubling the efficiency of existing buildings and making heating fuels cleaner.

These expressions of executive branch policy may be manifested in adopted legislative or regulatory action through the State agencies and departments responsible for achieving the State's environmental policy objectives, particularly those relating to global climate change.[5]

Further, studies show that the State's existing and proposed regulatory framework will allow the State to reduce its GHG emissions level to 40 percent below 1990 levels by 2030, and to 80 percent below 1990 levels by 2050. Even though these studies did not provide an exact regulatory and technological roadmap to achieve the 2030 and 2050 goals, they demonstrated that various combinations of policies could allow the Statewide emissions level to remain very low through 2050, suggesting that the combination of new technologies and other regulations not analyzed in the studies could allow the State to meet the 2050 target.[6]

Given the proportional contribution of mobile source-related GHG emissions to the State's inventory, recent studies also show that relatively new trends—such as the increasing importance of web-based shopping, the emergence of different driving patterns, and the increasing effect of web-based applications on transportation choices—are beginning to substantially influence transportation choices and the energy used by transportation modes. These factors have changed

[5] Brown, Edmund G. Jr. 2015. Press Release: California Establishes Most Ambitious Greenhouse Gas Goal in North America. April 29.
Website: https://archive.gov.ca.gov/archive/gov39/2015/04/29/news18938/index.html. Accessed July 16, 2025.

[6] Energy and Environmental Economics, 2015. Pathways to Deep Carbonization in the United States.
Website: https://pdfs.semanticscholar.org/4630/43eacaf24d1cb64b1357b94ccc41d76bc823.pdf. Accessed July 16, 2025.

the direction of transportation trends in recent years and will require the creation of new models to effectively analyze future transportation patterns and the corresponding effect on GHG emissions. For the reasons described above, the proposed project's post-2020 emissions trajectory is expected to follow a declining trend, consistent with the 2030 and 2050 targets.

CONCLUSION

The proposed Project would be consistent with relevant plans, policies, and regulations associated with GHGs, notably the most recent version of the CARB's Scoping Plan, and StanCOG's 2022 RTP/SCS. This would ensure that the proposed Project would be consistent with, and would not impair, the State's carbon neutrality standard by year 2045 as established under AB 1279. The State is making progress toward reducing GHG emissions in key sectors such as transportation, industry, and electricity. Since the Project would be consistent with State GHG Plans, it would not impede the State's goals of reducing GHG emissions 40 percent below 1990 levels by 2030, and of achieving carbon neutrality by 2045. The proposed Project would make a reasonable fair share contribution to the State's GHG reduction goals, by implementing a wide array of Project features that would reduce GHG emissions (see the list of Project features listed within the *Project Sustainability Features* discussion, above) and therefore, the proposed Project's GHG emissions would be considered to have a ***less than significant*** impact.

THRESHOLDS OF SIGNIFICANCE (ENERGY CONSERVATION)

Consistent with Appendices F and G of the CEQA Guidelines, energy-related impacts are considered significant if implementation of the proposed Project would do the following:

- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during Project construction or operation.
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

To determine whether the proposed Project would result in a significant impact on energy use, this EIR includes an analysis of proposed Project energy use, as provided under *Impacts and Mitigation Measures* below.

IMPACTS AND MITIGATION MEASURES

Impact 3.7-2: Project implementation would not result in the inefficient, wasteful, or unnecessary use of energy resources, and would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency (Less than Significant)

According to the CEQA Guidelines, the means to achieve the goal of conserving energy include decreasing overall energy consumption, decreasing reliance on natural gas and oil, and increasing reliance on renewable energy sources. In particular, the proposed Project would be considered "wasteful, inefficient, and unnecessary" if it were to violate State and federal energy standards and/or result in significant adverse impacts related to Project energy requirements, energy inefficiencies, energy intensiveness of materials, effects on local and regional energy supplies or on

requirements for additional capacity, compliance with existing energy standards, effects on energy resources, or transportation energy use requirements. In addition, the Project could have a significant energy impact if it would conflict or create an inconsistency with an applicable plan, policy, or regulation for renewable energy or energy efficiency.

The proposed Project includes various mitigation measures that reduce the inefficient, wasteful, or unnecessary use of energy. For example, Mitigation Measure 3.3-2 requires the Project applicant to ensure that diesel generators, if needed, would not be used on site during project operations, except in emergency situations, in which case such generators shall have Best Available Control Technology (BACT) that meets CARB's final Tier IV standards. Mitigation Measure 3.3-9 requires the Project applicant to ensure that all landscape equipment used on-site shall be electric or zero-emission vehicles. The Project applicant would provide on-site electrical charging facilities to adequately service such electric vehicles. Mitigation Measure 3.3-10 requires the Project applicant to install conduit as infrastructure for electric vehicle charging stations onsite to allow truck docks to charge electric trucks in the future. Such conduit shall be provided on the site to serve a minimum of 50% of the number of truck docking stations, with the location of conduit at the discretion of the developer (e.g., truck trailer parking spaces or other locations). Additionally, Mitigation Measure 3.3-11 requires the Project applicant to install conduit as infrastructure for electric vehicle charging stations onsite to allow for truck docks to serve Transport Refrigeration Units (TRUs) so that those TRUs that can accept electric plug-ins will not be required to use the vehicle's TRUs to keep perishable items cold.

Moreover, it should be noted that, over time, electrification of the vehicles will increase due to state requirements, and state and national trends. Electric charging infrastructure would be installed on the property to facilitate the conversion of the truck fleet to zero-emission electric trucks as they become available in the market and used for truck deliveries to and from the facility.

The amount of energy used by the proposed Project during operation would include the amount of energy used by Project buildings and outdoor lighting, and the fuel used by vehicle trips generated during Project construction and operation, fuel used by off-road construction vehicles during construction activities, and fuel used by Project maintenance activities during Project operation. The following discussion provides a detailed calculation of energy usage expected for the proposed Project, as provided by applicable modelling software (i.e., CalEEMod v2022.1) and the CARB EMFAC2025). Additional assumptions and calculations are provided within Appendix B of this EIR.

ELECTRICITY AND NATURAL GAS

Electricity and natural gas used by the proposed Project would be used primarily to generate energy for Project buildings, as well as for outdoor parking lot lighting. As shown in further detail in the CalEEMod modeling outputs provided in Appendix B, "Energy" is one of the categories that was modeled for GHG emissions. As also shown in the CalEEMod modeling outputs as provided in Appendix B, the proposed Project is anticipated to consume approximately 32,528,591 kWh of electricity per year and approximately 33,747,236 kBTU of natural gas per year. Moreover, this is a conservative estimate, given that the CalEEMod model does not account for the latest version of

Title 24. Furthermore, this also does not account for most of the Project's energy efficiency commitments, which would drive down energy usage much further than identified herein.

ON-ROAD VEHICLES (OPERATION)

The proposed Project would generate vehicle trips (i.e., passenger vehicles for employees and heavy-duty trucks for hauling) during its operational phase. Compliance with applicable State laws and regulations would limit idling and a part of a comprehensive regulatory framework that is implemented by the CARB. A description of Project operational on-road mobile energy usage is provided below.

To calculate operational on-road vehicle energy usage, De Novo Planning Group used fleet mix data from the CalEEMod (v.2022.1) output for the proposed Project, and Year 2028 gasoline and diesel MPG (miles per gallon) factors for individual vehicle classes as provided by EMFAC2025, to derive weighted average gasoline and diesel MPG factors for the vehicle fleet as a whole. Based on these calculations, as provided in Appendix B, upon full buildout, the proposed Project would generate operational vehicle trips that would use a total of approximately 2,746 gallons of gasoline and 1,932 gallons of diesel per day, or 1,002,338 gallons of gasoline and 705,353 gallons of diesel per year.

The proposed Project's buildings would be designed and constructed in accordance with the City's latest adopted energy efficiency standards, which are based on the State's Title 24 Energy Efficiency Standards for Nonresidential Buildings and Green Building Code Standards. These standards include minimum energy efficiency requirements related to building envelope, mechanical systems (e.g., heating, ventilation, and air conditioning [HVAC] and water heating systems), and indoor and outdoor lighting, are widely regarded as the some of the most advanced and stringent building energy efficiency standards in the country. Moreover, as specified in Chapter 5, Part 11 of the Title 24 standards, the proposed project would be required to incorporate electrical conduits to facilitate future installation of EV charging infrastructure. In addition, as specified in Subchapter 6, Part 6 of the Title 24 standards, the proposed Project would be required to design the proposed buildings to structurally accommodate future installation of a rooftop solar PV system. As such, the design of the proposed project would facilitate the future commitment to renewable energy resources. Therefore, building energy consumption would not be considered wasteful, inefficient, or unnecessary.

ON-ROAD VEHICLES (CONSTRUCTION)

The proposed Project would also generate on-road vehicle trips during Project construction (from construction workers and vendors travelling to and from the Project site). De Novo Planning Group estimated the vehicle fuel consumed during these trips based on the assumed construction schedule, vehicle trip lengths and number of workers per construction phase as provided by CalEEMod, and Year 2025 gasoline and diesel MPG factors provided by EMFAC2025 (year 2025 factors were used to represent a conservative analysis, as the energy efficiency of construction activities is anticipated to improve over time). For the sake of simplicity and to be conservative for purposes of estimating reasonable worst-case conditions, it was assumed that all construction worker light duty passenger cars and truck trips use gasoline as a fuel source, and all medium and

heavy-duty vendor trucks use diesel fuel. Table 3.7-6, below, describes gasoline and diesel fuel consumed during each construction phase (in aggregate). Additionally, it should be noted that the Project would be developed over four phases. As shown, most of the on-road mobile vehicle fuel used during the construction of the proposed Project would occur during the building construction phase. See Appendix B of this EIR for a detailed accounting of construction on-road vehicle fuel usage estimates.

TABLE 3.7-6: ON-ROAD MOBILE FUEL USAGE BY PROJECT CONSTRUCTION ACTIVITIES – BY PHASE

CONSTRUCTION PHASE	*TOTAL GALLONS OF GASOLINE FUEL(B)*	*TOTAL GALLONS OF DIESEL FUEL(B)*
Phase 1 - Site Preparation	179	-
Phase 1 - Grading	498	-
Phase 1 - Building Construction	19,734	14,375
Phase 1 - Paving	272	-
Phase 1 – Architectural Coatings	3,947	-
Phase 2 - Site Preparation	179	-
Phase 2 - Grading	498	-
Phase 2 - Building Construction	19,734	14,375
Phase 2 - Paving	272	-
Phase 2 – Architectural Coatings	3,947	-
Phase 3 - Site Preparation	179	-
Phase 3 - Grading	498	-
Phase 3 - Building Construction	19,734	14,375
Phase 3 - Paving	272	-
Phase 3 – Architectural Coatings	3,947	-
Phase 4 - Site Preparation	179	-
Phase 4 - Grading	498	-
Phase 4 - Building Construction	19,734	14,375
Phase 4 - Paving	272	-
Phase 4 – Architectural Coatings	3,947	-
Total	**98,520**	**57,500**

NOTE: (A) PROVIDED BY CALEEMOD OUTPUT. (B)SEE APPENDIX B OF THIS EIR FOR FURTHER DETAIL

SOURCE: CALEEMOD (V.2022.1); EMFAC2025.

OFF-ROAD EQUIPMENT (CONSTRUCTION)

Off-road construction equipment would use diesel fuel during the construction phase of the proposed Project. A non-exhaustive list of off-road constructive equipment expected to be used during the construction phase of the proposed Project includes: forklifts, generator sets, tractors, excavators, and dozers. Based on the total amount of CO_2 emissions expected to be generated by the proposed Project (as provided by the CalEEMod output), and standard conversion factors (as provided by the U.S. Energy Information Administration), the proposed Project would use a total of approximately 116,079 gallons of diesel fuel for off-road construction equipment. Detailed calculations are provided in Appendix B of this EIR.

State laws and regulations would limit idling from both on-road and off-road diesel-powered equipment and are part of a comprehensive regulatory framework that is implemented by the CARB. Additionally, as a practical matter, it is reasonable to assume that the overall construction schedule and process would be designed to be as efficient as feasible to avoid excess monetary costs. For example, equipment and fuel are not typically used wastefully due to the added expense associated with renting the equipment, maintaining it, and fueling it. Therefore, the opportunities for further future efficiency gains during construction are limited. For the foregoing reasons, it is anticipated that the construction phase of the project would not result in wasteful, inefficient, and unnecessary consumption of energy.

CONCLUSION

The proposed Project would use energy resources for the operation of Project buildings (natural gas and electricity), outdoor lighting (electricity), on-road vehicle trips (e.g. gasoline and diesel fuel) generated by the proposed Project, and off-road and on-road construction activities associated with the proposed Project (e.g. diesel fuel). Each of these activities would require the use of energy resources. The proposed Project would be responsible for conserving energy, including through Project sustainability features, the mitigation measures provided throughout this EIR, as well as through the implementation of statewide and local measures.

The proposed Project would comply with all applicable federal, State, and local regulations regulating energy usage. Statewide measures, including those intended to improve the energy efficiency of the statewide passenger and heavy-duty truck vehicle fleet (e.g., the Pavley Bill and the Low Carbon Fuel Standard), would improve vehicle fuel economies, thereby conserving gasoline and diesel fuel. These energy savings would continue to accrue over time. Moreover, the proposed Project would comply with the City's General Plan goals, objectives and policies related to energy conservation that are relevant to this analysis.

The proposed Project would comply with all existing energy standards and would not be expected to result in significant adverse impacts on energy resources. For these reasons, the proposed Project would not cause an inefficient, wasteful, or unnecessary use of energy resources nor would it have a significant impact on any of the energy-related thresholds as described by the *CEQA Guidelines*. This is a ***less than significant*** impact.

CUMULATIVE IMPACTS

As the California Supreme Court has reasoned, "because of the global scale of climate change, any one project's contribution is unlikely to be significant by itself. The challenge for CEQA purposes is to determine whether the impact of the project's emissions of greenhouse gases is cumulatively considerable, in the sense that 'the incremental effects of [the] individual 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.'" (*Center for Biological Diversity v. California Department of Fish and Wildlife* (2015) 62 Cal.4th 204, 219.) "'With respect to climate change, an individual project's emissions will not have any appreciable impact on the global problem by themselves, but they will contribute to the significant cumulative impact caused by greenhouse gas emissions from

other sources around the globe. The question therefore becomes whether the project's incremental addition of greenhouse gases is "cumulatively considerable" considering the global problem, and thus significant.'" (*Ibid*.)

The cumulative context for GHG emissions and climate change impacts for this analysis is the State of California, to ensure consistency with the State's climate change goals. The cumulative context for energy is also the State of California.

Impact 3.7-3: Cumulative Impact on Climate Change from Increased Project-Related Greenhouse Gas Emissions, and Impact Associated with Energy (Less than Significant)

GHG emissions from a single Project will not cause global climate change; however, GHG emissions from multiple projects throughout a region or state could result in a cumulative impact with respect to global climate change. It should be noted that, since greenhouse gas emissions are inherently global in nature, the greenhouse gas emissions analysis for the Project also represents a cumulative analysis for greenhouse gases.

As presented in Table 3.7-2, short-term construction emissions of GHGs are estimated at a maximum of 2,600 metric tons of carbon dioxide equivalents ($MTCO_2e$). As shown in Table 3.7-3, the annual operational emissions of GHGs associated with the proposed Project would be approximately 48,446 MT CO_2e.

The proposed Project would be consistent with relevant plans, policies, and regulations associated with GHGs, notably the most recent version of the CARB's Scoping Plan, and StanCOG's 2022 RTP/SCS. This would ensure that the proposed Project would be consistent with the State's carbon neutrality standard by year 2045 as established under AB 1279. Taking into account the proposed Project's emissions, and the progress being made by the State toward reducing emissions in key sectors such as transportation, industry, and electricity, the Project would be consistent with State GHG Plans and would not impede the State's goals of reducing GHG emissions 40 percent below 1990 levels by 2030, and carbon neutrality by 2045. The proposed Project would make a reasonable fair share contribution to the State's GHG reduction goals. Therefore, a ***less than significant*** cumulative impact relative to GHGs would result.

Furthermore, regarding Project energy consumption, the proposed Project includes various characteristics that reduce the inefficient, wasteful, or unnecessary use of energy. Moreover, it should be noted that, over time, electrification of the vehicles will increase due to state requirements, and state and national trends. Electric charging infrastructure would be installed on the property to facilitate the conversion of the truck fleet to zero-emission electric trucks as they become available in the market and used for truck deliveries to and from the facility. Therefore, a ***less than significant*** cumulative impact relative to energy would result.

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The purpose of this section is to disclose and analyze the potential impacts associated with hazards and hazardous materials related to the Project site, and to analyze the potential for exposure of people to hazards and hazardous materials as the Project is built and operated in the future. This section is based in part on the:

- *Modesto General Plan* (UAGP) and Draft EIR (City of Modesto, 2019);
- City of Modesto Municipal Code;
- EnviroStor database search (California Department of Toxic Substances Control [DTSC], Accessed 2025);
- GeoTracker Information System and Geographic Environmental Information Management System database search (State Water Resources Control Board [SWRCB], Accessed 2025);
- *California Airport Land Use Planning Handbook* (California Department of Transportation, Division of Aeronautics, 2011); and
- *Airport Land Use Compatibility Plan for Stanislaus County* (ALUCP) (2016).

Comments were received during the public review period or scoping meeting for the Notice of Preparation regarding this topic from the following:

- Stanislaus County Planning and Community Development Department/ Department Of Environmental Resources (DER) provided comments stating: The applicant shall determine, to the satisfaction of the Department of Environmental Resources (DER), that a site containing (or formerly containing) residences or farm buildings, or structures, has been fully investigated (via Phase I study, and if necessary, Phase II study) prior to the issuance of any grading permit. Any discovery of underground storage tanks, former underground storage tank locations, buried chemicals, buried refuse, or contaminated soil shall be brought to the immediate attention of DER (March 6, 2024 [sic]).
- PG&E Provided comments stating that there could be gas transmission pipelines in this area which would be considered critical facilities for PG&E and a high priority subsurface installation under California law (March 20, 2025). Care must be taken to ensure safety and accessibility. Full comments received are included in Appendix A of this DEIR.
- David Schwarz Deputy District Counsel - Salida Fire Protection District provided comments that related to Funding for Fire and Emergency Response by Salida Fire Protection District (March 20, 2025).

The comment letters as related to this topic are addressed within this section. Full comments received are included in Appendix A of this DEIR.

3.8.1 ENVIRONMENTAL SETTING

PHYSICAL SETTING

Project Location

The proposed Project site consists of approximately 145 acres located at the northwest corner of Kiernan Avenue and Dale Road intersection, within the unincorporated Community of Salida. The

Project site is located within the Stanislaus County Salida Community Plan (SCP) and is zoned for development as Salida Community Plan Industrial/Business Park (SCP-IBP) and Salida Community Plan Planned Industrial (SCP-PI). The area is also within the City of Modesto General Plan Planning Area with a designation of Salida Community Plan (SCP).

Figures 2.0-1 and 2.0-2 in the Project Description (Chapter 2.0) show the Project's regional location and vicinity.

Existing Site and Surrounding Uses

The Project site and surrounding properties are generally in agricultural use. There are also light industrial developments east and west of the Project site, along Kiernan Avenue. Joseph A. Gregori High School is located northwest of the site, and the Kaiser Permanente Modesto Medical Center and similar business park uses are located immediately south, within the City of Modesto.

The Project site is primarily bounded by lands within the unincorporated County to the north, east and west. Lands within the City of Modesto are located to the south. Uses within the surrounding area include the following:

- North – Agricultural lands, Joseph A. Gregori High School.
- East – Agricultural lands, industrial developments, along Kiernan Avenue.
- South – Kaiser Permanente Modesto Medical Center and similar business park uses, within the City of Modesto.
- West – Agricultural lands, industrial developments.

Figure 2.0-4 shows aerial imagery of the current existing site uses within the Project site.

Site Topography

The Project site is relatively flat and ranges in elevation from approximately 75 to 82 feet above mean sea level.

HAZARDS ASSESSMENT

For the purposes of this EIR, "hazardous material" is defined as provided in California Health and Safety Code, Section 25501:

- Any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment.

"Hazardous materials" include, but are not limited to, hazardous substances, hazardous waste, and any material that a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

"Hazardous waste" is a subset of hazardous materials. For the purposes of this EIR, the definition of hazardous waste is essentially the same as that in the California Health & Safety Code, Section 25117, and in the California Code of Regulations (CCR), Title 22, Section 66261.2:

- Hazardous wastes are wastes that, because of their quantity, concentration, physical, chemical, or infectious characteristics, may either cause, or significantly contribute to, an increase in mortality or an increase in serious illness, or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

CCR Title 22 categorizes hazardous waste into hazard classes according to specific characteristics of ignitibility, corrosivity, reactivity, or toxicity. Hazardous waste with any of these characteristics is also known as a Resource Conservation and Recovery Act (RCRA) waste.

Hazardous materials can be categorized as hazardous non-radioactive chemical materials, radioactive materials, toxic materials, and biohazardous materials. The previous definitions are adequate for non-radioactive hazardous chemicals. Radioactive and biohazardous materials are further defined as follows:

- Radioactive materials contain atoms with unstable nuclei that spontaneously emit ionizing radiation to increase their stability.
- Radioactive wastes are radioactive materials that are discarded (including wastes in storage) or abandoned.
- Toxic wastes are harmful or fatal when ingested or absorbed (e.g., containing mercury, lead). When toxic wastes are land disposed, contaminated liquid may leach from the waste and pollute groundwater.
- Biohazardous materials include materials containing certain infectious agents (microorganisms, bacteria, molds, parasites, and viruses) that cause or significantly contribute to increased human mortality or organisms capable of being communicated by invading and multiplying in body tissues.
- Medical wastes include both biohazardous wastes (byproducts of biohazardous materials) and sharps (devices capable of cutting or piercing, such as hypodermic needles, razor blades, and broken glass) resulting from the diagnosis, treatment, or immunization of human beings, or research pertaining to these activities.

There are countless categories of hazardous materials and hazardous wastes that could be found on any given property based on past uses. Some common examples include agrichemicals (chlorinated herbicides, organophosphate pesticides, and organochlorine pesticides, such as such as Mecoprop (MCPP), Dinoseb, chlordane, dichloro-diphenyltrichloroethane (DDT), and dichloro-diphenyl-dichloroethylene (DDE)), petroleum-based products (oil, gasoline, diesel fuel), a variety of chemicals including paints, cleaners, and solvents, and asbestos-containing or lead-containing materials (e.g., paint, sealants, pipe solder).

Site Review

As shown on Figure 2.0-4, aerial imagery of the current existing site uses within the Project site show the Project site consists of active agricultural fields and orchards, to the northern and southern portions of the Project site, respectively.

Site reconnaissance of the property is generally limited, due to the active agricultural uses on-site, including orchards and alfalfa crops.

No aboveground storage tanks (ASTs) are observed on-site. Additionally, there are no known underground storage tanks (USTs) within the Project site.

Historic Site Conditions

The Project vicinity was a typical agricultural area. Aerial photographs of the Project site and general vicinity were reviewed. In 1985, the Project site appeared to be used for agricultural purposes while the lands in the southernmost portion appear to include developed areas with agricultural support buildings and possible home site. These site buildings are not present following 2010, and the areas that use to house them has remained barren. From 1985 to present, the Project site appears to have been active agricultural fields.

ENVIRONMENTAL RECORDS

A search of local, state, and federal agency databases for the Project site and known contaminated sites in the vicinity was performed. None of the parcels in the Project site were found to contain any known listed contamination sites; however, due to past agricultural uses and site structures, it would be anticipated that soil contamination would potentially be present on the Project site, as similar sites in the areas have known REC's.

California DTSC Envirostor

The California DTSC maintains the Envirostor Data Management System, which provides information on hazardous waste facilities (both permitted and corrective action), as well as any available site cleanup information. There are no sites listed in the Envirostor database within the Project site. The nearest site listed on the Envirostor database is the Joseph A. Gregori High School site (50010022) located adjacent to the Project site. Past use(s) that caused contamination included: agricultural – orchard; agricultural - row crops; fuel - vehicle storage/refueling; pesticide/insecticide/rodenticide storage; USTs; and vehicle maintenance.

Joseph A. Gregori High School Site History and Findings

The 79.6-acre site consisted primarily of agricultural land, which was in cultivation for at least 60 years. The majority of the agricultural land was used for orchards and row crops since the 1960s. The southwest corner of the property included a residence and farm-support structures, which occupied about 1.5 acres of the site. The residence area included a single-family home with a detached garage, storage shed, swimming pool, septic tank, and water well. The farm-support area

included a large equipment garage, maintenance and storage shed, large wooden barn, pesticide mixing and equipment wash-down area, and two former USTs.

Chemicals of concern that were identified during a Preliminary Environmental Assessment (PEA) of the site included: organochlorine pesticides (OCP), lead, and petroleum hydrocarbons in surface soils in and around the barn structure; lead in surface soils near the equipment shed; and gasoline-range organics [GRO] and benzene, toluene, ethyl benzene, and xylenes [BTEX]) in subsurface soil, soil vapor, and groundwater near the two former USTs. DTSC approved the PEA report on June 3, 2005, with a "Further Action" determination.

A Supplemental Site Investigation (SSI) was conducted between March 2006 and March 2007. During the SSI, characterization of lead, arsenic, and OCPs in surface soil in the farm support area and GRO/BTEX in soil and groundwater at the location of the two former USTs was completed. Groundwater characterization included installation of eight new groundwater monitoring wells (in addition to three existing wells). DTSC determined that a cleanup action was required based on data presented in the draft SSI report, and on June 21, 2006, DTSC signed a partial site approval (Form 4.15) for the site. The partial site approval allowed the MCS to request state funding and start construction in the non-impacted portion of the site.

DTSC approved a Removal Action Workplan (RAW) on May 1, 2008. The RAW recommended excavation and disposal of 6,500 cubic yards (cy) of GRO/BTEX- and OCP/arsenic-impacted soils, addition of oxygen release compound in the bottom of the UST excavation, and after completion of the soil removal action, continued monitoring of GRO/BTEX in groundwater for natural attenuation. The removal action for soil was implemented in July 2008, and DTSC approved the Removal Action Completion Report (RACR) for the Soil Operable Unit (OU) on November 14, 2008. A total of 8,255 cy of contaminated soil were sent for off-site disposal; 7,715 cy of GRO/BTEX-contaminated soil and 540 cy of OCP/arsenic-contaminated soil.

Long-term groundwater monitoring of GRO and BTEX at the location of the former USTs was implemented in mid-2008 in accordance with an Operations and Maintenance (O&M) Plan approved by DTSC on April 4, 2009. Groundwater monitoring has continued with the goal of meeting groundwater quality standards for drinking water within two to five years. A total of seven groundwater monitoring wells have been installed and monitored between July 2008 and December 2010. During the last several monitoring events in 2010, the five perimeter wells have been reported with non-detect concentrations for GRO/BTEX. As of December 2010, concentrations of GRO and/or BTEX exceeding the groundwater cleanup goals are limited to one monitoring well, MW-3R, which is centered over what was the original hot-spot of the plume; concentrations in the other seven wells are below the drinking water cleanup goals or non-detect. In January 2011, DTSC advised the School District that further monitoring was not required and that the groundwater OU could be closed under the Bay Area Regional Water Quality Control Board’s (RWQCB's) low-risk closure scenario.

The School District submitted the Groundwater OU RACR on March 1, 2011, and DTSC provided comments on March 30, 2011. The Final Groundwater OU RACR was submitted on June 22, 2011. DTSC prepared a review letter concurring with the conclusions of the report and requesting

concurrence from Central Valley RWQCB. DTSC received the Waterboard's checklist and concurrence letter on August 2, 2011. DTSC approved the Groundwater OU RACR with a No further Action determination on August 5, 2011. A Site Certification package was approved for the Groundwater OU, on August 9, 2011. No further response actions are required for this site.

State Water Resources Control Board - GeoTracker

GeoTracker is the State Water Resources Control Board's (SWRCB's) Internet-accessible database system used by the SWRCB, regional boards, and local agencies to track and archive compliance data from authorized or unauthorized discharges of waste to land, or unauthorized releases of hazardous substances from USTs. See Table 3.8-1 for a complete list of sites identified by the GeoTracker database within 0.5 mile of the Project site.

TABLE 3.8-1: GEOTRACKER HAZARDOUS MATERIAL RELEASE SITES WITHIN 0.5 MILE OF PROJECT SITE

SITE NAME	*STATUS*	*STATUS DATE*	*ADDRESS*	*SITE TYPE*
JOSEPH GREGORI HIGH SCHOOL	COMPLETED - CASE CLOSED	8/16/2011	5518 STODDARD RD	CLEANUP PROGRAM SITE
KAISER PERMANENTE MODESTO	COMPLETED - CASE CLOSED	11/18/2004	KIERNAN AVE AND DALE RD	CLEANUP PROGRAM SITE
SHELL BIOLOGICAL SCIENCES RESEARCH FACILITY - SHELL AGRICULTURAL CHEMICAL COMPANY, LABORATORY AREA	COMPLETED - CASE CLOSED	11/15/2011	5901 STODDARD ROAD	CLEANUP PROGRAM SITE
TONY SALSI	COMPLETED - CASE CLOSED	8/10/1998	5912 STODDARD	LUST CLEANUP SITE
VAN KAY INC	COMPLETED - CASE CLOSED	8/16/2011	5518 STODDARD RD	LUST CLEANUP SITE
VELLA BROTHERS	COMPLETED - CASE CLOSED	4/11/2005	3406 KIERNAN	LUST CLEANUP SITE

NOTE: LUST = LEAKING UNDERGROUND STORAGE TANK.
SOURCE: SWRCB, GEOTRACKER, ACCESSED MAY 28, 2025.

Solid Waste Information System (SWIS) is a database of solid waste facilities that is maintained by the California Integrated Waste Management Board (CIWMB). The SWIS data identifies active, planned and closed sites. The Project site does not have any active or planned solid waste facilities listed in the database.

Cortese Database: The Cortese database identifies public drinking water wells with detectable levels of contamination, hazardous substance sites selected for remedial action, sites with known toxic material identified through the abandoned site assessment program, sites with USTs having a reportable release, and all solid waste disposal facilities from which there is known hazardous substance migration. The source of this database is the California Environmental Protection Agency (Cal-EPA) and are found in the GeoTracker database. The Project site is not listed in this database.

Petroleum Pipelines: Online databases were research to provide an indication whether crude oil and/or petroleum product pipelines were located on the Project Site including the National Pipeline Mapping System gas transmission and hazardous liquid map viewer (https://pvnpms.phmsa.dot.gov/PublicViewer) and the California Office of the State Fire Marshall crude oil Pipeline Safety and Certified Unified Program Agency (CUPA) Division.

No petroleum pipelines were depicted beneath the Project site. PG&E operates an existing natural gas transmission pipeline located along Kiernan Avenue adjacent to the Project site's southernmost perimeter.

Transportation of Hazardous Materials

The transportation of hazardous materials within the City of Modesto Planning Area is subject to various federal, State, and local regulations. The following provisions are included in the California Vehicle Code (CVC) and pertain to the transportation of hazardous related materials.

- The Highway Patrol designates the routes in California which are to be used for the transportation of explosives (Section 31616).
- The CVC applies when the explosives are transported as a delivery service for hire or in quantities in excess of 1,000 pounds. The transportation of explosives in quantities of 1,000 pounds or less, or other than on a public highway, is subject to the California Health and Safety Code (Section 31601(a)).
- It is illegal to transport explosives or inhalation hazards on any public highway not designated for that purpose, unless the use of the highway is required to permit delivery of, or the loading of, such materials (Section 31602(b) and Section 32104(a)).
- When transporting explosives through or into a city for which a route has not been designated by the Highway Patrol, drivers must follow routes as may be prescribed or established by local authorities (Section 31614(a)).
- Inhalation hazards and poison gases are subject to additional safeguards. These materials are highly toxic, spread rapidly, and require rapid and widespread evacuation if there is loss of containment or a fire. The Highway Patrol designates through routes to be used for the transportation of inhalation hazards. It may also designate separate through routes for the transportation of inhalation hazards composed of any chemical rocket propellant (Section 32100 and Section 32102(b)).

HAZARDS FROM AIR TRAFFIC

The State Division of Aeronautics has compiled extensive data regarding aircraft accidents around airports in California. This data is much more detailed and specific than data currently available from the Federal Aviation Administration (FAA) and the National Transportation Safety Board (NTSB). According to the California Airport Land Use Planning Handbook (2011), prepared by the State Division of Aeronautics, 21 percent of general aviation accidents occur during takeoff and initial climb and 44.2 percent of general aviation accidents occur during approach and landing. The State Division of Aeronautics has plotted accidents during these phases at airports across the country and has determined certain theoretical areas of high accident probability.

Approach and Landing Accidents

As nearly half of all general aviation accidents occur in the approach and landing phases of flight, considerable work has been done to determine the probability of such accidents. Nearly 77 percent of accidents during this phase of flight occur during touchdown onto the runway or during the roll-out. These accidents typically consist of hard or long landings, ground loops (where the aircraft spins out on the ground), departures from the runway surface, etc. These types of accidents are rarely fatal and often do not involve other aircraft or structures. Commonly these accidents occur due to loss of control on the part of the pilot and, to some extent, weather conditions (California Division of Aeronautics, 2011).

The remaining 23 percent of accidents during the approach and landing phase of flight occur as the aircraft is maneuvered towards the runway for landing, in a portion of the airspace around the airport commonly called the traffic pattern. Common causes of approach accidents include the pilot's misjudging of the rate of descent, poor visibility, unexpected downdrafts, or tall objects beneath the final approach course. Improper use of rudder on an aircraft during the last turn toward the runway can sometimes result in a stall (a cross-control stall) and resultant spin, causing the aircraft to strike the ground directly below the aircraft. The types of events that lead to approach accidents tend to place the accident close to the extended runway centerline. The probability of accidents increases as the flight path nears the approach end of the runway (California Division of Aeronautics, 2011).

According to aircraft accident plotting provided by the State Division of Aeronautics, most accidents that occur during the approach and landing phase of flight occur on the airport surface itself. The remainder of accidents that occur during this phase of flight are generally clustered along the extended centerline of the runway, where the aircraft is flying closest to the ground and with the lowest airspeed (California Division of Aeronautics, 2011).

Takeoff and Departure Accidents

According to data collected by the State Division of Aeronautics, nearly 65 percent of all accidents during the takeoff and departure phase of flight occur during the initial climb phase, immediately after takeoff. This data is correlated by two physical constraints of general aviation aircraft:

- The takeoff and initial climb phase are times when the aircraft engine(s) is under maximum stress and is thus more susceptible to mechanical problems than at other phases of flight; and,
- Average general aviation runways are not typically long enough to allow an aircraft that experiences a loss of power shortly after takeoff to land again and stop before the end of the runway.

While most of the approach and landing accidents occur on or near to the centerline of the runway, accidents that occur during initial climb are more dispersed in their location as pilots are not attempting to get to any one specific point (such as a runway). Additionally, aircraft vary widely in payload, engine power, glide ratio, and several other factors that affect glide distance, handling characteristics after engine loss, and general response to engine failure. This further disperses the

accident pattern. However, while the pattern is more dispersed than that seen for approach and landing accidents, the departure pattern is still generally localized in the direction of departure and within proximity of the centerline. This is partially since pilots are trained to fly straight ahead and avoid turns when experiencing a loss of power or engine failure. Turning flight causes the aircraft to sink faster and flying straight allows for more time to attempt to fix the problem (California Division of Aeronautics, 2002).

Local Airport Facilities - Modesto City-County Airport

There are no private or public airport facilities within the City of Modesto. The Modesto City-County Airport is a general aviation airport located two miles southeast of the City of Modesto boundaries, in Stanislaus County, and is operated by Stanislaus County. The Modesto City-County Airport is located along the Tuolumne River Regional Park. The Project site is not within the airport influence area for the Modesto City-County Airport.

3.8.2 REGULATORY SETTING

FEDERAL

The primary federal agencies that are responsible for overseeing regulations and policies regarding hazardous materials are the Environmental Protection Agency (EPA), Department of Labor Occupational Safety and Health Administration (OSHA), and the Department of Transportation (DOT). Several laws governing the transport, storage, and use of hazardous materials are governed by these agencies as well as oversight for contaminated sites cleanup. Federal laws and regulations that are applicable to hazards and hazardous materials are presented below.

Hazardous Materials Transportation Act

The Hazardous Materials Transportation Act, as amended, is the basic statute regulating hazardous materials transportation in the United States. The purpose of the law is to provide adequate protection against the risks to life and property inherent in transporting hazardous materials in interstate commerce, giving DOT and other agencies the authority to issue and enforce rules and regulations governing the safe transportation of hazardous materials.

Natural Gas Pipeline Safety Act

The Natural Gas Pipeline Safety Act authorizes the DOT Office of Pipeline Safety to regulate pipeline transportation of natural (flammable, toxic, or corrosive) gas and other gases as well as the transportation and storage of liquefied natural gas. The Office of Pipeline Safety regulates the design, construction, inspection, testing, operation, and maintenance of pipeline facilities. While the federal government is primarily responsible for developing, issuing, and enforcing pipeline safety regulations, the pipeline safety statutes provide for State assumption of the intrastate regulatory, inspection, and enforcement responsibilities under an annual certification. To qualify for certification, a state must adopt the minimum federal regulations and may adopt additional or more stringent regulations as long as they are not incompatible.

Resource Conservation and Recovery Act

The 1976 Federal Resource Conservation and Recovery Act (RCRA) and the 1984 RCRA Amendments regulate the treatment, storage, and disposal of hazardous and non-hazardous wastes. The legislation mandated that hazardous wastes be tracked from the point of generation to their ultimate fate in the environment. This includes detailed tracking of hazardous materials during transport and permitting of hazardous material handling facilities.

The 1984 RCRA amendments provided the framework for a regulatory program designed to prevent releases from USTs. The program established tank and leak detection standards, including spill and overflow protection devices for new tanks. The tanks must also meet performance standards to ensure that the stored material will not corrode the tanks. The RCRA was further amended in 1988 to set additional standards for USTs.

In July 2015, EPA revised the federal UST regulation, which strengthened the 1988 federal UST regulations by increasing emphasis on properly operating and maintain UST equipment. The revision added new operation and maintenance requirements and addressed UST systems deferred in the 1988 UST regulation. The purpose of the revision was to help prevent and detect UST releases, which are a leading source of groundwater contamination. To ensure compliance performance measures reflect the 2015 UST regulation, the EPA and the Association of State and Territorial Solid Waste Management Officials coordinated to update existing compliance performance measures and add new measures. The measures required states to switch from tracking compliance against significant operational compliance measures to the more stringent technical compliance rate measures. As of June 2020, only 45.6 percent of USTs were in compliance with all technical compliance rate categories.[1]

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) introduced active federal involvement to emergency response, site remediation, and spill prevention, most notably the Superfund program. CERCLA was intended to be comprehensive in encompassing both the prevention of, and response to, uncontrolled hazardous substances releases. CERCLA deals with environmental response, providing mechanisms for reacting to emergencies and to chronic hazardous material releases. In addition to establishing procedures to prevent and remedy problems, it establishes a system for compensating appropriate individuals and assigning appropriate liability. It is designed to plan for and respond to failure in other regulatory programs and to remedy problems resulting from action taken before the era of comprehensive regulatory protection.

Code of Federal Regulations (CFR)

49 CFR Part 173 outlines the regulations for the transportation of hazardous materials in the United States. It includes:

[1] EPA. *Semiannual Report of UST Performance Measures Mid Fiscal Year 2020*. June 2020. Access: https://www.epa.gov/sites/production/files/2020-06/documents/ca-20-12.pdf

- Definitions of hazardous materials for transportation purposes.
- Requirements for preparing hazardous materials for shipment by various modes of transport, including air, highway, rail, and water.
- General requirements for shippers regarding packaging and labeling of hazardous materials.
- Classification and packaging guidelines for different classes of hazardous materials.

49 CFR Part 177 pertains to the carriage of hazardous materials by public highway. It outlines the requirements for records, equipment, packaging, and containers under the control of a motor carrier, ensuring they are available for examination and inspection by authorized representatives of the Department of Transportation.

STATE

The primary State agencies that are responsible for overseeing regulations and policies regarding hazardous materials are the California Office of Emergency Services (OES), Cal-EPA, DTSC, California Department of Transportation (Caltrans), California Highway Patrol (CHP), State Water Resources Control Board (SWRCB), and the California Air Resources Board. Several laws governing the generation, transport, and disposal of hazardous materials are administered by these agencies. State laws and regulations that are applicable to hazards and hazardous materials are presented below.

California Health and Safety Code

Cal-EPA has established rules governing the use of hazardous materials and the management of hazardous wastes. Many of these regulations are embodied in the California Health and Safety Code. The code includes regulations that govern safe drinking water, substances control, land reuse and revitalization, remediation, restoration, and methamphetamine contaminated cleanups.

California Code of Regulations Title 22 and Title 26

The California Code of Regulations (CCR) Title 22 provides state regulations for hazardous materials, and CCR Title 26 provides regulation of hazardous materials management. In 1996, Cal-EPA established the "Unified Hazardous Waste and Hazardous Materials Management Regulatory Program" (Unified Program) which consolidated the six administrative components of hazardous waste and materials into one program.

California Environmental Protection Agency

Cal-EPA was created in 1991, unifying California's environmental authority in a single cabinet-level agency and brought California Air Resources Board, SWRCB, RWQCBs, California Department of Resources Recycling and Recovery (CalRecycle), DTSC, Office of Environmental Health Hazard Assessment, and the Department of Pesticide Regulation under one agency. These agencies were placed within the Cal-EPA "umbrella" for the protection of human health and the environment to ensure the coordinated deployment of State resources. Cal-EPA's mission is to restore, protect, and enhance the environment and ensure public health, environmental quality, and economic vitality.

Department of Toxic Substances Control

DTSC, a department of Cal-EPA, is the primary agency in California for regulating hazardous waste, cleaning up existing contamination, and finding ways to reduce the amount of hazardous waste produced in California. DTSC regulates hazardous waste primarily under the authority of RCRA and the California Health and Safety Code (primarily Division 20, Chapters 6.5 through 10.6, and Title 22, Division 4.5). Other laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning.

Government Code section 65962.5 requires the DTSC and the Department of Health Services (now the Department of Public Health) to maintain a list (commonly known as the Cortese List) of hazardous waste facilities and sites, contaminated drinking water wells, sites listed by the SWRCB as having UST leaks or a discharge of hazardous wastes or materials into the water or groundwater, and sites with a known migration of hazardous waste/material.

California Office of Emergency Services

To protect public health and safety as well as the environment, the California OES is responsible for establishing and managing statewide standards for business and area plans related to the handling and release, or threatened release, of hazardous materials. The California OES requires basic information regarding hazardous materials handled, used, stored, or disposed of (including location, type, quantity, and health risks) to be available to firefighters, public safety officers, and regulatory agencies. Typically, this information should be included in business plans to prevent or mitigate impacts on the environment or the health and safety of individuals from the release, or threatened release, of these materials into the workplace and environment. These regulations are covered under Chapter 6.95 of the California Health and Safety Code, Article 1, Hazardous Materials Release Response and Inventory Program (Sections 25500 to 25520), and Article 2, Hazardous Materials Management (Sections 25531 to 25543.3).

Title 19 of the California Code of Regulation (CCR) establishes minimum statewide standards for hazardous materials business plans. These plans must include the following: 1) a hazardous material inventory in accordance with Sections 2729.2 to 2729.7, emergency response plans and procedures in accordance with Section 2731, and 3) training program information in accordance with Section 2732. Business plans should contain basic information regarding the location, type, quantity, and health risks of hazardous materials stored, used, or disposed of in the State. Each business would prepare a hazardous materials business plan if that business uses, handles, or stores a hazardous material or an extremely hazardous material in quantities greater than or equal to the following:

- 500 pounds of a solid substance;
- 55 gallons of a liquid;
- 200 cubic feet of compressed gas;
- A hazardous compressed gas in any amount; or
- Hazardous waste in any quantity.

California Occupational Safety and Health Administration

The California OSHA is the primary agency responsible for worker safety related to the handling and use of chemicals in the workplace. California OSHA standards are generally more stringent than federal OSHA regulations. The employer is required to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR 337–340). California OSHA regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings (8 CCR 5192 outlines standards for the preparation of Health and Safety Plans).

Regulations pertaining to protecting public health and safety from lead contamination related to construction (including disturbance of soils containing lead) are also promulgated by California OSHA (8 CCR 1532.1). These regulations address allowable exposure, exposure assessment, methods of compliance, respiratory protection and protective equipment/clothing, and employee/working training.

California Code of Regulations, Title 22, Section 66261.20-24

Soils having concentrations of contaminants higher than certain acceptable levels must be handled and disposed of as hazardous waste when excavated. CCR Title 22, Section 66261.20-24 contains technical descriptions of characteristics that would cause a soil to be classified as a hazardous waste.

Unified Hazardous Waste and Hazardous Materials Management Regulatory Program

In January 1996, Cal-EPA adopted regulations implementing the Unified Hazardous Waste and Hazardous Materials Management Regulatory Program. The program has six elements: 1) hazardous waste generators and hazardous waste on-site treatment; 2) underground storage tanks; 3) aboveground storage tanks; 4) hazardous materials release response plans and inventories; 5) risk management and prevention programs; and 6) Uniform Fire Code hazardous materials management plans and inventories. The plan is implemented at the local level. The local agency that is responsible for the implementation of the Unified Program is the Certified Unified Program Agency. The Stanislaus County Environmental Health Division is designated as the Certified Unified Program Agency.

The California Hazardous Materials Release Response Plans and Inventory Law of 1985

The California Hazardous Materials Release Response Plans and Inventory Law of 1985 requires that any business that handles hazardous materials prepare a business plan, which must include the following:

- Details, including floor plans, of the facility and business conducted at the site;
- An inventory of hazardous materials that are handled or stored on site;
- An emergency response plan; and
- A safety and emergency response training program for new employees with annual refresher courses.

State Water Resources Control Board Underground Storage Tank Program

The State Water Resources Control Board established regulations governing prevention of leaks from underground storage tanks. There are published standards and requirements for installation, tank construction, tank testing, leak detection, spill containment and overfill protection. California underground storage tank laws and regulations give local agencies (counties, cities, or other local agencies) authority throughout the State to issue permits for tank operation and to enforce tank testing requirements within their jurisdiction. In Stanislaus County, the Stanislaus County Environmental Health Division issues permits for the operation of underground storage tanks and oversees the installation, operation and removal.

Hazardous Materials Transportation Regulations

The State has also adopted U.S. Department of Transportation regulations for the intrastate movement of hazardous materials. State regulations are contained in 26 CCR. In addition, the State regulates the transportation of hazardous waste originating in the State and passing through the State as found in 22 CCR, Division 4.5, Chapter 11. Both regulatory programs apply in California. The two State agencies with primary responsibility for enforcing federal and State regulations and responding to hazardous materials transportation emergencies are the California Highway Patrol (CHP) and the California Department of Transportation (Caltrans).

California Vehicle Code Section 32000

Common carriers are licensed by the CHP, pursuant to California Vehicle Code Section 32000. This section requires the licensing of every motor (common) carrier who transports, for a fee, in excess of 500 pounds of hazardous materials at one time, and every carrier, if not for hire, who carries more than 1,000 pounds of hazardous material of the type requiring placards.

California Accidental Release Prevention Program

The California Accidental Release Prevention Program regulations became effective January 1, 1997, replacing the California Risk Management and Prevention Program. The California Accidental Release Prevention Program was created to prevent the accidental release of regulated substances. It covers businesses that store or handle certain volumes of regulated substances at their facilities. A list of regulated substances is found in Section 2770.5 of the California Accidental Release Prevention Program regulations (19 CCR, §2770.5). If a business has more than the listed threshold quantity of a substance, an accidental release prevention program must be implemented and a risk management plan may be required. The California OES is responsible for implementing the provisions of California Accidental Release Prevention Program.

California Aboveground Petroleum Storage Act

The California Aboveground Petroleum Storage Act (Health & Safety Code § 25270 et seq.) requires the owner or operator of a tank facility, with an aggregate storage capacity of greater than or equal to 1,320 gallons of petroleum, prepare and implement a Spill Prevention Control and Countermeasure Plan in accordance with U.S. Code of Federal Regulations, Title 40, part 112 (40CFR112). The Cal-EPA designated CUPA is the Stanislaus County Department of Environmental

Resources, which is required to conduct inspections at tank facilities with an aggregate storage capacity greater than or equal to 10,000 gallons of petroleum at least every three years. The purpose of the inspection is to determine whether the owner or operator is in compliance with the Spill Prevention Control and Countermeasure Plan requirements of the California Aboveground Petroleum Storage Act.

California State Aeronautics Act (Public Utilities Code §21001)

The Caltrans Division of Aeronautics bases most of its aviation policies on the Aeronautics Act. Policies include permits and annual inspections for public airports and hospital heliports and recommendations for schools proposed within two miles of airport runways.

Airport Land Use Commission Law (Public Utilities Code §21670 et seq.)

The law, passed in 1967, authorized the creation of Airport Land Use Commissions (ALUC) in California. Per the Public Utilities Code, the purpose of an ALUC is to protect public health, safety, and welfare by encouraging orderly expansion of airports and the adoption of land use measures that minimizes exposure to excessive noise and safety hazards within areas around public airports to the extent that these areas are not already devoted to incompatible uses (Pub. Util. Code §21670). Furthermore, each ALUC must prepare an Airport Land Use Compatibility Plan (ALUCP). Each ALUCP, which must be based on a twenty-year planning horizon, should focus on broadly defined noise and safety impacts.

California Code of Regulations, Title 26

The California Code of Regulations (CCR) Title 26, titled "Toxics," contains 4 Divisions. There are also numerous chapters and articles containing regulatory sections, or individual regulations.

LOCAL

2022-2027 Multi-Jurisdictional Hazard Mitigation Plan

The Stanislaus County Office of Emergency Services in collaboration with the cities of Ceres, Hughson, Modesto, Newman, Oakdale, Patterson, Riverbank, Turlock, Waterford, and the County Office of Education creates and adopts a Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). The MJHMP recognized earthquakes, floods, dam inundation, landslides and wildfire as the local natural hazards. The MJHMP also states mitigation strategies and actions that serve as the long-term blueprint for reducing potential losses.

The MJHMP must be updated every five years. It may be used as a base plan by cities and special districts within Stanislaus County for the development of their own specific plan. Federal emergency management agencies will only provide disaster relief funds to local government that have shown positive steps to prevent loss and damages from disasters by adopting a Hazard Mitigation Plan.

County of Stanislaus General Plan

Pursuant to the Integrated Waste Management Act, each county within the state is required to adopt a county integrated waste management plan, part of which addresses the handling of

household hazardous wastes, such as paint, motor oil, and cleaning solutions. The household hazardous waste elements for each city and the county identify programs for the safe collection, recycling, treatment, and disposal of hazardous waste. County policies, as summarized below, are relevant because they manage development in unincorporated areas within the study area.

HM-1: The County's General Plan Safety Element minimizes the effects of hazardous conditions that might cause a loss of life and property. The County Environmental Resources Department investigates all such sites to determine the degree of contamination and the level of cleanup needed. The County works closely with the DTSC and the RWQCB during all phases of the site investigation.

HM-2: The County is a Certified Unified Program Agency–authorized by the DTSC to administer a number of state programs at the local level. It regulates hazardous materials within its incorporated areas (including Modesto) and unincorporated areas. The County's role includes taking the following actions (Stanislaus County 2007).

1. Implement risk management and prevention laws to minimize chemical releases in the community.
2. Maintain a hazardous materials response team to assist police and fire agencies during transportation and industrial accidents involving chemical spills.
3. Prepare and implement the County's area plan for emergency response to chemical spills in the community.
4. Permit and inspect the removal of USTs.
5. Permit and monitor new USTs.
6. Oversee site investigation for soil and groundwater contamination and cleanup.
7. Inspect hazardous waste generators.
8. Review procedures for the storage, treatment, and disposal of hazardous wastes.
9. Prepare and implement the County's hazardous waste management plan.
10. Develop and implement the County's Household Hazardous Waste collection program.
11. Inspect medical facilities to ensure compliance with state medical waste management laws.
12. Implement hazardous materials disclosure laws (business plans) to ensure access to information about chemicals handled by businesses.

City of Modesto Urban Area General Plan

The UAGP policies for hazardous materials management apply to development within incorporated areas. These policies identify programs for the safe collection, recycling, treatment, and disposal of hazardous waste generated within Modesto. The applicable UAGP policies are listed below.

HM-3 Comply with all existing federal and state laws which regulate the generation, transportation, storage, and disposal of hazardous materials. (UAGP Policy VI.M.1)

HM-4: Require that businesses and industries using hazardous material provide mitigation measures commensurate with the hazards they bring to the community, in accordance with the most current adopted edition of the Uniform Fire Code. (UAGP Policy VI.M.2)

HM-5: In the event that site inspection or construction activities uncover chemical contamination, underground storage tanks, abandoned drums, or other hazardous materials or wastes at a parcel, the inspection report preparer shall so notify the City. The City shall notify the County Health Services Department. Under the direction of these agencies, a site remediation plan would be prepared by the project applicant.

The plan would (1) specify measures to be taken to protect workers and the public from exposure to potential site hazards and (2) certify that the proposed remediation measures would clean up the wastes, dispose the wastes, and protect public health in accordance with federal, state, and local requirements.

Permitting or work in the areas of potential hazard shall not proceed until the site remediation plan is on file with the City.

If a parcel is found to be contaminated to a level that prohibits the proposed use, the potential for reduction of the hazard should be evaluated. Site remediation is theoretically capable of removing hazards to levels sufficiently low to allow any use at the site. In practice, both the technical feasibility of the remediation and its cost (financial feasibility) should be evaluated in order to determine the overall feasibility of locating a specific use on a specific site. In some cases, it may require restriction to industrial use or a use that involves complete paving and covering of the parcel.

In accordance with OSHA requirements, any activity performed at a contaminated site shall be preceded by preparation of a separate site health and safety plan (prepared by the project applicant and filed with the City) for the protection of workers and the public. All reports, plans, and other documentation shall be added to the administrative record. (UAGP Policy VI.M.3)

HM-6: For each specific project that would generate hazardous waste, require as a condition of building permit approval that the project sponsor prepare a hazardous material transportation program. Passage through residential streets should be minimized and parking of waste haulers on residential streets should be prohibited. The City Fire Department shall review and approve the applicant's hazardous materials transportation program or, working with the applicant, modify it to the satisfaction of both parties. (UAGP Policy VI.M.4)

HM-7: Prior to the issuance of all building permits, identify the site in relation to all Comprehensive Environmental Response, Compensation and Liability Information System sites and to known or suspected uncontrolled or abandoned hazardous waste sites. All projects within 2,000 feet of these facilities should conduct hazardous materials studies as necessary to identify the type and extent of contamination, if any, and the extent of risk to human health

and public safety. If necessary, a remedial action program should be developed and implemented as in UAGP Policy VI.M.3. (UAGP Policy VI.M.5)

HM-8: Applicants for building permits should determine that a site containing or formerly containing residences or farm buildings / structures has been fully investigated for the presence of hazardous materials or wastes prior to issuance of the permit. Investigation should consist of, at minimum, a Phase I environmental site assessment and a Phase II site assessment, if found necessary as a result of the Phase I assessment. The findings of the site assessment should be reported to the City and the County's Department of Environmental Resources. The appropriate remediation should occur prior to final occupancy of the approved development. (UAGP Policy VI.M.6)

City of Modesto Municipal Code

TITLE 3 – PUBLIC SAFETY

Chapter 1 – Adoption of the California Fire Code, 2022 Edition

Article 1 – Fire Code

3-1.101 – Findings for Adoption of the California Fire Code, 2022 Edition: The City Council of the City of Modesto hereby finds and determines: That the International Code Council is a private organization which has been in existence for at least three (3) years. That the California Fire Code, 2022 Edition, published by said organization, is a nationally recognized compilation of proposed rules, regulations, and standards of said organization. That said California Fire Code, 2022 Edition has been printed and published as a code in book form within the meaning of Section 50022.2 et seq. of the Government Code. That one (1) copy of the California Fire Code, 2022 Edition, certified by the City Clerk of the City of Modesto to be a true copy, has been filed for use and examination by the public in the office of the City Clerk of the City of Modesto. Sections of the California Fire Code, 2022 Edition may be referred to by the number used in said published compilation, preceded by the words "California Fire Code Section" or "Fire Code Section", and may also be referred to by additional reference to the Modesto Municipal Code and sections therein pertaining to said California Fire Code, 2022 Edition.

The additional requirements and standards established herein are needed to properly protect the health, safety, and welfare of the existing and future residents and workers of the City of Modesto. Said requirements and standards are reasonably necessary because of local climatic, geological, and topographical conditions, and comply with existing state laws and regulations.

Amendment of the California Fire Code, 2022 Edition, is necessary so as to provide more stringent standards for fire extinguishing systems; fire hazards and hazardous materials controls are necessary to serve the public interest by reducing the risk to life and property of the citizens of Modesto because of the following climatic and topographical local conditions:

a. Summer weather conditions are very dry, hot and windy causing ordinary combustibles to be easily ignited and fires to be fast spreading;

b. Very dense fog conditions occur in winter. Reduced visibility causes delays in fire response;
c. Fire response is delayed by railroad tracks which:
    1. Divide the City from northeast between Tully Road and McHenry Venue to the west side of Ninth Street;
    2. Run parallel to Highway 99 through the City, restricting response at locations where overpasses are not provided;
    3. Run parallel to Yosemite Boulevard restricting access to the airport, Tuolumne Regional Park, and adjacent areas; and
    4. Restrict access at intersections and streets in the areas of Ninth, Tenth, D, and E Streets.
d. Modesto Irrigation Canal #3 restricts access to the neighborhoods and developments to the north and east of Briggsmore Avenue from Oakdale Road to Clause Road;
e. Fire response is delayed by rivers and creeks which:
    1. Divide the southwest area of the City and City contract areas and restrict access to these areas; and
    2. Divide the City from east to southwest along Scenic Drive.

THEREFORE, for the above reasons taken individually and cumulatively and in accordance with the authority granted in Sections 17958.5 and 17958.7 of the California Health and Safety Code, the Council of the City of Modesto expressly finds there are local climatic and topographical conditions that make the increased fire protection requirements set forth in the chapter reasonably necessary.

Article 2 – Amendments, Additions and Deletions to the 2022 California Fire Code

3-1.213 – Deposits of Hazardous Materials; Cleanup, Abatement, or Mitigation Required; Liability for Costs: Section 5003.3.1.4 of the 2022 California Fire Code is hereby adopted by reference, in addition to the following:

> Responsibility for Cleanup. The person, firm or corporation responsible for an unauthorized discharge shall initiate and complete all actions necessary to remedy the effects of such unauthorized discharge, whether sudden or gradual, at no cost to the jurisdiction. When deemed necessary by the Fire Code Official, cleanup may be initiated by the Fire Department or by an authorized individual or firm. Costs associated with such cleanup shall be borne by the owner, operator or other person responsible for the unauthorized discharge. The remedy provided by this section shall be in addition to any other remedies provided by law.
>
> For purposes of this section, costs incurred by the City shall include, but shall not necessarily be limited to, the following: actual labor costs of City personnel, including worker's compensation benefits, administrative overhead; cost of equipment operation; cost of materials obtained directly by the City; and cost of any contract labor and materials. The authority to recover costs under this section shall not include actual fire suppression services that are normally or usually provided by the Fire Department.

3.1-214 – Sanitary Containers: Section 5504.3.1.1.3 of the 2022 California Fire Code is adopted by reference, in addition to the following:

Location. Storage of flammable cryogenic fluids in stationary containers outside of buildings is prohibited within the limits established by law. All R-1, R-2 and R-3 zoning designations

(Ord. No. 3760-C.S., § 1, effective 5-4-23)

TITLE 5 – SANITATION AND HEALTH

Chapter 5 – Solid Waste

Article 1 – Solid Waste

5-5.107 – Explosives or Hazardous Materials: No person shall deposit in any container used for solid waste, any explosive, highly flammable, radioactive or otherwise hazardous material or substance. A violation of this section shall be punishable as a misdemeanor or administrative fine.

Chapter 6 – Wastewater Collection and Disposal

5-6.208 – Limitations on Waste Hauler Discharges: A waste hauler/user proposing to discharge septic tank, cesspool wastes or other biodegradable or compatible material into the City's facilities must have a waste hauler discharger permit as required by Section 5-6.401. Such wastewater shall be discharged only at a location specified by the City.

No waste hauler/use shall discharge constituents in excess of those specified in the respective permit based on the adopted local limits.

No waste hauler shall discharge to the City sewage system any material defined as hazardous waste by 40 CFR 261 of the Federal Resource Conservation and Recovery Act.

(Added by Ord. 3137-C.S., § 1, effective 6-17-99)

5-6.209 – Limitations on Wastewater Strength and Characteristics

a. No person shall discharge wastewater in excess of the permitted mass emission rates or limits as determined in accordance with this chapter.
b. No person shall discharge wastewater:
    1. Having a temperature higher than one hundred forty (140) degrees Fahrenheit, (sixty (60) degrees Centigrade), or which causes the temperature at the treatment plant to exceed one hundred four (104) degrees Fahrenheit (forty (40) degrees Centigrade);
    2. Having a pH less then 5.0 or greater than 12.0;
    3. Containing those pesticides and other toxic pollutants in toxic amounts, determined by the administrator of the Environmental Protection Agency in accordance with the federal Act, such other federal or State
    4. Having waters or wastes containing inorganic oils, including but not limited to motor oils, transmission oils, hydraulic fluids, gear oils, and machining oils;
    5. Any wastewater that causes a hazard to human life or creates a public nuisance;

6. Containing flow or other materials, including, but not limited to, ammonia, chemical oxygen demand, total organic carbon, priority pollutants (as established by EPA), suspended solids, oil and grease of animals or vegetable origin, total dissolved solids, and phenolic compounds released in a discharge at a flow rate and/or concentration which will cause problems, pass through, or interference with the sewerage facilities;
7. Producing a gaseous mixture that is ten (10) percent or greater of the lower explosion limit (LEL). Prohibited materials include, but are not limited to, gasoline, kerosine, naphtha, benzene, toluene, xylene, ethers, ketones, and alcohols;
8. Containing material which will readily settle or cause an obstruction to the flow in the sewer resulting in interference to the same such as, but not limited to, sand, mud, glass, metal filings, diatomaceous earth, asphalt, dead animals, wood, bones, hair, and fleshes;
9. Any wastewater causing the treatment plant effluent to show a lethal concentration of fifty percent as determined by a toxicity test of ninety-six (96) hours or less, using a percentage of the discharge and aquatic test species chosen by the Director;
10. In violation of any applicable, federal categorical pretreatment standards, State standards or other local regulations covering wastewater disposal.

When the Director determines that a user(s) is discharging to the Publicly Owned Treatment Works (POTW) any of the above enumerated substances in any amount which will interfere with the operation of the POTW, the Director shall: (1) Advise the user(s) of the impact of the discharge on the POTW; and (2) Take such actions as deemed necessary to correct the interference with the POTW.

(Added by Ord. 3137-C.S., § 1, effective 6-17-99)

5-6.210 – Specific Pollutant Limitations (Local Limits): No person shall discharge wastewater to the City sewerage system which (1) exhibits any characteristics which is specifically prohibited by an action of the City Council, or (2) contains constituents in excess of an specific constituent level limitations as may be set by the City Council pursuant to the 40 CFR 403.5 (b), (c), and (d). Specific pollutant limitations regarding waste characteristics and constituent limits may be adopted by resolution. The City may also incorporate Maximum Allowable Industrial Loadings (MAIL) on a user-specific basis into wastewater discharge permits where necessary.

Any violation of a specific pollutant limitation as may be set forth in a City resolution shall subject the user to the same administrative actions, penalties, and enforcement actions as would be available for any other violation of this chapter.

(Added by Ord. 3137-C.S., § 1, effective 6-17-99)

Chapter 9 – Stormwater Management and Discharge Controls

Article 1 – Title, Purpose and General Provisions

5-10.108 – Abatement of Hazardous Materials: Nothing in this chapter is intended to diminish or to preempt the authority of the Fire Department to investigate, cleanup or to abate the

effects of any hazardous materials under State law or applicable sections of this Code, and any such actions of the Fire Department shall be in addition to and not in place of measures set forth in this chapter.

(Ord. 3355 § 1, effective 10-8-04)

Article 2 – Discharge Regulations and Requirements

5-10.201 – Prohibited Activities

a. Illicit Discharge. Any illicit discharge to the City's MS4 is prohibited unless excepted by Section 5-10.202. All discharges to the City's MS4 of material other than storm water must be in compliance with an NPDES permit issued for the discharge or other regulatory requirement issued pursuant to the Porter-Cologne Water Quality Control Act if an NPDES permit is not required or applicable.
b. Discharge in Violation of Permit. Any discharge that would result in or contribute to a violation of the City's existing or future municipal NPDES permit and any amendment revision or reissuance thereof, either separately considered or when combined with other discharges, is a violation of this chapter and is prohibited. Liability for any such discharge shall the responsibility of the person(s) causing or responsible for the discharge, as well as the parcel owner on whose property the discharge occurs, who shall be strictly liable for its consequences, and such persons and/or owners shall defend, indemnify and hold harmless the City in any administrative or judicial enforcement action relating to such discharge.
c. Illicit Connectors: It is a violation of this chapter and is prohibited to construct, establish, use, maintain, operate, or continue an illicit connection to the City's MS4 or cause, permit or suffer any agent, employee, or independent contractor to do so. This prohibition against illicit connections is retroactive and applies to unpermitted connections made in the past, regardless of whether permissible under the law or practices applicable or prevailing at the time of the connection.
d. Roof Run-off. Domestic roof drain leaders may not drain directly to sidewalks and gutters. Any practical method must be administered to discharge roof run-off into permeable areas.
e. Private Drains. Storm water or surface water which is causing flooding on private property served by an on-site storm drainage system may not be discharged to the City's MS4.
f. Swimming Pool Water. Discharge of water from a swimming pool, hot tub or spa into the City's MS4 is prohibited.

Certified Unified Program Agency (CUPA)

Cal-EPA designates specific local agencies as CUPAs, typically at the county level. The Stanislaus County Department of Environmental Resources is the CUPA designated for Stanislaus County. The County Department is responsible for the implementation of statewide programs within its jurisdiction, including: Hazardous Materials Business Plans; Hazardous Waste; California Fire Code -

Hazardous Materials Management Plan/Hazardous Materials Inventory Statement; Aboveground Petroleum Storage Act; USTs; and California Accidental Release Prevention (Cal-ARP).

Stanislaus County Office of Emergency Resources

The County Office of Emergency Resources administers the State's Hazardous Material Release Response Plan and Inventories and Cal-ARP programs. Additionally, the Office of Emergency Resources has a Hazardous Material Area Plan designed to protect human health and the environment through hazardous materials emergency planning, response and agency coordination and community right-to-know programs. Under Chapter 6.95 of the California Health and Safety Code and the RCRA, any business storing quantities of hazardous materials greater than 55 gallons of liquid, 500 pounds of solid or 200 cubic feet of some compressed gases must file a hazardous materials business plan annually that establishes incident prevention measures, hazardous material handing protocols and emergency response and evacuation procedures. The Modesto Fire Department works with the surrounding fire agencies and the Stanislaus County Department of Environmental Resources to provide a hazardous materials response team.

3.8.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed Project will have a significant impact from hazards and hazardous materials if it will:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- 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.
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.
- For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard for people residing or working in the Project area.
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- Have a significant impact related to wildfire risks associated with lands in or near State Responsibility Areas or lands classified as very high fire hazard severity zones.
- Potential to expose people or structures to a significant risk of loss, injury or death involving wildland fires.

IMPACTS AND MITIGATION MEASURES

Impact 3.8-1: The proposed Project, with mitigation, would not result in a significant hazard through the routine transport, use, or disposal of hazardous materials or through the reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment (Less than Significant with Mitigation)

CONSTRUCTION PHASE IMPACTS

Construction of the proposed Project would likely require the use of petroleum-based products (oil, gasoline, diesel fuel), and a variety of common chemicals including paints, cleaners, and solvents. The use of these materials will pose a reasonable risk of release into the environment if not properly handled, stored, and transported.

Construction workers and the general public could be exposed to hazards and hazardous materials as a result of improper handling or use during construction activities (particularly by untrained personnel), transportation accidents, fires, or other emergencies. Construction workers could also be exposed to hazards associated with accidental releases of hazardous materials, which could result in significant impacts to the health and welfare of people and/or wildlife. Additionally, an accidental release into the environment could result in the contamination of water, habitat, and countless resources. Mitigation Measure 3.9-1 contained in Section 3.9, Hydrology and Water Quality, ensures compliance with existing regulatory requirements of the RWQCB, which requires the preparation of a project specific Stormwater Pollution Prevention Plan (SWPPP). The SWPPP is required to include project specific best management measures that are designed to control erosion and the loss of topsoil to the extent practicable using best management practices (BMPs) that the RWQCB has deemed effective in controlling erosion, sedimentation, and runoff during construction activities.

The proposed Project would also be required to comply with regulations on the transportation of hazardous materials codified in 49 CFR 173, 49 CFR 177, and CCR Title 26, Division 6. These regulations, which are under the jurisdiction of Caltrans and CHP, provide specific packaging requirements, define unacceptable hazardous materials shipments, and prescribe safe-transit practices by carriers of hazardous materials. Compliance with these regulations would reduce the risk of exposure to humans and the environment related to the transportation of hazardous materials.

Hazardous materials regulations, which are codified in CCR Titles 8 and 22, and their enabling legislation set forth in Chapter 6.5 (Section 25100 et seq.) of the California Health and Safety Code, were established at the State level to ensure compliance with federal regulations to reduce the risk to human health and the environment from the routine use of hazardous substances. Construction specifications would include the following requirements in compliance with applicable regulations and codes, including, but not limited to CCR Titles 8 and 22, Uniform Fire Code, and Division 20 of the California Health and Safety Code: all reserve fuel supplies and hazardous materials must be stored within the confines of a designated construction area; equipment refueling and maintenance

must take place only within the staging area; and construction vehicles shall be inspected daily for leaks. Off-site activities (e.g., utility construction) would also be required to comply with these regulations. These regulations and codes must be implemented, as appropriate, and are monitored by the State and/or local jurisdictions, including the Stanislaus County Department of Environmental Resources and the Modesto Fire Department.

The Project includes a proposed Tentative Map to subdivide site into seven industrial development lots, one basin lot, and one commercial lot. As described in Chapter 2.0, Project Description, a detailed site plan is not currently included for any of the proposed lots. Future development of these lots would involve the conversion of active agricultural land into industrial, commercial, and/or open basin uses. Site grading, excavation for utilities, trenching, backfilling, and the construction of proposed facilities that could result in the exposure of construction workers and the general public to hazardous materials, such as pesticides and herbicides. Like most agricultural and farming operations in the Central Valley, agricultural practices in the area have used agricultural chemicals including pesticides and herbicides as a standard practice. Residual concentrations of pesticides may be present in soil as a result of historic agricultural application and storage. Continuous spraying of crops over many years can potentially result in a residual buildup of pesticides in farm soils. Of highest concern relative to agrichemicals are chlorinated herbicides, organophosphate pesticides, and OCPs, such as such as MCPP, Dinoseb, chlordane, DDT, and DDE. Additionally, past uses associated with agricultural support uses in the southern portion of the site (visible prior to 2010) could also include soil contaminates associated with the structures themselves (i.e., lead paints and asbestos-containing products), as well as any past uses that involved the storage or release of chemicals and fuels onsite.

Mitigation Measure 3.8-1 would require additional site investigations, while Mitigation Measure 3.8-3 provides a requirement for future developments within the subdivided lots to conduct site-specific soil sampling to determine if chemicals of potential concern associated with the historical agricultural uses at the Project site are present in shallow soil at concentrations that would pose a threat to human health. This sampling should be performed after agricultural operations cease and prior to development. If results of the soil sampling identify concentrations of hazardous materials exceeding applicable Environmental Screening Levels (ESLs),on-site remediation would be required in coordination with the Stanislaus County Department of Environmental Resources. Implementation of Mitigation Measure 3.8-3 would ensure the redevelopment of the active agricultural land would not result in accidental release of or exposure to hazardous materials.

Contractors would be required to comply with Cal-EPA's Unified Program; regulated activities would be managed by the Stanislaus Department of Environmental Resources, the designated CUPA for the County, in accordance with the regulations included in the Unified Program (e.g., hazardous materials release response plans and inventories, California Fire Code hazardous material management plans and inventories). Additionally, in the event that hazardous materials are discovered during construction, a Soils Management Plan (SMP) will need to be submitted and approved by the Stanislaus County Department of Environmental Resources, as required by Mitigation Measure 3.8-2. The SMP will establish management practices for any required disposals and handling hazardous materials, including fuels, paints, cleaners, solvents, etc., during

construction. Such compliance would reduce the potential for accidental release of hazardous materials during construction of the proposed Project. As a result, it would lessen the risk of exposure of construction workers and the public to accidental release of hazardous materials, as well as the demand for incident emergency response.

OPERATIONAL PHASE IMPACTS

The operational phase would occur after construction is completed and business operations commence on a day-to-day basis. As previously noted, the proposed Project would result in the construction of up to 2,503,230 square feet of warehouse, distribution, and manufacturing space. In addition, a small three-acre retail site is proposed at the corner of Dale Road and Kiernan Avenue (SR 219) to provide retail service to the Project. The proposed Project includes a Tentative Map that would create eight parcels for the industrial and retail buildings. Figure 2.0-7 provides an illustration of the proposed buildings and parcel lines. Figure 2.0-8 depicts the utility plan.

The industrial land use designation allow for a wide variety of industrial uses. This designation provides for the full range of industrial uses, including but not limited to manufacturing, food processing, trucking, packing, and recycling, as well as those enterprises which may want to combine office and production aspects of their business in the same complex.

Depending on the future industrial uses on-site, the Project has the potential to transport, use, or dispose of hazardous materials, and/or present a reasonably foreseeable release of hazardous materials. Any operations that involve the use of hazardous materials would be required to have the hazardous material transported, stored, used, and disposed of in compliance with local, state, and federal regulations. The Stanislaus County Department of Environmental Resources is the CUPA for Stanislaus County and is responsible for the implementation of statewide programs within the City, including Hazardous Materials Business Plan (HMBP) requirements, among numerous other programs. Additionally, businesses are regulated by California OSHA and are therefore required to ensure employee safety. Specific requirements include identifying hazardous materials in the workplace, providing safety information to workers that handle hazardous materials, and adequately training workers. To further ensure the safety of employees and reduce the potential for accidental release of hazardous materials into the environment, the applicant must submit a HMBP to the CUPA for review and approval prior to bringing hazardous materials onsite, as required by Mitigation Measure 3.8-4. Additionally, Mitigation Measure 3.8-5 requires new business on the project site that may handle quantities of hazardous materials equal to or greater than 55 gallons of a liquid, 500 pounds of a solid, or 200 cubic feet of a compressed gas at any given time to submit a Hazardous Materials Business Plan to the Certified Unified Program Agency (CUPA) of Stanislaus County. The Hazardous Materials Business Plan shall include an inventory of hazardous materials and hazardous wastes and an emergency response plan for incidents involving hazardous materials and wastes

As with construction, operation of the proposed Project is required to be consistent with federal, State, and local laws and regulations addressing hazardous materials management and environmental protection, including, but not limited to 49 CFR 173 and 177 and CCR Title 26, Division 6 for transportation of hazardous materials, and CCR Titles 8 and 22, Uniform Fire Code, and Division

20 of the California Health and Safety Code for routine use of hazardous materials. Compliance with these existing regulations and codes is required, as appropriate, including monitoring by the State and/or local jurisdictions, such as Caltrans, CHP, and the Stanislaus County Department of Environmental Resources.

CONCLUSION

Overall, consistency with federal, State, and local laws and regulations related to the handling of hazardous materials discussed above, along with implementation of Mitigation Measures 3.8-1 through 3.8-5 and Mitigation Measure 3.9-1 contained in DEIR Section 3.9, would reduce potential impacts that could occur due to the routine transport, use, or disposal of hazardous materials or through the reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment associated with construction and operational activities. as such these impacts are considered ***less than significant with mitigation*** incorporated.

MITIGATION MEASURE(S)

Mitigation Measure 3.8-1: *Prior to grading, conduct a Phase I, and as required additional Phase II Environmental Site Assessments to verify soil contaminations associated with past uses including agricultural applications and uses associated with past developed site uses, and implement all additional recommended investigations and remediation as necessary.*

Mitigation Measure 3.8-2*: In the event that hazardous materials are encountered during construction, a Soils Management Plan (SMP) shall be submitted and approved by the Stanislaus County Department of Environmental Resources. The SMP shall establish management practices for any required soil disposals, and handling hazardous materials during construction in accordance with applicable laws. The approved SMP shall be posted and maintained onsite during construction activities and all construction personnel shall acknowledge that they have reviewed and understand the plan.*

Mitigation Measure 3.8-3: *Prior to the issuance of grading permits for any of the parcels identified on the Project's Tentative Subdivision Map (see Figure 2.0-7 of this EIR), the applicant or future project proponent shall hire a qualified consultant to perform site-specific soil sampling to determine if chemicals of potential concern associated with the historical agricultural uses at the Project site are present in shallow soil at concentrations that would pose a threat to human health. If results of the soil sampling identify concentrations of hazardous materials exceeding appropriate ESLs for the future site-specific uses, on-site remediation would be required in coordination with the Stanislaus County Department of Environmental Resources.*

Mitigation Measure 3.8-4*: Prior to bringing hazardous materials onsite, the applicant shall submit a Hazardous Materials Business Plan (HMBP) to Stanislaus County Department of Environmental Resources. (CUPA) for review and approval. If during the construction process the applicant or his subcontractors generates hazardous waste, the applicant must register with the CUPA as a generator of hazardous waste, obtain an EPA ID# and accumulate, ship and dispose of the hazardous waste per Health and Safety Code Ch. 6.5. (California Hazardous Waste Control Law).*

Mitigation Measure 3.8-5: *New business on the project site that may handle quantities of hazardous materials equal to or greater than 55 gallons of a liquid, 500 pounds of a solid, or 200 cubic feet of a compressed gas at any given time shall submit a Hazardous Materials Business Plan to the Certified Unified Program Agency (CUPA) of Stanislaus County. The Hazardous Materials Business Plan shall include an inventory of hazardous materials and hazardous wastes and an emergency response plan for incidents involving hazardous materials and wastes*

Impact 3.8-2: The proposed Project, with mitigation, would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school (Less than Significant with Mitigation)

(Note information related to air quality emissions and impacts is included in DEIR Chapter 3.3 – Air Quality)

One school is located within one-quarter mile of the Project site. Joseph A. Gregori High School is located immediately northwest of the Project site.

Given the unknown nature of future business establishments on the industrial lots, the Project has the potential for the routine transport, use, or disposal of hazardous materials, as provided under Impact 3.8-1.

Additionally, new infrastructure may be located near existing schools within the Project site area. Existing and planned infrastructure that relates to hazards located within close proximity to existing and proposed schools include:

- Interior water and sewer extensions to the site from existing planned water improvement project adjacent to the Project site.
- Natural gas services from existing sources and pipelines located adjacent to the Project site along the southern boundary.
- Extension of overhead or underground electrical transmission lines.

PG&E currently provides primary line service in close proximity to the development area. CCR Title 5, Article 2 (School Sites) § 14010 (Standards for School Site Selection) (c) requires setbacks from overhead power lines by transmission type. No specific improvements have been proposed or identified by the Project; however, if additional transmission lines are required, such installation would be subject to the following standards:

The property line of the site, even if it is a joint use agreement, shall be at least the following distance from the edge of respective power line easements:

- 100 feet for 50-133 kV line.
- 150 feet for 220-230 kV line.
- 350 feet for 500-550 kV line.

CONSTRUCTION IMPACTS

As described previously under Impact 3.8-1, construction of the proposed Project would likely require the use of petroleum-based products (oil, gasoline, diesel fuel), and a variety of common chemicals including paints, cleaners, and solvents. The use of these materials will pose a reasonable risk of release into the environment if not properly handled, stored, and transported.

Future development would involve the conversion of active agricultural land into industrial, commercial, and/or open basin uses. Site grading, excavation for utilities, trenching, backfilling, and the construction of proposed facilities that could result in the exposure of construction workers and the general public to hazardous materials, such as pesticides and herbicides. Like most agricultural and farming operations in the Central Valley, agricultural practices in the area have used agricultural chemicals including pesticides and herbicides as a standard practice. Residual concentrations of pesticides may be present in soil as a result of historic agricultural application and storage. Continuous spraying of crops over many years can potentially result in a residual buildup of pesticides in farm soils. Of highest concern relative to agrichemicals are chlorinated herbicides, organophosphate pesticides, and OCPs, such as such as MCPP, Dinoseb, chlordane, DDT, and DDE. Additionally, past uses associated with agricultural support uses in the southern portion of the site (visible prior to 2010) could also include soil contaminates associated with the structures themselves (i.e., lead paints and asbestos-containing products), as well as any past uses that involved the storage or release of chemicals and fuels onsite.

Mitigation Measure 3.8-1 would require additional site investigations, while Mitigation Measure 3.8-3 provides a requirement for future developments within the subdivided lots to conduct site-specific soil sampling to determine if chemicals of potential concern associated with the historical agricultural uses at the Project site are present in shallow soil at concentrations that would pose a threat to human health. This sampling should be performed after agricultural operations cease and development is anticipated to occur. If results of the soil sampling identify concentrations of hazardous materials exceeding appropriate Environmental Screening Levels (ESLs), on-site remediation would be required in coordination with the Stanislaus County Department of Environmental Resources. Implementation of Mitigation Measure 3.8-3 would ensure the redevelopment of the active agricultural land would not result in accidental release of or exposure to hazardous materials.

Contractors would be required to comply with Cal-EPA's Unified Program; regulated activities would be managed by the Stanislaus Department of Environmental Resources, the designated CUPA for the County, in accordance with the regulations included in the Unified Program (e.g., hazardous materials release response plans and inventories, California Fire Code hazardous material management plans and inventories). Additionally, in the event that hazardous materials are discovered during construction, a Soils Management Plan (SMP) will need to be submitted and approved by the Stanislaus County Department of Environmental Resources, as required by Mitigation Measure 3.8-2. The SMP will establish management practices for any required disposals and handling hazardous materials, including fuels, paints, cleaners, solvents, etc., during construction. Such compliance would reduce the potential for accidental release of hazardous materials during construction of the proposed Project. As a result, it would lessen the risk of

exposure of construction workers and the public to accidental release of hazardous materials, as well as the demand for incident emergency response.

CONCLUSION

All hazardous materials would be required to be handled in accordance with federal, State, and County requirements, which would limit the potential for the Project to expose nearby uses, including schools, to hazardous emissions or an accidental release. Hazardous emissions are monitored by the SJVAPCD, RWQCB, DTSC and the local CUPA. In the event of a hazardous materials spill or release, notification and cleanup operations would be performed in compliance with applicable federal, State, and local regulations and policies, including hazard mitigation plans. As part of the development review process, the City's General Plan also includes policies and requirements, that require projects that may result in significant risks associated with hazardous materials to include measures to address and reduce the risks to an acceptable level such that surrounding uses are not exposed to hazardous materials in excess of adopted State and federal standards. Additionally, these policies and actions also require the submittal of information regarding hazardous materials manufacturing, storage, use, transport, and/or disposal by existing and proposed businesses and developments to the City, including the Modesto Fire Department, for review. Specific business activities are currently unknown at this time; however, as described in Impact 3.8-2 a HMBP would be required for businesses and use types that would store or transport hazardous materials. Mitigation Measure 3.8-6 would require additional scrutiny for projects and uses near schools, as part of the HMBP, and would require the City to consult with the Modesto City Schools district affected schools (Joseph A. Gregori High School) prior to the approval of any HMBP for new businesses that use hazardous materials within one-quarter-mile of an existing school site.

As described previously, the proposed Project does not pose significant hazards from existing natural gas transmission, and mitigation measures identified previously, under Impact 3.8-1, would ensure construction and operational impacts would be less than significant.

However, implementation of the Project may create a hazard to school sites due to siting or the placement of infrastructure (i.e., the due to the citing power lines near school sites). Additionally, Mitigation Measure 3.8-6 would require additional scrutiny for projects and uses near schools, as part of the HMBP and would requires the City to consult with the Modesto City Schools districts affected schools (Joseph A. Gregori High School) prior to the approval of any HMBP for new businesses that use hazardous materials within one quarter-mile of the existing school site.

The following mitigation measures ensure that all future electrical transmission alignments are required to comply with CCR Title 5, Article 2 (School Sites) Section 14010 (Standards for School Site Selection) setback requirements. As such, compliance with all existing regulations, as well as mitigation measures specific to hazardous materials handling and reporting requirements, in addition to specific standards and best practices and review requirements for HMBPs within the Project site area would ensure that this impact is ***less than significant*** with mitigation incorporated.

MITIGATION MEASURE(S)

Mitigation Measure 3.8-6: *Additional scrutiny shall be required for any industrial site use within ¼ mile of a school and the approval of future development projects and or required HMBPs shall only be made if the CUPA and Modesto Fire department determine that the activities do not pose additional risk to the neighboring school. As part of the Hazardous Materials Business Plan requirements identified under mitigation 3.8-4 and 3.8-5, The City shall consult with the CUPA and finding shall be provided for comment to Modesto City Schools district affected schools (Joseph A. Gregori High School) prior to the approval of any hazardous materials business plan for new businesses that store or use hazardous materials within ¼ mile of the existing school site.*

Mitigation Measure 3.8-7: *The property line of all school sites (even if it is a joint use agreement as described in subsection (o) of § 14010) shall be at least the following distance from the edge of respective power line easements as identified in the California Code of Regulations Title 5, Article 2. School Sites § 14010, Standards for School Site Selection (c):*

- *100 feet for 50-133 kV line.*
- *150 feet for 220-230 kV line.*
- *350 feet for 500-550 kV line.*

Impact 3.8-3: The proposed Project would not result in impacts from being included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (No Impact)

The hazards assessment included site reconnaissance research and database research. The assessment revealed the Project site is not on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Implementation of the proposed Project would have ***no impact*** with regards to this environmental issue.

Impact 3.8-4: The proposed Project would not result in a safety hazards for people residing or working on the Project site as a result of public airport or public use airport (Less than Significant)

As previously stated, the Project site is not located within an Airport Influence Area, and no private airstrips have been identified within the immediate vicinity of the Project site. There are no private or public airport facilities within Modesto. The Modesto City-County Airport is located adjacent to the City of Modesto's southern boundary (approximately 7.5 miles from the Project site) and is operated by Stanislaus County. The Project site is not within the airport influence area for the Modesto City-County Airport.

Additionally, no proposed structures are proposed or would be anticipated to protrude into airspace requirement FAA or any other approval for safety. As such, the impact would be ***less than significant***.

Impact 3.8-5: The proposed Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan (Less than Significant)

(*Note: The following discussion is associated with potential impacts of the Project on emergency response plans and/or evacuation plans. Proposed emergency vehicle access to and from the site and the projects potential to* substantially increase hazards due *to a design feature are further addressed in Section 3.12, Transportation and Circulation.*)

Stanislaus County's disaster preparedness, mitigation, response, and recovery programs is administered by OES, which develops and maintains the Stanislaus County Emergency Operations Plan (EOP) and coordinates training, planning, and exercises for first responders throughout the County.

Stanislaus County has adopted the 2022-2027 Multi-Jurisdictional Hazard Mitigation Plan, which is a countywide plan that identifies risks posed by disasters, and ways to minimize damage from those disasters. The 2022-2027 Multi-Jurisdictional Hazard Mitigation Plan is a comprehensive resource document that serves many purposes, including: enhancing public awareness and understanding, creating a decision tool for management, promoting compliance with State and federal program requirements, enhancing local policies for hazard mitigation capability, and providing inter-jurisdictional coordination. The 2022-2027 Multi-Jurisdictional Hazard Mitigation Plan includes a risk assessment, vulnerability analysis, and mitigation plan/strategy for earthquake, landslide, dam failure, flood, and wildfire hazards.

The proposed Project would include roadway improvements and an internal circulation system, resulting in new development and infrastructure improvements. New development and infrastructure projects are not anticipated to remove or impede any established evacuation routes within the City or region. Furthermore, the Project does not include policies, or other components that conflict with adopted emergency response or evacuation plans. The Project would not interfere with any emergency response plan or emergency evaluation plan, as the Project does not include any actions that would impair or physically interfere with the County EOP.

Future uses on the Project site will have access to both City and County resources that establish protocols for safe use, handling and transport of hazardous materials. Construction activities are not expected to result in any unknown significant road closures, traffic detours, or congestion that could hinder the emergency vehicle access or evacuation in the event of an emergency. Furthermore, the specific design and layout of the development projects under the Tentative Map would be reviewed by the City's law enforcement and fire personnel to ensure that adequate emergency ingress and egress is provided throughout the site that would not interfere or impair evacuation plans. Therefore, impacts related to the potential for the Project to impair implementation of emergency response plans would be ***less than significant***.

Impact 3.8-6: The proposed Project would not have a significant impact related to wildfire risks associated with lands in or near State Responsibility Areas or lands classified as very high fire hazard severity zones (No Impact)

The Project site is not located within a State Responsible Area (SRA) or within a fire hazard severity zone; therefore, the CEQA thresholds associated with the Project's proximity to SRAs or lands classified as very high fire hazard severity zones and other wildfire risks are not applicable to the Project, as there is ***no impact*** associated with this threshold.

Impact 3.8-7: The proposed Project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires (No Impact)

The risk of wildfire is related to a variety of parameters, including fuel loading (vegetation), fire weather (winds, temperatures, humidity levels and fuel moisture contents) and topography (degree of slope). The Project site is located in an area that is predominately agricultural uses, and does not contain wildland areas or interfaces, and as such would not expose people or structures to wildfire. As such, there is ***no impact***.

For information related to impacts associated with the provision of fire protection and emergency services, see EIR Chapter 3.12 (Public Services).

CUMULATIVE IMPACTS

Related projects in the City and surrounding areas may have the potential to interact with the proposed Project to the extent that a significant cumulative effect relative to hazards and hazardous materials may occur. The geographic setting for hazards and hazardous materials are typically localized and considers development within the City and SOI, as well as development within the vicinity of the Project site.

Impact 3.8-8: Implementation of the proposed Project, in combination with other cumulative development, would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through the reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment (Less than Significant)

Construction activities associated with future development projects may involve the routine transport, use, or disposal of hazardous materials. However, the construction contractor would be required to use standard construction controls and safety procedures that would avoid and minimize the potential for hazards associated with the transport and use of hazardous materials. Standard construction practices would be observed such that any materials released are appropriately contained and remediated as required by local, State, and federal law.

Industrial uses may involve the use, generation, storage, or transport of larger amounts of hazardous materials. Existing and future uses within the City may use, store, transport, and dispose of hazardous materials. Future uses for the project have not been established, however if uses are proposed to include hazardous materials a hazardous materials business plan, and compliance with other applicable regulations would be required. The use, storage, transport, and disposal of hazardous materials would be governed by existing regulations of several agencies, including the DTSC, EPA, DOT, Cal OSHA, and the Stanislaus County CUPA. Adherence to existing regulations would ensure compliance with safety standards related to the use and storage of hazardous materials, and the safety procedures mandated by applicable federal, State, and local laws and regulations, which would ensure that risks involving the routine transportation, use, storage, or disposal of hazardous materials or hazardous wastes would be cumulatively ***less than significant*.**

Any development activities that may occur on documented hazardous materials sites would be required to undergo remediation and cleanup under the supervision of the regulatory agencies, such as DTSC and the CVRWQCB. Therefore, the cumulative impact of creating a hazard to the public or environment through reasonably foreseeable accident would be ***less than significant***.

Impact 3.8-9: Implementation of the proposed Project, in combination with other cumulative development, could be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment. (Less than Significant)

Future development projects would be evaluated at the project-level to determine whether any development sites are listed on a hazardous materials site. Any development activities occurring on documented hazardous materials sites would be required to undergo remediation and cleanup under the supervision of federal, State, and local regulations, including the DTSC and the CVRWQCB, prior to construction. Therefore, the cumulative impact of locating development on hazardous materials sites would be ***less than significant.***

Impact 3.8-10: The proposed Project, in combination with other cumulative development, would not be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, resulting in a safety hazard for people residing or working in the Project site. (Less than Significant)

As previously stated, the Project site is not located within an Airport Influence Area (AIA), and no private airstrips have been identified within the immediate vicinity of the Project site. There are no private or public airport facilities within Modesto. The Modesto City-County Airport is located adjacent to the City of Modesto's southern boundary (approximately 7.5 miles from the Project site) and is operated by Stanislaus County. The Project site is not within the airport influence area for the Modesto City-County Airport.

Future cumulative development would be evaluated at the project-level to determine if they are located within an airport land use plan or within two miles of a public or public use airport. Future

projects located within the Airport Influence Area would be reviewed by the ALUC for consistency with applicable standards established in the Land Use Compatibility Plan on a project-by-project basis. Therefore, the cumulative impact of locating cumulative development in an airport land use plan area would be ***less than significant***.

Impact 3.8-11: Implementation of the proposed Project, in combination with other cumulative development, would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (Less than Significant)

The proposed Project would include roadway improvements and an internal circulation system, and would resulting in new development, and infrastructure improvements. New development and infrastructure projects are not anticipated to remove or impede any established evacuation routes within the City or region. Furthermore, the Project does not include policies, or other components that conflict with adopted emergency response or evacuation plans. The Project would not interfere with any emergency response plan or emergency evaluation plan, as the Project does not include any actions that would impair or physically interfere with the County EOP.

Future development projects would be required to comply with applicable City codes and regulations pertaining to emergency response and evacuation plans. Prior to construction, proposed site plans would be required to undergo review by the Fire Department to ensure that adequate emergency access would be maintained within the area. During operation of future projects, the City and/or County EOPs would be implemented and emergency response and evacuation would occur dependent upon the emergency situation, consistent with the respective emergency operations plans. Therefore, the cumulative impact to emergency response would be ***less than significant***.

Impact 3.8-12: Implementation of the proposed Project, in combination with other cumulative development, would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school (Less than Significant with Mitigation)

As described previously, given the unknown nature of future business establishments within project area as well as other surrounding future development projects, the potential for hazardous materials is present. Potential impacts related to the handling or transport of hazardous materials in proximity to schools would be minimized through the implementation and adherence to local, State, and Federal regulations as descried under impacts 3.8-1 and 3.8-2.

Overall, consistency with federal, State, and local laws and regulations related to the handling of hazardous materials discussed above, along with and implementation of Mitigation Measures 3.8-1 through 3.8-6 and Mitigation Measure 3.9-1 contained in DEIR Section 3.9, would reduce potential impacts that could occur due to the routine transport, use, or disposal of hazardous materials or through the reasonably foreseeable upset and accident conditions involving the release of

hazardous materials into the environment associated with construction and operational activities. As such these impacts are considered less than significant with mitigation incorporated.

Therefore, the cumulative impact of emitting hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school would be ***less than significant***.

MITIGATION MEASURE(S)

Implement of **Mitigation Measures 3.8-1 through 3.8-6**, and **Mitigation Measure 3.9-1**

This section describes the regulatory setting, existing hydrology and water quality conditions, and potential impacts on existing drainage patterns, surface hydrology, and water quality conditions that are likely to result from Project implementation, and measures to reduce potential impacts. This section is based in part on the following documents, reports, and studies:

- *Modesto Urban Area General Plan Amendment* (City of Modesto, 2024).
- *Modesto Urban Area General Plan Amendment Draft Environmental Impact Report* (City of Modesto, 2024).
- *Modesto Subbasin Groundwater Sustainability Plan* (Stanislaus County, 2020).
- *California Water Plan Update 2013* (DWR, 2013).
- *California's Groundwater: Bulletin 118 – Modesto Subbasin* (DWR, 2003).
- *City of Modesto. Stormwater Quality Design Manual.* City of Modesto, 2021.
- *City of Modesto. Stormwater Plans & Reports.* City of Modesto, 2023.
- *Modesto Irrigation District. Groundwater Management* (Modesto Irrigation District, 2022).
- *Joint 2020 Urban Water Management Plan* (City of Modesto, June 2021).

Comments were received during the public review period or scoping meeting for the Notice of Preparation regarding this topic from the following:

- Central Valley Regional Water Quality Control Board (March 27, 2025).
- Modesto City Schools, Business Services Department (March 25, 2025).
- Stanislaus County Environmental Review Committee (ERC) (March 27, 2025); and
- Leonard Powell (resident) (March 19, 2025).

Each of the comments related to this topic are addressed within this section. Full comments received are included in Appendix A.

3.9.1 ENVIRONMENTAL SETTING

REGIONAL HYDROLOGY

The City of Modesto is located at the confluence of the Tuolumne River and Dry Creek, and south of the Stanislaus River. The Tuolumne River drains an 1,800-square-mile watershed, and Dry Creek drains an area of about 190 square miles. Dry Creek flows east to west and then north to south to drain into the Tuolumne River. The Stanislaus River forms the northern boundary of Stanislaus County and the City's Urban Area General Plan (UAGP) planning area, about seven miles north of this confluence, draining an area of about 1,075 square miles at its intersection with SR 99. The Tuolumne and Stanislaus Rivers are tributaries to the San Joaquin River, which flows into the Sacramento-San Joaquin River Delta. The topography of the Modesto area is flat, with gently sloping lands from east to west toward the San Joaquin River, approximately ten miles west of the city limits. The elevation in the downtown Modesto area is approximately one hundred feet above sea level. Annual precipitation is approximately twelve inches per year and occurs from October through May. The City obtains a portion of its drinking water supplies from the Modesto Reservoir via the Modesto

Regional Water Treatment Plant (MRWTP), which is owned and operated by the Modesto Irrigation District (MID), and groundwater aquifers that underlie the region.

Climate

Summers in the City of Modesto are hot, arid, and clear, ranging from an average high in June of above 87 degrees Fahrenheit (°F) to an average low of approximately 64°F. Winters are generally short, cold, and wet with an average high of 62°F and a low of 40°F. The average annual precipitation is approximately 298 millimeters, as the yearly climate is most often dry.

Watersheds

A watershed is a region that is bound by a divide that drains to a common watercourse or body of water. Watersheds serve an important biological function, oftentimes supporting an abundance of aquatic and terrestrial wildlife, including special-status species and anadromous and native local fisheries. Watersheds provide conditions necessary for riparian habitat.

The State of California uses a hierarchical naming and numbering convention to define watershed areas for management purposes. This means that boundaries are defined according to size and topography, with multiple sub-watersheds within larger watersheds. Table 3.9-1 shows the primary watershed classification levels used by the State of California. The second column indicates the approximate size that a watershed area may be within a particular classification level, although variation in size is common.

TABLE 3.9-1. STATE OF CALIFORNIA WATERSHED HIERARCHY NAMING CONVENTION

WATERSHED LEVEL	*APPROXIMATE SQUARE MILES (ACRES)*	*DESCRIPTION*
Hydrologic Region (HR)	12,735 (8,150,000)	Defined by large-scale topographic and geologic considerations. The State of California is divided into ten HRs.
Hydrologic Unit (HU)	672 (430,000)	Defined by surface drainage; may include a major river watershed, groundwater basin, or closed drainage, among others.
Hydrologic Area (HA)	244 (156,000)	Major subdivisions of hydrologic units, such as by major tributaries, groundwater attributes, or stream components.
Hydrologic Sub-Area (HSA)	195 (125,000)	A major segment of an HA with significant geographical characteristics or hydrological homogeneity.

SOURCE: CALIFORNIA DEPARTMENT OF WATER RESOURCES, 2012.

The City of Modesto is in an area where four watersheds converge: the Lower Stanislaus River Watershed, the Dry Creek Watershed, the Peaslee Creek-Tuolumne River Watershed, and the Salado Creek-San Joaquin River Watershed.

Hydrologic Region

The flow of the Tuolumne River is regulated by reservoirs and power plants upstream of Modesto, including Hetch-Hetchy Reservoir, which is operated by the San Francisco Public Utilities Commission. Other reservoirs and dams upstream of the City on the Tuolumne River include Don Pedro Reservoir, Modesto Reservoir, Turlock Lake, and La Grange Dam. Don Pedro Reservoir, with a capacity of 2.03 million acre-feet (af), provides flood control for the Modesto area and is jointly

operated by MID and the Turlock Irrigation District (TID). Don Pedro's Reservoir's flows are controlled by a dam and powerhouse. Modesto Reservoir (29,000 af capacity) and Turlock Lake (49,000 af capacity) receive and store Tuolumne River water via canals. MID and TID own and operate major surface irrigation water canals in the region, with hundreds of miles of laterals that provide water service to large agricultural service areas. La Grange Dam, located downstream of the Don Pedro Reservoir, is primarily used to divert Tuolumne River water into MID and TID canal systems and is not intended as a water storage reservoir.

The Stanislaus River's flows are regulated by the New Melones Reservoir, which is part of the U.S. Bureau of Reclamation's (USBR's) Central Valley Project and provides hydropower electricity. The New Melones Reservoir has a pool capacity of approximately 2.42 million af.

STORMWATER QUALITY

Surface water quality is affected by point source and non-point source pollutants. Point source pollutants are those emitted at a specific point, such as a pipe, while non-point source pollutants are typically generated by surface runoff from diffuse sources, such as streets, paved areas, and landscaped areas. Point source pollutants are controlled with pollutant discharge regulations or waste discharge requirements (WDRs). Non-point source pollutants are more difficult to monitor and control, although they are important contributors to surface water quality in urban areas.

Stormwater runoff pollutants vary based on land use, topography, the amount of impervious surface, and the amount and frequency of rainfall and irrigation practices. Runoff in developed areas typically contains oil, grease, and metals accumulated in streets, driveways, parking lots, and rooftops, as well as pesticides, herbicides, particulate matter, nutrients, animal waste, and other oxygen-demanding substances from landscaped areas. The highest pollutant concentrations usually occur at the beginning of the wet season during the "first flush."

Storm Water Drainage

The Tuolumne River and Dry Creek receive a substantial portion of stormwater runoff from the Modesto urban area. Storm water drains to MID canals located north of the Tuolumne River. Stormwater drainage south of the Tuolumne River is discharged to outfalls along the Tuolumne River; (TID) facilities located in the Ceres area are not currently used for storm drainage. MID and TID facilities convey drainage west to downstream locations along the Tuolumne River and the San Joaquin River.

There is a finite existing capacity for MID canals to convey storm drainage because the canal systems were designed primarily to convey irrigation water. Consequently, canal capacities for flow conveyance are larger near the eastern edge of the County, where the irrigation water originates and is reduced near the western edge where the terminal agricultural water users are located. Therefore, the suitability of the canal systems for stormwater conveyance contrasts with the needs of urban area stormwater systems that generate more flow in the downstream direction as more stormwater discharges are contributed to the channels.

During the winter rainfall season, capacity in some parts of the MID canal system can be limited for acceptance of storm drainage. The City regulates its discharges to the MID facilities by controlling the pumping systems at detention/retention-pond discharge locations. The City of Modesto controls the amount of urban storm drainage entering the channels by operating pump stations that discharge flow from the surrounding landscape into the channels. MID staff will request curtailment of pumping by the City before the canals reach their capacity. MID now requires high water level monitoring and shut off sensors to be installed in City storm water discharge pump stations that discharge to MID canals to help avoid exceeding the capacity of canals.

The City implements a Storm Drainage Master Plan, to describe the schematic layout of future storm drainage systems in all the Planned Urbanizing Area. MID and TID both require that the City and any other parties who wish to use their facilities for disposal of excess storm drainage to enter into drainage agreements for the use of their canal facilities. The drainage agreements account for the projected drainage contributions and ensure that the design and installation of the facilities needed are coordinated among the parties responsible.

Storm water drainage systems are designed primarily to convey runoff that occurs during storm events. Impervious surfaces collect and concentrate stormwater discharges to various drainage systems. To a lesser extent, the drainage systems also help to dispose of excess water generated from urban uses such as street sweeping, residential watering, and other activities that generate runoff during drier months of the year. Proper control of stormwater runoff is important to reduce adverse effects from increased flooding, erosion, and transport of pollutants. The City is currently requiring developers to implement the concepts of Low Impact Development (LID) for all new development and redevelopment projects, as established in the City's Guidance Manual for New Development Stormwater Quality Control Measures (adopted 2011, revised February 2015). LID uses a variety of mechanisms to retain as much stormwater runoff on each individual site as possible. Runoff is infiltrated using swales, vegetation, pervious pavement, French drains, rockwells, and other methods.

The City's storm drainage system includes approximately seventy-seven miles of storm drain lines and twenty-five storm pump stations. Stormwater discharges from the City drain to twenty-four drainage basins and approximately twelve major outfalls (greater than twenty-four inches in diameter) to receiving waters (Tuolumne River or Dry Creek), MID laterals/drains, or rockwells. According to the City's Storm Drainage Master Plan (2008), surface water discharges occur in the older parts of Modesto or those areas immediately adjacent to the Tuolumne River, Dry Creek, or irrigation canals. Approximately 40 percent of stormwater gets discharged to detention/retention basins, 20 percent of stormwater gets directed to receiving waters, 10 percent is directed to MID laterals/drains, and 30 percent goes to rockwells.

Rockwells are designed to collect surface stormwater runoff and allow it to infiltrate to the groundwater. Rockwells are rock-lined holes that are typically six feet in diameter and up to fifty feet deep. There are approximately 10,500 rockwells in Modesto. The rock wells are unable to accommodate the amount of drainage generated in the existing developed areas. In addition, the cost of maintenance for rockwells is high, and the U.S. Environmental Protection Agency (EPA) regulations for rockwells are becoming more stringent. Consequently, the City requires gravity-

based stormwater systems in existing urban areas, as these systems rely on natural topography to direct runoff and are more cost-effective and easier to maintain compared to alternatives like rockwells, which can be expensive and difficult to service. The City's *Guidance Manual for Development Stormwater Quality Control Measures* provides design standards for incorporating infiltration wells—also known as dry wells or rockwells—for treating and retaining stormwater runoff. However, to function effectively and avoid maintenance issues, these infiltration wells must be served by positive gravity drainage systems, meaning stormwater must flow into them by gravity without relying on pumps or mechanical conveyance. Thus, while infiltration wells are an approved method for stormwater control, they must be integrated into an overall gravity-fed drainage design to align with City preferences and standards.

Many of the City's storm drainage pipelines are interconnected with sanitary sewer lines. After storm events, these cross-connections typically increase with peak flows. Some City improvements to address this may include installing new storm drainage pipes, detention basins, and various underground storage and percolation methods.

The City monitoring and reporting program for the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer Systems (MS4) permit is issued pursuant to Water Code Section 13267. To comply with the City's MS4 permit (NPDES No. CAS083526, Order No. R5-2015-0025) and monitoring and reporting program, the City is responsible for assessing the point-source runoff from Modesto. The City's drainage facilities are unique since only one-third of the City drains into surface water while the remaining drainages go to rock wells. The MS4 permit and monitoring and reporting program apply to both water quality and drainage for the City. As part of the monitoring program, the City is required to collect water quality data from representative outfalls and estimates of annual pollutant loads of cumulative discharges to waters of the U.S. from identified municipal outfalls. The Comprehensive Monitoring Report, prepared by the City of Modesto as part of its stormwater management and NPDES compliance program, includes a detailed assessment of local water quality data. The report also identifies Best Management Practices (BMPs), incorporated into the City's drainage facilities that help reduce pollutant loading to receiving water.

The MS 4 Permit requires that the City perform a Peak Discharge Impact Study (PDIS). The purpose of the PDIS is to determine the extent of erosion of the natural streams from the City stormwater runoff. The City has developed a work plan to conduct a PDIS to determine the extent of erosion of natural stream channels and banks caused by urban runoff on both the Dry Creek and Tuolumne Rivers. In previous studies, the City determined erosion was minimal based on aerial photos of Dry Creek. This work plan also evaluates peak flow control and determines numeric criteria to prevent or minimize erosion of natural stream channels and banks caused by urban runoff (City of Modesto, 2016).

Plans and specifications for new stormwater facilities within Modesto are reviewed and approved by the City's Community and Economic Development Department. Development of storm drainage facilities are required to be installed in compliance with BMPs outlined in the City's Comprehensive Stormwater Management Program (CSMP), Guidance Manual for New Development Stormwater Quality Control Measures (City of Modesto 2011, revised February 2015), and as outlined in the

City's Design Standards for Dual Use Flood Control/Recreation Facilities, adopted December 12, 2000.

303(d) Impaired Water Bodies

Water quality in the City is governed by the Central Valley Regional Water Quality Control Board (CVRWQCB), which sets water quality standards in their Water Quality Control Plan for the respective basins (Basin Plans). The Central Valley Region Basin Plans identify beneficial uses for surface water and groundwater and establish water quality objectives to attain those beneficial uses.

Section 303(d) of the federal Clean Water Act (CWA) requires States to identify waters that do not meet water quality standards or objectives and thus, are considered "impaired." Once listed, Section 303(d) mandates prioritization and development of a Total Maximum Daily Load (TMDL). TMDL is a tool that establishes allowable loadings or other quantifiable parameters for a waterbody and thereby is the basis for the states to establish water quality-based controls. The purpose of TMDLs is to ensure that beneficial uses are restored and that water quality objectives are achieved.

According to the California Water Quality Control Monitoring Council, which is part of California EPA, there are many areas within Stanislaus County which are considered Section 303(d) impaired waterbodies.

Storm water runoff may play a role in the water quality impairments described above. Runoff that occurs as overland flow across yards, driveways, and public streets is intercepted by the storm water drainage system and conveyed to local drainages before eventually being routed to the Pacific Ocean. This storm water can carry pollutants that can enter the local waterways and result in the types of water quality impairments described above. Common sources of storm water pollution in the City include litter, trash, pet waste, paint residue, organic material (yard waste), fertilizers, pesticides, sediments, construction debris, metals from automobile brake pad dust, air pollutants that settle on the ground or attach to rainwater, cooking grease, illegally dumped motor oil, and other harmful fluids.

Potential hazards to surface water quality include the following nonpoint pollution problems: high turbidity from sediment resulting from erosion of improperly graded construction projects, concentration of nitrates and dissolved solids from agriculture or septic tank failures, contaminated street and lawn run-off from urban areas, and warm water drainage discharges into cold water streams.

The most critical period for surface water quality is following a rainstorm which produces significant amounts of drainage runoff into streams at low flow, resulting in poor dilution of contamination in the low flowing stream. Such conditions are most frequent during the fall at the beginning of the rainy season when stream flows are near their lowest annual level. Besides the greases, oils, pesticides, litter, and organic matter associated with such runoff, heavy metals such as copper, zinc, and cadmium can cause considerable harm to aquatic organisms when introduced to streams in low flow conditions.

Urban stormwater runoff was managed as a non-point discharge (a source not readily identifiable) under the Federal Water Pollution Control Amendments of 1972 (PL 92-500, Section 208) until the mid-1980's. However, since then, the U.S. EPA has continued to develop implementing rules which categorize urban runoff as a point source (an identifiable source) subject to NPDES permits. Rules now affect medium and large urban areas, and further rulemaking is expected as programs are developed to meet requirements of Federal water pollution control laws.

Surface water pollution is also caused by erosion. Excessive and improperly managed grading, vegetation removal, quarrying, logging, and agricultural practices all lead to increased erosion of exposed earth and sedimentation of watercourses during rainy periods. In slower moving water bodies these same factors often cause a buildup of siltation, which reduces the capacity of the water system to percolate and recharge groundwater basins, as well as adversely affecting both aquatic resources and flood control efforts.

Table 3.9-2 below summarizes 303(d) impaired water bodies in the vicinity of the City of Modesto.

TABLE 3.9-2: CITY OF MODESTO VICINITY IMPAIRED WATER BODIES

POLLUTANT	*FINAL LISTING DECISION*	*EXPECTED TMDL COMPLETION DATE*	*EXPECTED TMDL ATTAINMENT DATE*	*POTENTIAL SOURCE*
Del Puerto Creek (Stanislaus County)				
Metals/Metalloids				
Boron	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Chromium	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Salinity/Total Dissolved Solids/Chloride/Sulfates				
Specific Conductivity	List on 303(d) list (TMDL required)	2033	n/a	Unknown
Delta Waterways (Southern Portion)				
Pesticides				
Group A Pesticides	List on 303(d) list (TMDL required)	2027	n/a	Unknown
Other Cause				
Invasive Species	List on 303(d) list (TMDL required)	2019	n/a	Unknown
Total Toxics				
Toxicity	List on 303(d) list (TMDL required)	2019	n/a	Unknown
Dry Creek (Tributary to Tuolumne River)				
Pesticides				
Bifenthrin	List on 303(d) list (being addressed by action other than TMDL)	n/a	2030	Unknown
Cyfluthrin	List on 303(d) list (being addressed by action other than TMDL)	n/a	2030	Unknown
Cyhalothrin, Lambda	List on 303(d) list (being addressed by action other than TMDL)	n/a	2030	Unknown

POLLUTANT	*FINAL LISTING DECISION*	*EXPECTED TMDL COMPLETION DATE*	*EXPECTED TMDL ATTAINMENT DATE*	*POTENTIAL SOURCE*
Pyrethroids	List on 303(d) list (being addressed by action other than TMDL)	n/a	2030	Unknown
Duck Creek (San Joaquin County)				
Metals/Metalloids				
Lead	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Mercury	List on 303(d) list (TMDL required)	2019	n/a	Unknown
Nutrients				
Oxygen, Dissolved	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Total Toxics				
Toxicity	List on 303(d) list (TMDL required)	2027	n/a	Unknown
Grasslands (Marshes)				
Metals/Metalloids				
Selenium	List on 303(d) list (being addressed by USEPA approved TMDL)	n/a	n/a	Unknown
Grayson Drain (At Outfall)				
Pathogens				
Indicator Bacteria	List on 303(d) list (TMDL required)	2021	n/a	Unknown
Harding Drain				
Toxic Organics				
alpha.-BHC (Benzene-hexachloride or alpha-HCH)	List on 303(d) list (TMDL required)	2021	n/a	Unknown
Pesticides				
DDE (Dichloro-diphenyldichloroethylene)	*List on 303(d) list (TMDL required)*	2021	n/a	Unknown
Hexachlorobenzene/ HCB	List on 303(d) list (TMDL required)	2022	n/a	Unknown
Lindane/gamma Hexachlorocyclohexane (gamma-HCH)	List on 303(d) list (TMDL required)	2023	n/a	Unknown
Hospital Creek (San Joaquin and Stanislaus Counties)				
Metals/Metalloids				
Boron	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Lead	List on 303(d) list (TMDL required)	2036	n/a	Unknown
Nickel	List on 303(d) list (TMDL required)	2037	n/a	Unknown
Salinity/Total Dissolved Solids/Chloride/Sulfates				
Salinity	List on 303(d) list (TMDL required)	2021	n/a	Unknown
Other Cause				
pH	List on 303(d) list (TMDL required)	2033	n/a	Unknown

POLLUTANT	*FINAL LISTING DECISION*	*EXPECTED TMDL COMPLETION DATE*	*EXPECTED TMDL ATTAINMENT DATE*	*POTENTIAL SOURCE*
Pesticides				
Chlorpyrifos	List on 303(d) list (being addressed by action other than TMDL)	n/a	2026	Agriculture
Diuron	List on 303(d) list (being addressed by action other than TMDL)	n/a	2020	Agriculture
Methyl Parathion	List on 303(d) list (being addressed by action other than TMDL)	n/a	2018	Agriculture
Ingram Creek (From Confluence with Hospital Creek to Hwy 33 Crossing)				
Metals/Metalloids				
Boron	List on 303(d) list (TMDL required)	2033	n/a	Unknown
Pesticides				
Bifenthrin	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Cyfluthrin	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Cyhalothrin, Lambda	List on 303(d) list (TMDL required)	2035	n/a	Unknown
DDE (Dichlorodiphenyldichloroethylene)	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Diazinon	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Dimethoate	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Esfenvalerate/Fenvalerate	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Imidacloprid	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Linuron	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Metolachlor	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Dieldrin	List on 303(d) list (TMDL required)	2021	n/a	Unknown
Nutrients				
Oxygen, Dissolved	List on 303(d) list (TMDL required)	2021	n/a	Unknown
Pathogens				
Indicator Bacteria	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Salinity/Total Dissolved Solids/Chloride/Sulfates				
Salinity	List on 303(d) list (TMDL required)	2021	n/a	Unknown
Total Toxics				
Toxicity	List on 303(d) list (TMDL required)	2021	n/a	Unknown
Langworth Pipeline (Stanislaus County)				
Nutrients				
Oxygen, Dissolved	List on 303(d) list (TMDL required)	2027	n/a	Unknown

POLLUTANT	*FINAL LISTING DECISION*	*EXPECTED TMDL COMPLETION DATE*	*EXPECTED TMDL ATTAINMENT DATE*	*POTENTIAL SOURCE*
Levee Drain (Stanislaus County)				
Nutrients				
Nitrate/Nitrite (Nitrite + Nitrate as N)	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Salinity/Total Dissolved Solids/Chloride/Sulfates				
Specific Conductivity	List on 303(d) list (TMDL required)	2033	n/a	Unknown
Total Dissolved Solids	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Little Johns Creek				
Nutrients				
Oxygen, Dissolved	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Lone Tree Creek				
Nutrients				
Ammonia	List on 303(d) list (TMDL required)	2020	n/a	Unknown
BOD, Biochemical oxygen demand	List on 303(d) list (TMDL required)	2020	n/a	Unknown
Oxygen, Dissolved	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Other Cause				
Benthic Community Effects	List on 303(d) list (TMDL required)	2034	n/a	Unknown
Merced River (Lower McSwain Reservoir to San Joaquin River)				
Pesticides				
Group A Pesticides	List on 303(d) list (TMDL required)	2011	n/a	Unknown
Nutrients				
Oxygen, Dissolved	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Newman Wasteway				
Salinity/Total Dissolved Solids/Chloride/Sulfates				
Salinity	List on 303(d) list (TMDL required)	2021	n/a	Unknown
Orestimba Creek (Above Kilburn Road)				
Metals/Metalloids				
Selenium	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Pesticides				
Bifenthrin	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Cyhalothrin, Lambda	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Diazinon	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Dimethoate	List on 303(d) list (being addressed by action other than TMDL)	n/a	n/a	Unknown
Esfenvalerate/Fenvalerate	List on 303(d) list (TMDL required)	2035	n/a	Unknown

POLLUTANT	*FINAL LISTING DECISION*	*EXPECTED TMDL COMPLETION DATE*	*EXPECTED TMDL ATTAINMENT DATE*	*POTENTIAL SOURCE*
Linuron	List on 303(d) list (TMDL required)	2036	n/a	Unknown
Pyrethroids	List on 303(d) list (TMDL required)	2037	n/a	Unknown
Orestimba Creek (Below Kilburn Road)				
Metals/Metalloids				
Chromium	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Nickel	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Pesticides				
Bifenthrin	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Cyhalothrin, Lambda	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Dimethoate	List on 303(d) list (being addressed by action other than TMDL)	n/a	n/a	Unknown
Esfenvalerate/Fenvalerate	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Imidacloprid	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Linuron	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Pyrethroids	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Nutrients				
Oxygen, Dissolved	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Ramona Lake				
Metals/Metalloids				
Boron	List on 303(d) list (TMDL required)	2033	n/a	Unknown
Pesticides				
Linuron	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Linuron	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Rock Creek (Stanislaus County)				
Nutrients				
Oxygen, Dissolved	List on 303(d) list (TMDL required)	2035	n/a	Unknown
Pathogens				
Indicator Bacteria	List on 303(d) list (TMDL required)	2035	n/a	Unknown
San Joaquin River (Mendota Pool to Bear Creek)				
Pesticides				
Group A Pesticides	List on 303(d) list (TMDL required)	2011	n/a	Unknown
Other causes				
pH	List on 303(d) list (TMDL required)	2035	n/a	Unknown

POLLUTANT	*FINAL LISTING DECISION*	*EXPECTED TMDL COMPLETION DATE*	*EXPECTED TMDL ATTAINMENT DATE*	*POTENTIAL SOURCE*
San Joaquin River (Mud Slough to Merced River)				
Metals/Metalloids				
Mercury	List on 303(d) list (TMDL required)	2012	n/a	Unknown
Pesticides				
Chlorpyrifos	List on 303(d) list (TMDL required)	2027	n/a	Unknown
DDT (Dichlorodiphenyltrichloroethane)	List on 303(d) list (TMDL required)	2027	n/a	Unknown
Diazinon	List on 303(d) list (TMDL required)	2027	n/a	Unknown
Group A Pesticides	List on 303(d) list (TMDL required)	2011	n/a	Unknown
Pathogens				
Indicator Bacteria	List on 303(d) list (TMDL required)	2027	n/a	Unknown
Salinity/Total Dissolved Solids/Chloride/Sulfates				
Electrical Conductivity	List on 303(d) list (TMDL required)	2027	n/a	Unknown
Other Cause				
Temperature, Water	List on 303(d) list (TMDL required)	2034	n/a	Unknown
San Joaquin River (Merced River to Tuolumne River)				
Pesticides				
Group A Pesticides	List on 303(d) list (TMDL required)	2011	n/a	Unknown
Salinity/Total Dissolved Solids/Chloride/Sulfates				
Electrical Conductivity	List on 303(d) list (TMDL required)	2027	n/a	Unknown
San Joaquin River (Tuolumne River to Stanislaus River)				
Metals/Metalloids				
Mercury	List on 303(d) list (TMDL required)	2012	n/a	Unknown
Pesticides				
Group A Pesticides	List on 303(d) list (TMDL required)	2011	n/a	Unknown
Salinity/Total Dissolved Solids/Chloride/Sulfates				
Electrical Conductivity	List on 303(d) list (TMDL required)	2027	n/a	Unknown
Stanislaus River, Lower				
Pesticides				
Group A Pesticides	List on 303(d) list (TMDL required)	2011	n/a	Unknown
Tuolumne River, Lower (Don Pedro Reservoir to San Joaquin River)				
Pesticides				
Group A Pesticides	List on 303(d) list (TMDL required)	2011	n/a	Unknown

SOURCE: STATE WATER RESOURCES CONTROL BOARD, FINAL 2020/2022 CALIFORNIA INTEGRATED REPORT (CLEAN WATER ACT SECTION 303(D) LIST / 305(B) REPORT)

GROUNDWATER

The City lies at the northern end of the San Joaquin Valley Groundwater Basin and overlies two designated groundwater subbasins that are delineated by geographic and hydrologic features. The Turlock groundwater subbasin encompasses the area south of the Tuolumne River to the Merced River and from the San Joaquin River to the base of the Sierra Nevada foothills. The Modesto groundwater subbasin extends north from the Tuolumne River to the Stanislaus River and east from the San Joaquin River to the base of the Sierra Nevada foothills. The Delta-Mendota subbasin underlies the outlying area of Grayson. The groundwater basins are recharged from streamflow infiltration, deep percolation of irrigation water, and rain. Large areas of the County are considered principal groundwater recharge areas, as well.

Both groundwater subbasins underlying the City's contiguous service area consist of similar hydrogeologic properties. The groundwater subbasins are composed of three units: (1) a lower aquifer unit (Unit 1) that is confined in the west (beneath Unit 2) and unconfined in the east; (2) a shallow, unconfined aquifer (Unit 2); and, (3) an aquitard, known as the Corcoran Clay, an impervious barrier separating the two aquifers. The Corcoran Clay, which underlies the entire San Joaquin Valley, is thickest near the center of the San Joaquin Valley and progressively thinner near the edges, with the eastern edge located about three miles east of Modesto. Within the areas where the Corcoran Clay layer is prese nt, most wells are completed in the upper Unit 2 aquifer, because water quality is better than in Unit 1.

FLOODPLAIN MAPPING

FEMA Flood Zones

Federal Emergency Management Agency (FEMA) mapping provides important guidance for the City in planning for flooding events and regulating development within identified flood hazard areas. FEMA's National Flood Insurance Program (NFIP) is intended to encourage State and local governments to adopt responsible floodplain management programs and flood measures. As part of the program, the NFIP defines floodplain and floodway boundaries that are shown on Flood Insurance Rate Maps (FIRMs).

Areas that are subject to flooding are indicated by a series of alphabetical symbols, indicating anticipated exposure to flood events:

- **Zone A:** Subject to 100-year flooding with no base flood elevation determined. Identified as an area that has a one percent chance of being flooded in any given year.
- **Zone AE:** Subject to 100-year flooding with base flood elevations determined.
- **Zone AH:** Subject to 100-year flooding with flood depths between one- and three-feet being areas of ponding with base flood elevations determined.
- **500-year Flood Zone:** Subject to 500-year flooding. Identified as an area that has a 0.2 percent chance of being flooded in a given year.

The City of Modesto is subject to flooding problems along the natural creeks and drainages that traverse the area.

SB 5 (Stats. 2007, Ch. 364) Flood Zones

Both State policy and State legislation (Senate Bill [SB] 5) call for 200-year (0.5 percent annual chance) flood protection to be the minimum level of protection for urban and urbanizing areas in the Central Valley. SB 5 requires that the 200-year protection be consistent with criteria used or developed by the Department of Water Resources. SB 5 requires that all urban and urbanizing areas in the Sacramento and San Joaquin Valleys to achieve 200-year flood protection to approve development.

Dam Inundation

Earthquakes centered close to a dam are typically the most likely cause of dam failure. Dam Inundation maps have been required in California since 1972, following the 1971 San Fernando Earthquake and near failure of the Lower Van Norman Dam. The City of Modesto has the potential to be inundated by eight dams: Cherry Valley Dam, Don Pedro Dam, Lake Eleanor Dam, Modesto Res Dam, New Exchequer Dam, O'Shaugnessy Dam, Turlock Lake Dam, and Vermilion Valley Dam.

These dams do not have a history of failure; however, they are identified as having the potential to inundate habitable portions of the City of Modesto in the unlikely event of dam failure. The dam owners/operators are responsible for the management, monitoring, and improvements to these dams to reduce the risk of dam failure and inundation.

Portions of the 100-year floodplain would be subject to inundation in the event of dam failure. Although the likelihood is remote, the area subject to inundation within the City of Modesto is not specifically defined but would coincide with the area delineated as the 100-year floodplain.

Despite the number of dams near Stanislaus County, the risk of dam failure inundating portions of the County is considered low, and the degree and nature of risk for each dam is unknown. Dam failure can occur under three general conditions: because of an earthquake, an isolated incident due to structural instability, or because of intense rain more than design capacity.

California Government Code Section 8589.5 requires local jurisdictions to adopt emergency procedures for the evacuation of populated inundation areas identified by dam owners. The local Office of Emergency Services has prepared a Dam Failure Plan, which includes a description of dams, direction of floodwaters, responsibilities of local jurisdictions, and evacuation plans.

LOCAL SETTING

The Project site is in unincorporated Stanislaus County along the northwestern city limits of Modesto. The Project site is approximately 1.5 miles south of the Stanislaus River and 7.5 miles north of Dry Creek (a major tributary to the Tuolumne River). The existing topography of the Project site is flat with current agricultural use. The property is bound by agricultural uses and light industrial developments along Kiernan Avenue. Joseph A. Gregori High School (Modesto City Schools) is diagonally adjacent to the northwest of the site.

As discussed further below, the Project site is not located within a FEMA-designated 100-year flood hazard zone. However, the site is within a broad, flat area that is subject to sheet flow-type shallow flooding.

Flooding can also occur because of catastrophic dam failure and the release of waters contained in upstream reservoirs. The Project site area could be impacted if an upstream dam in the vicinity were to fail catastrophically. Although a very low probability event, catastrophic structural dam failure can be caused by earthquakes or overflow. According to the City of Modesto Local Hazard Mitigation Plan, the failure of Don Pedro could affect the Project site.

The Project site is located within an area underlain by the Modesto Subbasin of the San Joaquin Valley Groundwater Basin designated as Basin Number 5-022.02 by the California Department of Water Resources (DWR). The Modesto Subbasin is bounded by the Stanislaus River to the north, the Tuolumne River to the south, the San Joaquin River to the west, and the Sierra Nevada foothills to the east.

Stormwater Drainage

The City of Modesto's stormwater management practices are governed by the NPDES MS4 Permit, which mandates the implementation of measures to reduce pollutant discharges to the maximum extent practicable.

Groundwater

As previously stated, the Project site is situated above the Modesto Subbasin (DWR Basin No. 5-022.02), a component of the San Joaquin Valley Groundwater Basin. The San Joaquin Valley Groundwater Subbasin is delineated by the Stanislaus River to the north, the Tuolumne River to the south, the San Joaquin River to the west, and the Sierra Nevada foothills to the east.

In compliance with the Sustainable Groundwater Management Act (SGMA), the Stanislaus and Tuolumne Rivers Groundwater Basin Association (STRGBA) developed and adopted the Modesto Subbasin Groundwater Sustainability Plan (GSP), in January 2022. The Modesto Basin GSP outlines strategies to achieve groundwater sustainability by 2042, including monitoring programs, recharge projects, and demand management measures.

The Modesto Subbasin has experienced an average annual groundwater storage decline of approximately 43,000 acre-feet. While Modesto Subbasin is not classified as being in a state of critical overdraft, certain areas, particularly in the eastern portion where water users rely heavily on groundwater, are currently unsustainable.

Groundwater levels are monitored by the STRGBA, which serves as the California Statewide Groundwater Elevation Monitoring (CASGEM) entity for the Modesto Subbasin. Monitoring data indicates that groundwater levels have declined in some areas, remained stable in others, and increased in a few locations, reflecting the complex interplay of recharge and extraction across the subbasin.

Recharge of the Modesto Subbasin occurs through various sources, including percolation of rainfall and irrigation water, seepage from rivers and streams, and intentional recharge efforts, such as the use of recharge ponds and irrigation of specific fields.

GROUNDWATER RESOURCES

The City of Modesto sources its water supply through a combination of surface water and groundwater, employing a conjunctive use strategy to ensure long-term sustainability. Groundwater is primarily extracted from the Modesto Subbasin. Historically, the City has estimated its operational yield—the volume of groundwater that can be sustainably extracted without causing adverse impacts—at 53,500 acre-feet per year (AFY). This estimate was established based on analyses conducted during the development of the City's 2005 Urban Water Management Plan. It is important to note that this figure pertains to the City's water service area, which encompasses portions of the Modesto, Turlock, and Delta-Mendota subbasins.

Flooding

Flooding is the accumulation of water where none usually occurs or the overflow of excess water from a stream, river, lake, reservoir, or coastal body of water onto adjacent floodplains. Floods are natural events that are considered hazards only when people and property are affected. Flooding events can result in damage to structures, injury or loss of human and animal life, exposure of waterborne diseases, and damage to infrastructure. In addition, standing floodwater can destroy agricultural crops, undermine infrastructure and structural foundations, and contaminate groundwater.

The City of Modesto is situated within the San Joaquin Valley, an area historically prone to flooding due to its topography and hydrology. The region's flood risks are primarily associated with the Tuolumne River, Dry Creek, and local stormwater runoff. Flooding can result from prolonged rainfall, rapid snowmelt, or intense storm events, leading to the overflow of these water bodies and overwhelming of local drainage systems.

To mitigate flood risks, Modesto relies on a combination of natural waterways and man-made infrastructure. MID and TID operate canal systems that primarily serve irrigation purposes but also convey stormwater westward to the Tuolumne River and San Joaquin River. However, these canals have finite capacities and were not originally designed for flood control, which can limit their effectiveness during significant storm events.

The broader region, including Modesto, is part of the Central Valley Flood Protection Plan (CVFPP), which aims to enhance flood management through a system-wide approach. The CVFPP outlines strategies to achieve a 200-year level of flood protection for urban areas, meaning there is a 0.5 percent chance of flooding in any given year. Despite these efforts, many levees in the Central Valley, particularly those protecting rural and agricultural lands, do not meet this standard, posing ongoing risks to communities.

In Stanislaus County, floodplain management is guided by FEMA flood maps, which identify current flood hazards and inform local mitigation actions. These maps are essential tools for planning and

development, ensuring that new projects consider flood risks and incorporate appropriate protective measures. According to FEMA, the Project site is not located within the 100-Year designated FEMA Flood Zone. The Project site is located within the FEMA flood zone X which is designated as an area of minimal flood hazard.

Dam Failure

The entirety of the Project site, as well as most of the City of Modesto, is located within the Don Pedro Dam Inundation Area. Dam failure is a result of structural instability caused by improper design or construction, instability resulting from seismic shaking, or overtopping and erosion of the dam. Larger dams that are higher than twenty-five feet or with storage capacities over fifty acre-feet of water are regulated by the California Dam Safety Act, which is implemented by DWR's Division of Safety of Dams (DSD). The DSD is responsible for inspecting and monitoring these dams. The Act also requires that dam owners submit to the California Office of Emergency Services inundation maps for dams that would cause significant loss of life or personal injury because of dam failure. The County Office of Emergency Services is responsible for developing and implementing a Dam Failure Plan that designates evacuation plans, the direction of floodwaters, and provides emergency information.

Stormwater Quality

Urban stormwater runoff was managed as a non-point discharge (a source not readily identifiable) under the Federal Water Pollution Control Amendments of 1972 (PL 92-500, Section 208) until the mid-1980's. However, since then, the U.S. EPA has continued to develop implementing rules which categorize urban runoff as a point source (an identifiable source) subject to NPDES permits. Rules now affect medium and large urban areas, and further rulemaking is expected as programs are developed to meet requirements of Federal water pollution control laws.

Surface water pollution is also caused by erosion. Excessive and improperly managed grading, vegetation removal, quarrying, logging, and agricultural practices all lead to increased erosion of exposed earth and sedimentation of watercourses during rainy periods. In slower moving water bodies these same factors often cause a buildup of siltation, which reduces the capacity of the water system to percolate and recharge groundwater basins, as well as adversely affecting both aquatic resources and flood control efforts.

3.9.2 REGULATORY SETTING

There are a number of regulatory agencies whose responsibility includes the oversight of the water resources of the state and nation including the Federal Emergency Management Agency, the U.S. EPA, the State Water Resources Board (SWRCB), and the Regional Water Quality Control Board (RWQCB). The following is an overview of the federal, State, and local regulations that are applicable to the proposed Project.

FEDERAL AND STATE

Clean Water Act

CWA, initially passed in 1972, regulates the discharge of pollutants into watersheds throughout the nation. Section 402(p) of the act establishes a framework for regulating municipal and industrial stormwater discharges under the NPDES Program. Section 402(p) requires that stormwater associated with industrial activity that discharges either directly to surface waters or indirectly through municipal separate storm sewers must be regulated by an NPDES permit.

SWRCB is responsible for implementing CWA and does so through issuing NPDES permits to cities and counties through RWQCBs. Federal regulations allow two permitting options for stormwater discharges (individual permits and general permits). The SWRCB elected to adopt a statewide general permit (Water Quality Order No. 2013-001-DWQ).

National Flood Insurance Program

The National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 mandate FEMA to evaluate flood hazards. FEMA provides FIRMs for local and regional planners to promote sound land use and floodplain development by identifying potential flood areas based on the current conditions. To delineate a FIRM, FEMA conducts engineering studies referred to as Flood Insurance Studies (FISs). The most recent FIS and FIRMs were completed and published for the City of Modesto in 2009. Using information gathered in these studies, FEMA engineers and cartographers delineate Special Flood Hazard Areas (SFHAs) on FIRMs.

The Flood Disaster Protection Act (FDPA) requires owners of all structures in identified SFHAs to purchase and maintain flood insurance as a condition of receiving federal or federally related financial assistance, such as mortgage loans from federally insured lending institutions. Community members within designated areas can participate in the NFIP afforded by FEMA. The NFIP is required to offer federally subsidized flood insurance to property owners in those communities that adopt and enforce floodplain management ordinances that meet minimum criteria established by FEMA. The National Flood Insurance Reform Act of 1994 further strengthened the NFIP by providing a grant program for state and community flood mitigation projects. The National Flood Insurance Reform Act also established the Community Rating System (CRS), which is a system for crediting communities that implement measures to protect the natural and beneficial functions of their floodplains, as well as managing erosion hazards.

The City of Modesto, under NFIP, has created standards and policies to ensure flood protection. These policies address development and redevelopment, compatibility of uses, required predevelopment drainage studies, compliance with discharge permits, enhancement of existing waterways, cooperation with the US Army Corps of Engineers (Corps) and the San Joaquin Area Flood Control Agency (SJAFCA) for updating, and method consistency with the CVRWQCB and proposed BMPs.

200-Year Flood Protection in the Central Valley

Both State policy and State legislation (Senate Bill 5 [Stats. 2007, Ch. 364]) call for 200-year (0.5% annual chance) flood protection to be the minimum level of protection for urban and urbanizing areas in the Central Valley. As stated above, SB 5 requires that the 200-year protection be consistent with criteria used or developed by DWR. SB 5 requires all urban and urbanizing areas in the Sacramento and San Joaquin Valleys to achieve 200-year flood protection to approve development. SB 5 restricts approval of development after 2016 if "adequate progress" towards achieving this standard is not met. Urban and urbanizing areas protected by State-Federal project levees cannot use "adequate progress" as a condition to approve development after 2025. Adequate progress is defined as meeting all the following:

1. The project scope, cost and schedule have been developed.
2. In any given year, at least 90 percent of the revenues scheduled for that year have been appropriated and expended consistently with the schedule.
3. Construction of critical features is progressing as indicated by the actual expenditure of budget funds.
4. The city or county has not been responsible for any significant delay in completion of the system; and
5. The above information has been provided to the DWR, and the Central Valley Flood Protection Board and the local flood management agency shall annually report on the efforts to complete the project.

California Water Code

The Federal CWA places the primary responsibility for the control of surface water pollution and for planning the development and use of water resources with the states, although this does establish certain guidelines for the States to follow in developing their programs and allows the U.S. EPA to withdraw control from states with inadequate implementation mechanisms.

California's primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Division 7 of the California Water Code) (Porter-Cologne Act). The Porter-Cologne Act grants the SWRCB and each of the RWQCBs power to protect water quality and is the primary vehicle for implementation of California's responsibilities under the Federal CWA. The Porter-Cologne Act grants the SWRCB and the RWQCBs authority and responsibility to adopt plans and policies, to regulate discharges to surface and groundwater, to regulate waste disposal sites and to require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substance, sewage, or oil or petroleum product.

Each RWQCB must formulate and adopt a water quality control plan, or Basin Plan, for its region the regional plans are to conform to the policies set forth in the Porter-Cologne Act and established by the SWRCB in its State water policy. The Porter-Cologne Act also provides that a RWQCB may include within its regional plan water discharge prohibitions applicable to conditions, areas, or types of waste.

The Water Code Section 13260 requires all dischargers of waste that may affect water quality in waters of the state to prepare and provide a water quality discharge report to the RWQCB. Section 13260a-c is as follows:

(a) Each of the following persons shall file with the appropriate regional board a report of the discharge, containing the information that may be required by the regional board:

(1) A person discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the state, other than into a community sewer system.

(2) A person who is a citizen, domiciliary, or political agency or entity of this state discharging waste, or proposing to discharge waste, outside the boundaries of the state in a manner that could affect the quality of the waters of the state within any region.

(3) A person operating, or proposing to construct, an injection well.

(b) No report of waste discharge need be filed pursuant to subdivision (a) if the requirement is waived pursuant to Section 13269.

(c) Each person subject to subdivision (a) shall file with the appropriate regional board a report of waste discharge relative to any material change or proposed change in the character, location, or volume of the discharge.

National Pollutant Discharge Elimination System

NPDES permits are required for discharges of pollutants to navigable waters of the United States, which includes any discharge to surface waters, including lakes, rivers, streams, bays, the ocean, dry stream beds, wetlands, and storm sewers that are tributary to any surface water body. NPDES permits are issued under the Federal CWA, Title IV, Permits and Licenses, Section 402 (33 USC 466 et seq.).

The RWQCB issues these permits in lieu of direct issuance by the EPA, subject to review and approval by the EPA Regional Administrator. The terms of these NPDES permit implementing pertinent provisions of the Federal CWA and its implementing regulations, including pre-treatment, sludge management, effluent limitations for specific industries, and anti-degradation. In general, the discharge of pollutants is to be eliminated or reduced as much as practicable to achieve the CWA's goal of "fishable and swimmable" navigable (surface) waters. Technically, all NPDES permits issued by the RWQCB are also Waste Discharge Requirements issued under the authority of the California Water Code.

These NPDES permits regulate discharges from publicly owned treatment works, industrial discharges, stormwater runoff, dewatering operations, and groundwater cleanup discharges. NPDES permits are issued for periods of five years or less and are therefore to be updated regularly. The rapid and dramatic population and urban growth in the Central Valley Region have caused a significant increase in NPDES permit applications for new waste discharges. To expedite the permit issuance process, the RWQCB has adopted several general NPDES permits, each of which regulates

numerous discharges of similar types of wastes. Stormwater discharges from industrial and construction activities in the Central Valley Region can be covered under these general permits, which are administered jointly by the SWRCB and RWQCB.

Under Phase I, which started in 1990, the RWQCBs have adopted NPDES stormwater permits for medium (serving between 100,000 and 250,000 people) and large (serving more than 250,000 people) municipalities. As part of Phase II, the SWRCB adopted a General Permit for the Discharge of Storm Water from Small MS4s (WQ Order No. 2003-0005-DWQ) to provide permit coverage for smaller municipalities, including nontraditional Small MS4s, which are governmental facilities such as military bases, public campuses, and prison and hospital complexes. The MS4 permits require the discharger to develop and implement a Storm Water Management Plan/Program with the goal of reducing the discharge of pollutants to the maximum extent practicable (MEP). MEP is the performance standard specified in Section 402(p) of the CWA. The management programs specify which BMPs will be used to address certain program areas. The program areas include public education and outreach, illicit discharge detection and elimination, construction and post-construction, and good housekeeping for municipal operations.

Under Phase II requirements, dischargers in any location whose projects disturb one or more acres of soil or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres are required to obtain coverage under the statewide General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit, 99-08-DWQ). On September 2, 2009, the SWRCB adopted a new Construction General Permit (CGP) (Order No. 2009-0009-DWQ) that supersedes the existing CGP as of July 1, 2010. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The CGP requires the development and implementation of a stormwater pollution prevention plan (SWPPP). The SWPPP should contain a site map(s) that shows the construction site perimeter, existing and proposed buildings, lots, roadways, stormwater collection and discharge points, general topography both before and after construction, and drainage patterns across the project. The SWPPP must list best management practices the discharger will use to protect stormwater runoff and the placement of those BMPs.

Assembly Bill 3030 - Groundwater Management Act

In 1992, the State Legislature provided for more formal groundwater management with the passage of Assembly Bill (AB) 3030, the Groundwater Management Act (Water Code Section 10750, et seq.). Groundwater management, as defined in DWR's Bulletin 118 Update 2003, is the planned and coordinated monitoring, operation, and administration of a groundwater basin, or portion of a basin, with the goal of long-term groundwater resource sustainability. Groundwater management needs are identified and addressed at the local level in the form of Groundwater Management Plans (GMP). The Act provides local water agencies with procedures to develop a GMP to enable those agencies to manage their groundwater resources efficiently and safely while protecting the quality of supplies. Under the Act, development of a GMP by a local water agency is voluntary.

Sustainable Groundwater Management Act

In 2014, the SGMA established a framework for sustainable, local groundwater management. SGMA requires groundwater-dependent regions to halt overdraft and bring basins into balanced levels of pumping and recharge. With passage of the SGMA, the Department of Water Resources launched the Sustainable Groundwater Management (SGM) Program to implement the law and provide ongoing support to local agencies around the state. The SGMA defines "sustainable groundwater management" and requires that GMPs be adopted for the most important groundwater basins in California to empower local agencies to manage basins sustainably. The SGMA establishes basic requirements for the Groundwater Sustainability Plans, as well as a timetable for the adoption of the plans.

Water Quality Control Plan for the Central Valley Region

The Water Quality Control Plan for the Central Valley Region, or Basin Plan, includes a summary of beneficial water uses, water quality objectives needed to protect the identified beneficial uses, and implementation measures. The Basin Plan establishes water quality standards for all the ground and surface waters of the region. The term "water quality standards," as used in the Federal CWA, includes both the beneficial uses of specific water bodies and the levels of quality that must be met and maintained to protect those uses. The Basin Plan includes an implementation plan describing the actions by the RWQCB and others that are necessary to achieve and maintain water quality standards.

The RWQCB regulates waste discharges to minimize and control their effects on the quality of the region's ground and surface water. Permits are issued under a number of programs and authorities. The terms and conditions of these discharge permits are enforced through a variety of technical, administrative, and legal means. Water quality problems in the region are listed in the Basin Plan, along with the causes, where known. For water bodies with quality below the levels necessary to allow all the beneficial uses of the water to be met, plans for improving water quality are included. The Basin Plan reflects, incorporates, and implements applicable portions of a number of national and statewide water quality plans and policies, including the California Water Code and the CWA.

Central Valley Flood Protection Board

The Central Valley Flood Protection Board (CVFPB), formerly known as the California State Reclamation Board, is the regulating authority over flood risk management in the Central Valley. In addition, CVFPB is charged with the review and adoption of the CVFPP. The CVFPB's governing body consists of seven Governor-appointed and Senate-confirmed members. The board works in close partnership with the California Department of Water Resources (DWR, the Corps, and stakeholders to implement the CVFPP. The CVFPB also works closely with the California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, and the National Marine Fisheries Service to evaluate the environmental impacts of flood control.

Central Valley Flood Protection Plan

The CVFPP was adopted by the CVFPB on June 29, 2012, providing a policy, program, and project implementation framework to help guide regional and State level financing plans and investments.

CVFPP proposes a State Systemwide Investment Approach (SSIA) for sustainable, integrated flood management in areas currently protected by facilities of the State Plan of Flood Control (SPFC). The CVFPP suggests improvements to SPFC levees located along the Stanislaus River and tributary channels in the Modesto Metropolitan Area.

LOCAL

City of Modesto Urban Area General Plan

The UAGP includes policies that help protect local hydrology and water quality within incorporated areas of Modesto. These policies address potential sources of water pollution, including runoff from developed areas, and the risk of contamination of surface water and groundwater resources. The following UAGP policies are relevant to the protection of water quality.

FWQ-3: The City of Modesto will restrict development and encroachment into the Tuolumne River and Dry Creek floodplains to ensure and maintain proper downstream conveyance of flood flows to the San Joaquin River. The Comprehensive Planning Districts established for the Tuolumne and Stanislaus Rivers and Dry Creek by the Urban Area General Plan will limit development to open-space and related uses.

FWQ-4: When development is proposed on parcels located within any "Flood Potential Study Area" shown on Figure VII-2 [of the UAGP], the following policies apply.

1. Approve new urban development only when the City determines via "findings" that its protected from "200-year" floods, and otherwise complies with the City's Floodplain Management Ordinance (Title 9, Chapter 4 of the Modesto Municipal Code). (UAGP Policy VII.L[a])

2. Undeveloped floodway areas as well as the Tuolumne River Regional Park Master Plan, the Dry Creek Master Plan, the Tuolumne River Comprehensive Planning District (CPD), and the Dry Creek CPD should be preserved for undeveloped and non-urban use, as provided in the City's Floodplain Management Ordinance. (UAGP Policy VII.L[b])

3. Appropriate emergency plans for the safe evacuation of people from areas subject to inundation from dam failure shall be reviewed and periodically updated. The City Fire Department, Police Department, and Public Works Department should continue to work with other jurisdictions to develop evacuation routes to be used in case of dam failure. Evacuation routes will serve all the jurisdictions in the County. (UAGP Policy VII.L[c])

FWQ-5: The following policies will help to minimize the future loss of life and reduce property damage as a result of floods as well as reduce the economic impact of floods.

1. Maintain the floodplain management ordinance to ensure that flood insurance can be made available to qualified property owners through State and Federal programs. (UAGP Policy VII.L[d])

2. Support the Federal Emergency Management Agency (FEMA) Flood Insurance Program so that residents who qualify may purchase such protection. Property owners whose property is located within certain areas identified by FEMA as flood hazard areas may purchase insurance against flood damage. (UAGP Policy VII.L[e])

3. Discourage development in areas susceptible to floods, except as provided under the Flood Insurance Program and City Floodplain Management Ordinance. (UAGP Policy VII.L[f])

FWQ-6: All of the Flood Hazard Policies adopted for the Baseline Developed Area apply equally within the Planned Urbanizing Area. (UAGP Policy VII.L[g])

FWQ-7: The environmental review document for any Comprehensive Planning District located within or including any portion of a "Flood Potential Study Area" on Figure VII-2 [of the UAGP], should include a Flood Hazard Analysis developed to mitigate all of the Flood Hazard impacts identified in the Master Environmental Impact Report. (UAGP Policy VII.L[h])

FWQ-8: The results of the Flood Hazard Analysis should be incorporated into the project design of any Specific Plan. The Specific Plan shall prohibit development within the flood channel, consistent with the City's Floodplain Management Ordinance. Where possible, the Specific Plan shall minimize development within the floodplain, consistent with the City's Floodplain Management Ordinance, by such means as providing setbacks from flood zones, designating areas within the flood zones for low-intensity development only, or providing for setback levees. When levee improvements are necessary to achieve flood protection, the Specific Plan shall include adequate funding for those improvements. Funding mechanisms may include special assessments or special taxes for both capital and maintenance costs, and shall not rely solely on impact fees. The City may work with other agencies to provide these improvements. (UAGP Policy VII.L[i])

FWQ-9: Meet the requirements of acceptable urban storm runoff as established by the Central Valley Regional Water Quality Control Board Basin Plan for surface discharges and Environmental Protection Agency for underground injection. (UAGP Policy VI.G.1)

FWQ-10: Construct, operate, maintain, and replace storm water drainage facilities in a manner that will provide the best possible service to the public, as required by federal and state laws and regulations. In developing implementation plans, consideration should be given to rehabilitation of existing facilities, remediation of developed areas with inadequate levels of drainage service, and timely system expansion for future development. (UAGP Policy VI.G.2)

FWQ-11: Construction activities shall comply with the requirements of the City's Storm Water Management Plan under its municipal NPDES stormwater permit, and the State Water Resources Control Board's General Permit for Discharges of Storm Water Associated with Construction Activity. (UAGP Policy VI.G.3)

FWQ-12: For developments within a mapped 100-year floodplain, prepare studies that demonstrate how the development will comply with both the construction and post-construction programs under the City's municipal NPDES permit. No increased erosion or releases of other contaminants that would cause violations of the City's municipal NPDES permit should occur as a result of development. (UAGP Policy VI.G.4)

FWQ-13: Ensure that new development complies with the City of Modesto's Stormwater Management Program: Guidance Manual for New Development Stormwater Quality Control Measures. (UAGP Policy VI.G.5)

FWQ-14: Require new development to implement an appropriate selection of permanent pollution control measures in accordance with the City's implementation policies for the municipal NPDES stormwater permit. (UAGP Policy VI.G.6)

FWQ-15: Design development projects to preserve and, where possible, create or restore areas that provide important water quality benefits, such as riparian corridors, wetlands and buffers. Minimize disturbance of natural water bodies or natural drainage systems that might result from development, including road construction. (UAGP Policy VI.G.7)

FWQ-16: Integrate Low Impact Development principles into proposed development projects' design. Low Impact Development is a storm water management and land development strategy that promotes conservation and use of natural on-site features combined with engineered small-scale hydrologic devices. In designing development projects, minimize the amount of impervious surface in order to maximize on-site infiltration of stormwater runoff and minimize the potential for storm water runoff from the site. (UAGP Policy VI.G.8).

City of Modesto Municipal Code

The City of Modesto sets forth stormwater quality requirements in Municipal Code Title 5 Chapter 10, Stormwater Management and Discharge Control, which established limitations and regulations for discharges into the City's stormwater system, and Article 2, Discharge Regulations and Requirements, which establishes requirements that control the discharges of pollutants. Article 3, Grading and Erosion Control, of the Modesto Municipal Code regulates grading and erosion control in the City. Additionally, any well that serves twenty-five or more employees must be classified as a public water system, as defined in Part 12, Chapter 4 of the California Health and Safety Code.

City of Modesto Storm Drainage Master Plan

The Storm Drainage Master Plan (SDMP) is intended to address the problems associated with conveying, attenuating, and discharging stormwater runoff to meet regulatory water quality standards. This is done by performing the necessary hydrological and hydraulic analyses that result

in identifying the improvements needed to provide for the construction of new conveyance and storage facilities and upgrading of deficient existing facilities. The SDMP identifies the major (backbone) storm drainage infrastructure improvements needed to effectively accommodate stormwater runoff under both existing and future developed conditions within the City of Modesto's Sphere of Influence (SOI) plus an "offsite" watershed. The recommended improvements have been formulated in consideration of existing planning and engineering documents, studies, and regulations.

City of Modesto Water Shortage Contingency Plan

The City of Modesto Water Shortage Contingency Plan establishes a structured response to varying levels of water supply shortages. It includes six stages of action based on the severity of the shortage, with corresponding conservation measures, water use restrictions, and enforcement mechanisms. The plan is designed to ensure that essential water needs are met while minimizing adverse impacts on the community and supporting long-term water resource sustainability.

Integrated Regional Groundwater Management Plan for the Modesto Subbasin

The Integrated Regional Groundwater Management Plan for the Modesto Subbasin provides a collaborative framework for managing and sustaining groundwater resources in the region. Developed in coordination with local water agencies and stakeholders, the plan outlines strategies for monitoring groundwater conditions, promoting recharge, reducing overdraft, and improving water quality. It supports long-term water supply reliability in alignment with the goals of the Sustainable Groundwater Management Act (SGMA).

3.9.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed Project will have a significant impact on the environment associated with hydrology and water quality if it will:

- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality.
- Substantially decrease groundwater supplies or interfere with groundwater recharge such that the Project may impede sustainable groundwater management of the basin.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would:
    - Result in substantial erosion or siltation on- or off-site.
    - Substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site.
    - Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
    - Impede or redirect flood flows.

- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation.
- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

IMPACTS AND MITIGATION

Impact 3.9-1: The proposed Project, with mitigation, would not violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality (Less than Significant with Mitigation)

CONSTRUCTION PHASE

Grading, excavation, removal of vegetation cover, and loading activities associated with construction activities could temporarily increase runoff, erosion, and sedimentation. Construction activities also could result in soil compaction and wind erosion effects that could adversely affect soils and reduce the revegetation potential at construction sites and staging areas.

To ensure Project construction activities are covered under General Permit 2009-0009-DWQ (amended by 2010-0014-DWQ & 2012-0006-DWQ), the Project would be required to prepare a SWPPP containing project-specific BMPs to reduce erosion and sediments to meet water quality standards (Mitigation Measure 3.9-1). Such BMPs may include temporary erosion control measures such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover. The BMPs and overall SWPPP is reviewed by the CVRWQCB as part of the permitting process. The SWPPP, once approved, is kept on site and implemented during construction activities and must be made available upon request to representatives of the CVRWQCB and/or the lead agency. Upon completion of the Project, the applicant would be required to submit a Notice of Termination to the SWRCB to indicate that construction is completed. Mandatory compliance with the SWPPP would ensure that the proposed Project would not violate any water quality standards or waste discharge requirements during construction activities. Additionally, the Project would be required to comply with Modesto Municipal Code Title 5 Chapter 10, Stormwater Management and Discharge Control, which establishes limitations and regulations for discharges into the City's stormwater system, and Article 2, Discharge Regulations and Requirements, which establishes requirements that control the discharges of pollutants. Therefore, by complying with applicable regulations and through implementation of Mitigation Measure 3.9-2, water quality impacts associated with construction activities would be ***less than significant***.

OPERATIONAL PHASE

Long-term Project operation (all phases) could result in long-term impacts to surface water quality from urban stormwater runoff. The proposed Project would result in increased impervious surface areas at the site because of the proposed development, as compared with existing conditions. Normal activities in these developed areas include the use of various automotive petroleum

products (i.e., oil, grease, and fuel), common household hazardous materials, heavy metals, pesticides, herbicides, fertilizers, and sediment. Within urban areas, these pollutants are called nonpoint source pollutants. The pollutant levels vary based on several factors, such as time between storm events, volume of storm events, type of uses, and density of people.

A guiding stormwater management principle for the Project is that it would not result in new impacts to properties downstream or upstream. Potential downstream impacts could include increased runoff volume or flow rates that contribute to flooding, erosion, or sedimentation in adjacent channels or properties. Upstream impacts could involve altered drainage patterns that impede existing flow paths or cause water to back up onto nearby parcels. The Project's stormwater system is designed to manage both the quantity and quality of runoff to ensure that peak flows are maintained at or below pre-project conditions and that pollutants are minimized before discharge. Long-term water quality impacts could be significant due to development of the proposed Project; however, the Project would be designed to conform with current City of Modesto standard requirements, which would reduce these impacts to a less than significant level, as discussed below.

The Project site is in an area that does not have any public storm drain system available; therefore, all stormwaters would need to be retained on site. The two (2) main methods for stormwater retention are above ground stormwater retention basins and below ground French drain system. A French drain system consists of a perforated pipe surrounded by gravel or rock and is designed to collect and redirect stormwater runoff into the ground, promoting infiltration and reducing surface water accumulation. Based on the design storm, which refers to a theoretical rainfall event of a specific intensity, duration, and frequency used for engineering drainage systems—identified in the Stanislaus County Standards, the following sized basins and French drains would accommodate the design storm:

- 1,940 feet by 150 feet by seven feet deep.
- 340 feet by 340 feet by ten feet deep.
- 575 feet by 575 feet by five feet deep.
- 16,500 linear feet of 96-inch French drainpipe twenty feet deep.

California Governor issued Executive Order EO-N-7-22 in response to the drought which ceased permitting new water wells with some caveats. Specifically, if the location of a new well is in a basin subject to the SGMA and classified as medium- or high-priority, then the Groundwater Sustainability Agency (GSA) for that basin must determine that the new water well is not inconsistent with any sustainable groundwater management program. The proposed Project would connect to City water supplies; construction of a well is not proposed.

The overall design of the drainage infrastructure, including proposed detention basins, would be required to comply with the City of Modesto's Stormwater Management Program and associated NPDES MS4 Permit requirements. These standards are designed to control the discharge of pollutants into the City's municipal storm drain system to the MEP, in compliance with the Phase II Small MS4 General Permit issued by the SWRCB.

In alignment with the City of Modesto General Plan Policy FWQ-16, new development must incorporate LID techniques to minimize the amount of impervious surface to maximize on-site infiltration of stormwater runoff and minimize the potential for storm water runoff from the site. LID is a sustainable stormwater management strategy that integrates conservation of natural site features with engineered systems such as small-scale bioretention and infiltration features.

The Project would be required to incorporate LID measures throughout the site to provide effective stormwater treatment. These measures would include both volume-based BMPs (e.g., bioretention areas, pervious pavement, infiltration basins) and flow-based BMPs (e.g., vegetated swales, stormwater planters). The choice and design of BMPs would depend on site-specific conditions.

Pursuant to City of Modesto's Stormwater Quality Design Manual and State Water Board requirements, the Project qualifies as a Priority Development Project, as it would disturb more than one acre and/or create over 5,000 square feet of impervious surface. As such, the Project would be required to prepare a Project Stormwater Quality Control Plan (SWQCP) that identifies and provides design specifications for applicable post-construction BMPs. The Project SWQCP must be submitted for review and approval by the City of Modesto City Engineer, as required by Mitigation Measure 3.9-2. Implementation of Mitigation Measure 3.9-2 would require Best Management Practices to minimize discharge of sediment and all other pollutants, which would ensure that operation of the proposed Project would have a ***less than significant*** impact on water quality.

Implementation of proposed Project would not violate any water quality or waste discharge requirements. Construction activities could temporarily increase soil erosion rates during and shortly after Project construction. Construction-related erosion could result in the loss of soil and could adversely affect water quality in nearby surface waters. The RWQCB requires a project-specific SWPPP to be prepared for each project that disturbs an area one acre or larger. The SWPPP is required to include project-specific BMPs designed to control drainage and erosion. Mitigation Measure 3.9-1 would require the preparation of a SWPPP to ensure that the proposed Project prepares and implements a SWPPP throughout the construction phase of the proposed Project. The SWPPP (Mitigation Measure 3.9-1) and the project-specific drainage plan would reduce the potential for the proposed Project to violate water quality standards during construction. Implementation of Mitigation Measure 3.9-1 would ensure that the proposed Project would have a ***less than significant*** impact on operation-related water quality. Therefore, with implementation of the following mitigation measures, project construction and operation would not result in the violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality, and impacts would be ***less than significant*** with the incorporation of mitigation.

MITIGATION MEASURE(S)

Mitigation Measure 3.9-1: *The Project shall prepare a SWPPP designed to reduce potential impacts to surface water quality through the construction period of all the Project components (whether the portion of the Project disturbs more than one acre). The SWPPP shall emphasize measures designed to minimize erosion and off-site sedimentation.*

Industrial uses on the Project shall obtain coverage under the Central Valley RWQCB Industrial General Permit program and implement pollution control measures using the best available technology economically achievable and best conventional pollutant control technology. All facility operators shall prepare, retain on site, and implement a SWPPP implementing applicable Industrial General Permit requirements, including a monitoring program. The SWPPP shall be submitted to the Central Valley RWQCB for review and approval.

Mitigation Measure 3.9-2: *Prior to the issuance of grading permits, the applicant and/or future Project proponent must submit a site-specific Project Stormwater Quality Control Plan to the City of Modesto City Engineer for review and approval. The project must comply with the Modesto Municipal Code Section 5-10.204, which requires construction activities to be designed and conducted to minimize discharge of sediment and all other pollutants and Section 5-10.205, which contains standards for implementation of Best Management Practices. The site-specific Project Stormwater Quality Control Plan must specify BMPs the Project will use and design specifications for selected BMPs to ensure the Project's consistency with State and local water quality regulations.*

Impact 3.9-2: The proposed Project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin (Less than Significant)

The Project site is located within an area underlain by the Modesto Subbasin of the San Joaquin Valley Groundwater Basin, as designated by DWR. As stated above, the Modesto Subbasin is divided into three principal aquifers - the unconfined upper Western Principal Aquifer, the confined lower Western Principal Aquifer, and the unconfined to semiconfined Eastern Principal Aquifer located east of the Corcoran Clay aquitard. The City of Modesto overlies the central/western region of the Eastern Principal Aquifer. Water levels in the Eastern Principal Aquifer have declined since about 2000, with significant declines during the recent drought. However, the historical declining trends and the magnitude of decline during the recent drought are most pronounced in the eastern region of the Eastern Principal Aquifer, east of the City of Modesto.

Over the historical study period, agricultural production has expanded in the eastern Subbasin where groundwater is the primary source of water supply. Over-pumping in this area has led to water level declines expanding into other areas, which exacerbated conditions during the 2014-2016 drought, causing impacts to both public and domestic water supply wells.

The GSP identifies that declining water levels in the Modesto Subbasin are occurring primarily in the eastern Subbasin – not the central Subbasin where the City is located. The Modesto Subbasin experienced a decline of groundwater in storage of 43,000 AFY during historical conditions, based on an inflow of 440,000 AFY and an outflow of 483,000 AFY. The historical water budget estimates groundwater production of 311,000 AFY; by subtracting the groundwater deficit from the groundwater production, a simplified sustainable yield of 268,000 AFY can be estimated for the historical study period.

The average annual depletion of groundwater for the current and projected conditions is 125,000 AFY and 11,000 AFY, respectively. The average decline of groundwater in storage of 11,000 AFY during projected conditions is significantly less than historical storage depletion of 43,000 AFY. However, this decline occurs at the expense of increased seepage of 86,000 AFY, primarily from declining water levels in the Stanislaus and Tuolumne Rivers. This future increase in streamflow depletion as predicted by the model is considered significant and unreasonable, a term defined under the SGMA to describe groundwater conditions that cause substantial adverse impacts to beneficial uses, such as chronic lowering of groundwater levels, land subsidence, or degradation of water quality.

Although the Modesto Subbasin is not at risk of depleting a significant percentage of its total volume of groundwater supply, the ongoing depletion due to pumping larger volumes from the groundwater basin than can be replenished (overdraft conditions) requires mitigation to meet the Subbasin sustainability goal. The chronic lowering of groundwater levels in the Modesto Subbasin is caused primarily by overdraft conditions, illustrating the close relationship between these two indicators.

The sustainable yield is 267,000 AFY for the Modesto Subbasin, based on the current and latest data and information for the subbasin as of 2022. It is expected that the sustainable yield estimate would be updated for the next GSP update in 2027, as additional data and information become available on the operation of the Subbasin, implementation of projects and management actions, groundwater levels, storage, and quality, and as updates to the tools and technology, such as updates to the integrated numerical model are implemented. Currently, the project site consists primarily of undeveloped land which allows for natural percolation of stormwater into the Modesto Subbasin. Following development, impervious surfaces (e.g., warehouse, distribution, and manufacturing space, roadways, and parking areas) are projected to increase significantly, reducing on-site infiltration under existing conditions. To help mitigate this reduction, the Project includes above ground storm water retention basins and a below ground french drain system designed to capture and detain runoff. These improvements will be designed to allow infiltration into the underlying groundwater basin to support percolation and groundwater recharge. In locations where infiltration is not viable due to soil conditions or groundwater depth, detained stormwater will be routed to the City's storm drain system in accordance with City standards.

The Project site is currently used for agriculture. According to the US Department of Agriculture, farms in the US used approximately 1.5 AFY per acre in 2023, on average.[1] Using this rate, the agricultural uses on the 145-acre site currently use approximately 217.5 AFY.

The City of Modesto has prepared an Urban Water Management Plan (UWMP 2020) that predicts the water supply available to the City of Modesto in normal, single-dry, and multiple-dry years out to 2045. Using the Scannell Industrial Project Water Supply Assessment water demand rates, the total projected water demand for the Proposed Project is 377 acre-feet/year (AFY). All the water demands from the Proposed Project are anticipated to be served by the City's potable water distribution system. No recycled water demand is anticipated for the Proposed Project. The total projected water supplies determined to be available for the Proposed Project during normal, single

[1] USDA. 2022 Census of Agriculture Highlights, Irrigation and Water Management. October 2024.

dry, and multiple dry years during a 20-year projection will meet the projected water demand associated with the Proposed Project, in addition to existing and planned future uses. As such, implementation of the proposed Project would not deplete groundwater supplies or interfere with groundwater recharge such that the Project may impede sustainable groundwater management of the basin and would have a ***less than significant*** impact relative to this topic.

Impact 3.9-3: The proposed Project would not alter the existing drainage pattern of the site or area, including the alteration of the course of a river or through the addition of impervious surfaces, in a manner which would result in substantial erosion, siltation, surface runoff, flooding, or polluted runoff (Less than Significant)

The Project site is in unincorporated Stanislaus County along the northwestern city limits of Modesto. The Project site is approximately 1.5 miles south of the Stanislaus River and 7.5 miles north of Dry Creek (a major tributary to the Tuolumne River). MID operates several irrigation canal laterals that flow east to west in the vicinity of the Project area. Lateral No. 6 canal is located less than one mile to the north, and Lateral No. 3 canal is located approximately 1.5 miles to the south of the Project site. These laterals, open concrete-lined canals, completed in the early 1900s, are constructed conveyance structures that divert water from the Tuolumne River (and a series of reservoirs). The primary function of these laterals is to distribute water to irrigated farmlands. To a limited extent, these laterals receive irrigation return flows and receive urban stormwater runoff.

MID is increasingly scrutinizing the quantity and quality of urban stormwater runoff associated with new development, which is being discharged into the laterals. Quantity is an issue because the laterals were designed to distribute irrigation water, decreasing in size downstream, because irrigation water is used along the flow path and acreage served downstream diminishes. Stormwater conveyances typically increase downstream as more water is collected. If too much stormwater is discharged to the laterals, they could flood downstream or overtop the capacity of certain reaches throughout the system.

Project construction would include excavation and the overall disturbance of the existing landscape. Bare soil could be exposed, which could temporarily alter drainage patterns and potentially cause erosion and sedimentation. Adherence with statewide NPDES CGP and MS4 Permit construction requirements would ensure erosion or siltation would not occur onsite through implementation of erosion and sediment control BMPs during construction of the proposed Project. These requirements (see Mitigation Measure 3.9-1) would include the implementation of minimum BMPs, typical Source Control BMPs, and typical Treatment Control BMPs for erosion, sediment, non-storm water management, and waste management. Adherence to the MS4 Permit and CGP conditions would ensure that potential water quality degradation associated with the construction of future development projects within the Project area would be minimized. With implementation of erosion and sediment control BMPs, as would be required by the appropriate permitting authorities, including compliance with goals, policies, and implementation measures to reduce water quality impacts, construction-related impacts related to alteration of an existing drainage pattern that could

result in substantial erosion or siltation on- or off-site from future development projects occurring under the proposed Project would be less than significant.

Additionally, planned urbanization of the Project site would result in changes to land use, natural vegetation, and infiltration characteristics and would introduce new sources of water pollutants, producing "urban runoff." Pollutants contained within urban runoff may include, but are not limited to sediment, oxygen-demanding substances (e.g., organic matter), nutrients (primarily nitrogen and phosphorus), heavy metals, bacteria, oil and grease, and toxic chemicals that can degrade receiving waters. Urban runoff pollutants may stem from erosion of disturbed areas, deposition of atmospheric particles derived from automobile or industrial sources, corrosion or decay of building materials, rainfall contact with toxic substances, decomposing plant materials, animal excrement, and spills of toxic materials on surfaces which receive rainfall and generate runoff. New industrial development can generate urban runoff from parking areas, as well as any areas of hazardous materials storage exposed to rainfall.

The Project site is not located within a FEMA-designated 100-year flood hazard zone; however, the Project site is within a broad, flat area that is subject to sheet flow-type shallow flooding. Flooding can occur because of catastrophic dam failure and the release of waters contained in upstream reservoirs. Although highly improbable, catastrophic structural dam failure can be caused by earthquake or overflow.

To ensure that stormwater runoff from the Project site does not adversely increase pollutant levels in adjacent surface waters and stormwater conveyance infrastructure, or otherwise degrade water quality, Mitigation Measure 3.9-1 requires the preparation of a SWPPP, and structural BMPs. The SWPPP would require the application of BMPs to effectively reduce pollutants from stormwater leaving the site, which would ensure that stormwater runoff does not adversely increase pollutant levels and would reduce the potential for disturbed soils and ground surfaces to result in erosion and sediment discharge into adjacent surface waters during construction and operation of the Project. Implementation of Mitigation Measure 3.9-2 would require BMPs to minimize discharge of sediment and all other pollutants, which would minimize discharge of sediment and all other pollutants. The proposed Project would conform to existing flood hazard control regulations within the Modesto General Plan, as well as the recommendations and priorities established in the Integrated Regional Groundwater Management Plan for the Modesto Subbasin and the City of Modesto Water Shortage Contingency Plan. These plans guide hydrologic planning decisions for the region. Therefore, consistency with the General Plan and implementation of Mitigation Measures 3.9-1 and 3.9-2 reduce risk of potential flooding on the Project site.

Overall, compliance with federal, State, and local standards and regulations, as well as implementation of Mitigation Measures 3.9-1 and 3.9-2, would ensure that that the proposed Project would not result in substantial erosion, siltation, surface runoff, flooding, or polluted runoff and that the impact would be ***less than significant***.

Impact 3.9-4: The proposed Project would not have the potential to, in a flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation (Less than Significant)

FLOOD HAZARD ZONES

The Project site is located outside the 100-year flood zone and is categorized as having a low flood risk. The proposed Project would not expose people or structures to a significant risk of loss, injury or death involving flooding because of the failure of a levee or dam given the distance between the Project site and existing dams and other flood control infrastructure. Therefore, implementation of the proposed Project would not result in a flood hazard or result in the release of pollutants due to on- or off-site flooding. Additionally, as noted in Impact 3.9-1, the Project will be required to prepare a SWPPP (Mitigation Measure 3.9-1), a Project Stormwater Quality Control Plan (Mitigation Measure 3.9-2), and implement LID approaches that conserve natural areas and reduce impervious areas to ensure stormwater runoff from the Project site does not adversely increase pollutant levels. Consequently, with implementation of Mitigation Measure 3.9-1 this impact is considered ***less than significant*.**

DAM INUNDATION

The Project site is subject to flood inundation because of dam failure. The entire project site, as well as the City of Modesto in its entirety, is susceptible to dam inundation because of failure of the Don Pedro dam. Dam failure is a result of structural instability caused by improper design or construction, instability resulting from seismic shaking, or overtopping and erosion of the dam. Larger dams that are higher than twenty-five feet or with storage capacities over fifty acre-feet of water are regulated by the California Dam Safety Act, which is implemented by the California Department of Water Resources, DSD. The DSD is responsible for inspecting and monitoring these dams. The Act also requires that dam owners submit to the California Office of Emergency Services inundation maps for dams that would cause significant loss of life or personal injury because of dam failure. The County Office of Emergency Services is responsible for developing and implementing a Dam Failure Plan that designates evacuation plans, the direction of floodwaters, and provides emergency information. As such, impacts relative to this topic would be ***less than significant.***

TSUNAMIS AND SEICHES

Given the Project site's location in California's Central Valley, tsunamis originating in the Pacific Ocean (approximately eighty miles west) would dissipate in the San Francisco Bay (approximately sixty miles west); therefore, there would be no tsunami hazard to the Project site. The probability of a seiche (a standing wave that oscillates in a closed or semi-enclosed body of water, caused by wind, atmospheric pressure changes, or seismic activity) occurring in the Stanislaus River or in one of the many upstream reservoirs, resulting in inundation of the Project site, is considered negligible. Given the geologic context of the Project area, if such an event were to occur, the likelihood of it exposing Project facilities or people to a significant risk of injury or death is considered low. Given that the Project site is approximately 1.5 miles south of the Stanislaus River and is not located

adjacent to an existing reservoir lake, or other large standing water body, impacts relative to this topic would be ***less than significant.***

Impact 3.9-5: The proposed Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan (Less than Significant)

The Project is located within the Modesto Subbasin, which is managed under the Modesto Subbasin GSP, adopted in accordance with the SGMA. The GSP is administered by the STRGBA GSA, of which the City of Modesto is a participating member.

According to the GSP, the Modesto Subbasin is currently in a state of mild overdraft and requires coordinated implementation of supply augmentation and demand reduction strategies to achieve groundwater sustainability by 2042 (STRGBA, 2022). The GSP includes projects and management actions, such as recharge enhancement, conservation, and monitoring programs, which are intended to maintain groundwater levels, protect water quality, and avoid significant adverse impacts, such as land subsidence or interconnected surface water depletion.

The Project would not interfere with the implementation of the Modesto Subbasin GSP, as it is required to comply with stormwater and water efficiency regulations that minimize impacts on groundwater recharge and quality. Therefore, the potential for the Project to conflict with or obstruct implementation of an adopted GSP would be ***less than significant***.

To ensure that stormwater runoff from the Project site does not adversely increase pollutant levels in adjacent surface waters and stormwater conveyance infrastructure, or otherwise degrade water quality, Mitigation Measure 3.9-1 requires the preparation of a SWPPP, and structural BMPs. The SWPPP would require the application of BMPs to effectively reduce pollutants from stormwater leaving the site, which would ensure that stormwater runoff does not adversely increase pollutant levels, and would reduce the potential for disturbed soils and ground surfaces to result in erosion and sediment discharge into adjacent surface waters during construction and operation of the Project. Additionally, as described under Impact 3.9-1, the Project will be required to submit a Project Stormwater Quality Control Plan that demonstrates the Project incorporates site design measures, landscape features, and treatment facilities that will minimize imperviousness, retain or detain stormwater, slow runoff rates, and reduce pollutants in post-development runoff. The Project would also be subject to the applicable water quality regulations, including, but not limited to, Modesto Municipal Title 5 Chapter 10, Stormwater Management and Discharge Control, which established limitation and regulations for discharges into the City's stormwater system, and Article 2, Discharge Regulations and Requirements, which establishes requirements that control the discharges of pollutants.

CONCLUSION

Overall, implementation of the proposed Project would be subject to all existing federal, State, and local regulations related to storm drainage and water quality including the discharge permits and MS4 standards; therefore, it would not change the previous impact determinations. Implementation

of Mitigation Measure 3.9-1, the applicable General Plan goals and policies, and the City's Municipal Code, this impact would be considered ***less than significant***.

CUMULATIVE IMPACTS

Related projects in the City and surrounding areas may have the potential to interact with the proposed Project to the extent that a significant cumulative effect relative to hydrology and water quality may occur. The geographic setting for hydrology and water quality is typically localized and considers development within the City and SOI, as well as development within the vicinity of the Project site.

Impact 3.9-6: Implementation of the proposed Project, in combination with other cumulative development, would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. (Less than Significant)

Cumulative development would increase the amount of impervious surfaces in the city limits, which could affect stormwater runoff water quality. Individual projects would be required to provide stormwater collection and discharge facilities such that water quality is not adversely affected. Future facilities and projects would be subject to the State Water Resources Control Board Requirements (SWRCB), City of Modesto regulations; Phase II, National Pollutant Discharge Elimination System (NPDES) Permit Requirements; NPDES-MS4 Permit Requirements; and LID Guidelines.

Stormwater quality standards imposed and monitored by the Environmental Protection Agency (EPA) and the SWRCB through the NPDES permit require treatment of stormwater runoff prior to its release into drainage features. Therefore, the cumulative impact to stormwater systems would be ***less than significant***.

Impact 3.9-7: Implementation of the proposed Project, in combination with other cumulative development, would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin. (Less than Significant)

According to the GSP, the Modesto Subbasin is currently in a state of mild overdraft and requires coordinated implementation of supply augmentation and demand reduction strategies to achieve groundwater sustainability by 2042 (STRGBA, 2022). The GSP includes projects and management actions, such as recharge enhancement, conservation, and monitoring programs, which are intended to maintain groundwater levels, protect water quality, and avoid significant adverse impacts, such as land subsidence or interconnected surface water depletion.

As the city continues to grow, adequate permeable surfaces will need to be incorporated into projects' landscape plans. The City regulates open space requirements, landscaping, and retention

and detention basins to provide adequate groundwater recharge opportunities. Therefore, the cumulative impact on groundwater would be ***less than significant***.

Impact 3.9-8: Implementation of the proposed Project, in combination with other cumulative development, would not 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 flooding on- or offsite; 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 impede or redirect flood flows. (Less than Significant)

Cumulative development would increase the amount of impervious surfaces in the city limits, which could increase peak stormwater runoff rates and volumes. Individual projects would be required to provide stormwater collection and discharge facilities such that downstream peak flows do not exceed existing conditions. Future facilities and projects would be subject to the State Water Resources Control Board Requirements (SWRCB), City of Modesto regulations; Phase II, National Pollutant Discharge Elimination System (NPDES) Permit Requirements; NPDES-MS4 Permit Requirements; and LID Guidelines.

Stormwater quality standards imposed and monitored by the Environmental Protection Agency (EPA) and the SWRCB through the NPDES permit require treatment of stormwater runoff prior to its release into drainage features. Therefore, the cumulative impact to stormwater systems would be ***less than significant***.

Impact 3.9-9: Implementation of the proposed Project, in combination with other cumulative development, would not risk release of pollutants due to project inundation in flood hazard, tsunami, or seiche zones. (Less than Significant)

The Project site is not located within a FEMA-designated flood hazard zone. The Project site's inland location does not make it prone to effects from tsunamis or seiches. Therefore, cumulative development would not risk release of pollutants due to project inundation in flood hazard, tsunami, or seiche zones, and the cumulative impact would be ***less than significant***.

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This section describes the existing land uses on the Project site and in the surrounding area, describes the applicable land use regulations, and evaluates the environmental effects of implementation of the proposed Project related to land use and population. Information in this section is based on information provided in the Project materials and the following reference documents:

- Stanislaus County General Plan (adopted August 23, 2016);
- Salida Community Plan (Appendix I-A8 of the Stanislaus County General Plan);
- County of Stanislaus Salida Area Planning, Road Improvement, Economic Development, and Farmland Protection Initiative (2007);
- Notice of Preparation of a Program Environmental Impact Report for the Salida Community Plan Amendment Area (Stanislaus County project no. PLN2024-0083);
- Stanislaus County Municipal Code (2024);
- City of Modesto Urban Area General Plan (adopted March 5, 2019);
- City of Modesto Municipal Code (2025); and
- Stanislaus Local Agency Formation Commission (LAFCO) Policies and Procedures (adopted July 24, 2024).

During the public review period for the Notice of Preparation (NOP), comments were received regarding land use and zoning restrictions; compliance with relevant land use planning documents including the voter-approved Salida Area Planning, Road Improvement, Economic Development, and Farmland Protection Initiative (the "Salida Initiative"); land use compatibility; potential land use effects from cumulative development; expansion of the City of Modesto's Sphere of Influence (SOI); number of jobs that could be created by the proposed Project; population growth of the City of Modesto; and potential Projects effects on the area's jobs/housing balance. These issues are addressed in this section. All NOP comments can be found in Appendix B, NOP Comments.

3.10.1 ENVIRONMENTAL SETTING

EXISTING PHYSICAL ENVIRONMENT

The City of Modesto is located in Stanislaus County in the central San Joaquin Valley, approximately 95 miles east of San Francisco and 80 miles south of Sacramento. The Tuolumne River runs along the southern edge of the city, and the Stanislaus River runs roughly parallel to the northern boundary of the City's urban area. Modesto is intersected by State Route (SR) 99 along the north-south axis and Highway 132 along the east-west axis. In a larger context, the county is bounded by San Joaquin County to the north, Calaveras, Tuolumne, and Mariposa Counties to the east, Merced County to the south, and Santa Clara and Alameda Counties to the west.

Modesto is bordered by the natural greenbelts of the Stanislaus and Tuolumne Rivers. In the long-term future, the San Joaquin River flood plain and anticipated wetlands preserves will separate urban expansions of the SR 99 corridor from those of the I-5 corridor.

Project Site

The proposed Project site consists of 145 acres located immediately north of the Modesto city limits, at the northwest corner of Kiernan Avenue and Dale Road intersection, within the unincorporated Community of Salida. The Project site is bound by Kiernan Avenue to the south, Dale Road to the east, Pirrone Road to the north, and agricultural land to the west. Figures 2.0-1 and 2.0-2 found in Chapter 2.0, Project Description, illustrate the regional location and Project vicinity, while Figure 2.0-3 shows the Project site.

The Project site consists of active agricultural fields, and is currently planted with almond trees and rotating ground crops.

Surrounding Land Uses

The Project site and surrounding properties are generally in agricultural use. The Project site is primarily bounded by lands within the unincorporated County to the north, east and west. Lands within the City of Modesto are located to the south. Uses within the surrounding area include the following:

- North – Agricultural lands, Joseph A. Gregori High School.
- East – Agricultural lands, industrial developments, along Kiernan Avenue.
- South – Kaiser Permanente Modesto Medical Center and similar business park uses, within the City of Modesto.
- West – Agricultural lands, industrial developments.

There are three single-family residential uses on Dale Road across from the Project site, and one single family residence to the north of the Project site across Pirrone Road.

EXISTING GENERAL PLAN LAND USE DESIGNATIONS

Stanislaus County

The Stanislaus County General Plan Land Use Map designates the Project site as Salida Community Plan Business Park (SCP-IBP) and Salida Community Plan, Planned Industrial (SCP-PI). Each Stanislaus County land use designation is described in further detail below.

- **Salida Community Plan Business Park (SCP-IBP):** The Business Park designation is intended to accommodate development of a full range of uses, including modern, employment-intensive uses. Principal development and employment generating uses allowed within this designation include research, product development, professional office, commercial, and business services.

- **Salida Community Plan Planned Industrial (SCP-PI):** The Planned Industrial designation is intended to help alleviate the existing jobs-housing imbalance in the County by promoting development of employment-generating industrial/business park uses in the area roughly bound by Ladd Road, Dale Road, Pelandale Expressway, and Sisk Road.

Figures 2.0-5a and 2.0-5b depict the Stanislaus County and City of Modesto Urban Area General Plan land use designations for the Project site and the surrounding areas.

City of Modesto

The Modesto Urban Area General Plan Land Use Map designates the Project site as the Salida Community Plan (SCP) Area. The Modesto Urban Area General Plan notes that if the Salida Comprehensive planning district (or any portion thereof) is annexed to the City of Modesto, that the City does not propose to change any land use designations from those adopted by Stanislaus County.

EXISTING ZONING DESIGNATIONS

City of Modesto

The Project site is located outside the Modesto city limits and the City of Modesto has not zoned the Project site.

Stanislaus County

The Stanislaus County Zoning Ordinance (Chapter 21.66 of the County Code) designates the Project site for Salida Community Plan (SCP) zoning District. The SCP District is intended to implement the General Plan's stated vision for the development of the Salida Community Plan Amendment Area. There are nine sub-zoning districts for the SCP District, of which the Project site is Salida Community Plan, Industrial/ Business Park (SCP-IBP) and Salida Community Plan, Planned Industrial (SCP-PI). Figures 2.0-6a and 2.0-6b depict the Stanislaus County and City of Modesto zoning districts, respectively, for the Project site and the surrounding areas.

SURROUNDING GENERAL PLAN DESIGNATIONS

Within Stanislaus County, lands to the north and west of the Project site are designated Salida Community Plan Business Park (SCP-IBP) and Salida Community Plan Planned Industrial (SCP-PI); lands to the east are designated Agriculture (AG); and lands to the south are designated Salida Community Plan Business Park (SCP-IBP). As mentioned, the City of Modesto designates the lands to the north and west of the Project site as Salida Community Plan Area.

DEMOGRAPHICS

Population Trends

Table 3.10-1 summarizes the population growth for the City of Modesto from the years 2000-2025, utilizing information provided by the California Department of Finance (DOF). As shown, the City of Modesto has grown from a population of 188,861 in the year 1990 to a population of 219,765 in the year 2025. Growth from 2000-2005 was above normal (6.95%). Since 2005, the City has seen a much smaller rate of population growth, and even some population loss, but has remained relatively consistent, with the largest increases occurring in the years 2015 (4.45%) and 2020 (4.17%).

TABLE 3.10-1: POPULATION GROWTH – MODESTO

YEAR	POPULATION	CHANGE	PERCENT CHANGE
2000	188,861	-	-
2005	201,980	13,119	6.95%
2010	201,165	-815	-0.40%
2015	210,124	8,959	4.45%
2020	218,880	8,756	4.17%
2021	218,745	-135	-0.06%
2022	217,860	-885	-0.40%
2023	217,833	-27	-0.01%
2024	219,705	1,872	0.86%
2025	219,765	60	0.03%

SOURCES: CALIFORNIA DEPARTMENT OF FINANCE E-4 ESTIMATES (2001-2010), (2011-2020), (2021-2025), (2025).

Housing

Table 3.10.2 summarizes the housing unit growth for the City of Modesto from the years 2000-2025, utilizing information provided by the California Department of Finance (DOF). As shown, the City of Modesto has grown from a housing stock of 67,180 in the year 2000 to 78,229 in the year 2025. Growth from 2000-2010 was somewhat robust (5.85% on average) compared to the substantial slowdown from 2010-2020 (0.95%). Post-2020, the City has seen a dip in population growth, while the increase in housing stock has been minimal (0.46% on average).

TABLE 3.10-2: HOUSING UNIT GROWTH - MODESTO

YEAR	HOUSING UNITS	CHANGE	PERCENT CHANGE
2000	67,180	-	-
2005	72,701	5,521	8.22%
2010	75,044	2,343	3.22%
2015	75,532	488	0.65%
2020	76,476	944	1.25%
2021	76,653	177	0.23%
2022	77,048	395	0.52%
2023	77,702	654	0.85%
2024	78,079	377	0.49%
2025	78,229	150	0.19%

SOURCE: CALIFORNIA DEPARTMENT OF FINANCE E-8 ESTIMATES (1990-2000), (2000-2010), (2010-2020), E-5 ESTIMATE (2025).

Persons Per Dwelling Unit

According to the most recent Department of Finance data (2025), the average number of persons residing in a dwelling unit in the City of Modesto is 2.87.[1]

EMPLOYMENT

Modesto has a diverse economy rooted in agriculture and supported by key sectors such as food manufacturing, healthcare, education, government, retail, and logistics. The city benefits from its proximity to some of the richest farmland in the country, making agriculture and agri-business central to its economic identity. One of the city's most prominent employers is E. & J. Gallo Winery, the largest family-owned winery in the world, which plays a significant role in both local employment and Modesto's national reputation. Other major agricultural and food-related companies with a strong presence in the area include Blue Diamond Growers, Del Monte Foods, and Foster Farms.

Closely tied to agriculture is the food and beverage manufacturing sector, which includes a network of processing plants, cold storage facilities, and distribution hubs that handle regional and national supply chains. These facilities employ thousands of residents in roles ranging from production and maintenance to logistics and quality assurance.

Healthcare is another major industry in Modesto, expanding steadily to meet the needs of the city's growing population. Major healthcare providers include Doctors Medical Center of Modesto, Memorial Medical Center (part of the Sutter Health system), Kaiser Permanente, and the Stanislaus County Health Services Agency.

Education, government, retail, and service-based industries contribute significantly to the local economy. Modesto's strategic location along California State Route 99, with access to regional rail and freight lines, makes it a natural hub for transportation and logistics. Companies such as FedEx and UPS, along with food distributors and third-party logistics firms, operate large facilities in and around the city. The city also supports a modest but vital manufacturing and industrial sector, which includes the production of metal products, plastics, and specialized equipment. Table 3.10-3 shows the number of residents employed in the City and County.

Modesto has historically had a jobs/housing imbalance, where the number of housing units exceeds the number of local jobs, especially high-paying ones. Many residents commute to jobs outside the city, particularly in the Bay Area or Sacramento, in search of better employment opportunities. To improve the jobs/housing balance, the City of Modesto and Stanislaus County have made efforts to attract more employers and support local job creation through:

- business attraction and retention initiatives focused on manufacturing, logistics, food processing, and health services;

[1] California Department of Finance, 2025. *E-5 Estimates for Cities, Counties, and the State*. May 2025.

- downtown revitalization efforts to attract retail, tech startups, and office users;
- support for workforce development programs and partnerships with local institutions like Modesto Junior College; and
- industrial park expansions and infrastructure investments to accommodate future employment growth.

TABLE 3.10-3: EMPLOYMENT – MODESTO AND STANISLAUS COUNTY

	2005	*2010*	*2015*	*2020*	*2025*
CITY OF MODESTO[1]					
Labor Force	-	-	239,972	244,122	257,937
Employed Residents	-	-	213,201	227,716	238,883
Unemployed Residents	-	-	26,771	16,406	19,054
Unemployment Rate	-	-	11.2%	6.7%	7.4%
Jobs[2]	80,725	69,821	78,120	77,508	82,960[A]
Jobs to Housing Ratio	1.11	0.93	1.03	1.01	1.08
Jobs to Employed Ratio	-	-	0.37	0.34	0.35
STANISLAUS COUNTY[3]					
Labor Force	228,000	243,700	241,100	244,300	253,600[B]
Employed Residents	208,900	202,100	218,100	217,900	236,200[B]
Unemployed Residents	19,100	41,600	23,000	26,400	17,500[A]
Unemployment Rate	8.4%	17.1%	9.5%	10.8%	6.9%[A]
Jobs[2]	167,550	160,378	178,364	184,916	197,555[A]
Jobs to Housing Ratio	1.00	0.89	0.99	1.01	1.08
Jobs to Employed Ratio	0.80	0.79	0.82	0.85	0.84

NOTES:
A. DATA IS FROM 2022, THE MOST RECENT AVAILABLE.
B. DATA IS FROM 2024, THE MOST RECENT AVAILABLE.
SOURCES:
1. US BUREAU OF LABOR STATISTICS, 2025. DATA, TABLES & CALCULATORS BY SUBJECT, MODESTO, CA METROPOLITAN STATISTICAL AREA, SERIES ID LAUMT063370000000005. AVAILABLE: WWW.DATA.BLS.GOV. ACCESSED: JUNE 23, 2025.
2. UNITED STATES CENSUS BUREAU: ONTHEMAP, 2025. AVAILABLE: HTTPS://ONTHEMAP.CES.CENSUS.GOV/. ACCESSED: JUNE 24, 2025.
3. CALIFORNIA EMPLOYMENT DEVELOPMENT DEPARTMENT, 2025. EMPLOYMENT BY INDUSTRY DATA, STANISLAUS COUNTY (MODESTO MSA). AVAILABLE: HTTPS://LABORMARKETINFO.EDD.CA.GOV/DATA/EMPLOYMENT-BY-INDUSTRY.HTML. ACCESSED: JUNE 23, 2025.

Two types of employment data are described below: total jobs within the community, and employed residents. The data for employment figures was provided by multiple sources including the United States Bureau of Labor Statistics and the California Employment Development Department (EDD). The number of employed residents for both the City of Modesto and Stanislaus County includes all reported persons over the age of 16 who are employed.

Table 3.10-3 shows employment growth in the City and County since 2005, as well as a jobs-to-housing ratio and jobs-to-employed residents' ratio. The jobs-to-housing ratio is used to evaluate whether a community has an adequate number of jobs available to provide employment for

residents seeking employment. The jobs-to-housing ratio can be useful in understanding interconnections among housing affordability, traffic flows, congestion, and air quality within a city and larger region. The jobs-to-housing ratio is best analyzed at the sub-regional or regional level due to the tendency of people to commute to jobs outside of their community. A jobs-to-housing ratio of 1.5 considers residents who do not participate in the labor force (e.g., those who are retired, disabled, or students) and indicates that a community has an adequate number of jobs to meet its residents' demand for employment. The jobs-to-employed residents' ratio is the relationship between the number of jobs provided to the number of employed residents within a community. An ideal jobs-to-employed residents' ratio is 1.0, which implies that there is a job in the community for every employable resident. A jobs-to-employed residents' ratio greater than 1.0 indicates that the community provides more jobs than it has employable residents, while a jobs-to-employed residents' ratio of less than 1.0 indicates that a community has fewer jobs than employable residents.

As shown in Table 3.10-3, the City (as of 2022), supports 82,960 jobs and 238,883 employed residents, resulting in a jobs-to-employed residents' ratio of 0.35. This means the City has fewer jobs than employable residents, and that many residents would need to commute outside of the community for employment. The County, as of 2022 has a higher jobs-to-employed residents' ratio (0.84) than the City. The jobs-to-housing ratio suggests that there is enough housing for the existing labor force in both the City (1.08) and the County (1.08), but the types of jobs available may not be high-paying jobs or may be focused in the service industry.

3.10.2 REGULATORY SETTING

STATE

Government Code

California Government Code Section 65300 et seq. establishes the obligation of cities and counties to adopt and implement general plans. The general plan is a comprehensive, long-term, and general document that describes plans for the physical development of a jurisdiction and of any land outside its boundaries that, in the jurisdiction's judgment, bears relation to its planning. The general plan addresses a broad range of topics, including, at a minimum, land use, circulation, housing, conservation, open space, noise, and safety. In addressing these topics, the general plan identifies the goals, objectives, policies, principles, standards, and plan proposals that support the jurisdiction's vision for the area. The general plan is a long-range document that typically addresses the physical character of an area over a 20-year period. Although the general plan serves as a blueprint for future development and identifies the overall vision for the planning area, it remains general enough to allow for flexibility in the approach taken to achieve the plan's goals.

The State Planning and Zoning Law (California Government Code Section 65800 et seq.) establishes that zoning ordinances, which are laws that define allowable land uses within a specific district, are required to be consistent with the general plan and any applicable specific plans. When amendments to the general plan are made, corresponding changes in the zoning ordinance may be

required within a reasonable time to ensure the land uses designated in the general plan would also be allowable by the zoning ordinance (Government Code, Section 65860, subd. [c]).

LOCAL

Stanislaus County Local Agency Formation Commission

The Stanislaus County LAFCo administers the local government reorganization process under Cortese Knox Hertzberg. LAFCo has authority to administer the incorporation of new cities, formation of special districts, annexations to cities and special districts, and establishment of spheres of influence for all cities and special districts. The LAFCo is responsible for the orderly provision of services and the conservation of agricultural and open-space lands. It is composed of elected officials from Stanislaus County and its cities, as well as members-at-large. The LAFCo decides whether land is to be annexed to the City of Modesto and which agency (i.e., county, city, or special district) will provide services to newly annexed areas.

Stanislaus County General Plan

The County General Plan applies to the unincorporated lands surrounding Modesto, including lands within the City's sphere of influence, such as the Project site. Lands within the city limits are not governed by the County General Plan.

LAND USE ELEMENT POLICIES

Policy One: Land will be designated and zoned for agricultural, residential, commercial, industrial, or historical uses when such designations are consistent with other adopted goals and policies of the general plan.

Policy Two: Land designated Agriculture shall be restricted to uses that are compatible with agricultural practices, including natural resources management, open space, outdoor recreation and enjoyment of scenic beauty.

Policy Ten: New areas for urban development (as opposed to expansion of existing areas) shall be limited to less productive agricultural areas.

Policy Eleven: Development of residential areas shall be adjacent to existing compatible unincorporated urban development or, in the case of remote development, included as part of a specific plan.

Policy Twelve: The expansion of urban boundaries of unincorporated communities shall attempt to minimize conflict between various land uses.

Policy Thirteen: Expansion of urban boundaries of unincorporated communities should be based on infilling and elimination of existing "islands" and should not permit leapfrog development or create new "islands."

Policy Fourteen: Uses shall not be permitted to intrude into or be located adjacent to an agricultural area if they are detrimental to continued agricultural usage of the surrounding area.

Policy Seventeen: Agriculture, as the primary industry of the County, shall be promoted and protected.

Policy Twenty-Six: Development, other than agricultural uses and churches, which requires discretionary approval and is within the sphere of influence of cities or in areas of specific designation created by agreement (e.g., Sperry Avenue and East Las Palmas Corridors), shall not be approved unless first approved by the city within whose sphere of influence it lies or by the city for which areas of specific designation were agreed. Development requests within the spheres of influence or areas of specific designation of any incorporated city shall not be approved unless the development is consistent with agreements with the cities which are in effect at the time of project consideration. Such development must meet the applicable development standards of the affected city as well as any public facilities fee collection agreement in effect at the time of project consideration. (Comment: This policy refers to those development standards that are transferable, such as street improvement standards, landscaping, or setbacks. It does not always apply to standards that require connection to a sanitary sewer system, for example, as that is not always feasible.)

Policy Twenty-Eight: The County shall support a County-wide growth management strategy that is equitable to the needs of the County and all nine cities, taking into consideration land consumption and absorption rates.

Spheres of Influence Policy: Whenever an application is to be considered which includes property within the sphere of influence of a city or special district (e.g., sewer, water, community services) or areas of specific designation created by agreement between County and City, the following procedures should be followed:

1. Development, other than agricultural uses and churches, which requires discretionary approval from incorporated cities shall be referred to that city for preliminary approval. The project shall not be approved by the County unless written communication is received from the city memorializing their approval. If approved by the city, the city should specify what conditions are necessary to ensure that development will comply with city development standards. Requested conditions for such things as sewer service in an area where none is available shall not be imposed. Approval from a city does not preclude the County decision-making body from exercising discretion, and it may either approve or deny the project.

2. Agricultural uses and churches which require discretionary approval should be referred to that city for comment. The County Planning Commission and Board of Supervisors shall consider the responses of the cities in the permit process. If the County finds that a project is inconsistent with the city's general plan designation, it shall not be approved. Agricultural use and churches shall not be considered inconsistent if the only inconsistency is with a statement that a development within the urban transition area or sphere of influence shall

be discouraged (or similar sweeping statement). The city shall be asked to respond to the following questions:

A. Is the proposed project inconsistent with the land use designation on the city's general plan? If so, please include a copy of the map (or that portion which includes the subject property) and the text describing uses permitted for the general plan designation. All findings of inconsistency must include supporting documentation.

B. If the project is approved, specifically what type of conditions would be necessary to ensure the development will comply with city development standards such as street improvements, setbacks and landscaping?

In the case of a proposed project within the sphere of influence of a sanitary sewer district, domestic water district or community services district, the proposal shall be forwarded to the district board for comment regarding the ability of the district to provide services. If the district serves an unincorporated town with a Municipal Advisory Council (MAC), the proposal shall also be referred to the MAC for comment.

CONSERVATION/OPEN SPACE ELEMENT POLICIES

Policy Two: Assure compatibility between natural areas and development.

Policy Ten: Discourage the division of land which forces the premature cessation of agricultural uses.

Salida Community Plan

In 2007, the Stanislaus County Board of Supervisors approved the Salida Area Planning, Road Improvement, Economic Development, and Farmland Protection Initiative (herein referred to as the "Initiative"). Now known as the Salida Community Plan Amendment Area, the Initiative determined allowable land uses for a 3,383-acre area , including 2,029 acres of employment uses (up to 27,783 employees), 1,110 acres of residential uses (5,000 dwelling units supporting an estimated population of 15,063), regional and local parkland, open space, a wastewater treatment plant, transportation improvements, and other uses.

The Community Plan consists of the pre-2007 Existing Plan Area and the Amendment Area. The Salida Community Plan was integrated into the Land Use Element of the Stanislaus County General Plan upon the Initiative's adoption in 2007. Land use designations for the Salida Community Plan include: Low-Density Residential, Medium-Density Residential, Medium High-Density Residential, Commercial, Planned Industrial, Business Park, and Agriculture. Via the Initiative, the voters adopted the Salida Community Plan (SCP) Zoning District. The SCP Zoning District development regulations regulate land use for parcels in the Amendment Area. The SCP District encourages the use of flexible development standards designed to ensure the development of the Amendment Area as a master planned community and includes specific district standards, procedures, required findings, urban services requirements, and fee provisions. Within the Amendment Area, the community is zoned

for single and multi-family residential, neighborhood and community commercial, industrial, and agricultural uses. The SCP District requires the adoption of a discretionary non-legislative Development Plan that is Board approved and Planning Commission recommended (Stanislaus County Zoning Ordinance § 21.66.010(a).), which would outline the precise design, location of uses, and amenities in the Amendment area. Land in the Existing Plan Area is subject to standard County zoning and is zoned for a variety of uses including single and multi-family residential, planned development, and commercial uses adjacent to State Route 99, as well as limited industrial and agricultural designations. To effectively implement the Planned Industrial, Business Park, or Commercial Land Use designations in the Amendment area, land may be rezoned from commercial, Planned Industrial, or Business Park to Planned Development to allow for flexibility and diversification in the relationship of different uses, buildings, structures, lot sizes and open spaces, while ensuring compliance with, and implementation of, the Community Plan.

Stanislaus County Zoning Code

The Stanislaus County Zoning Code regulates the use and development of property within unincorporated Stanislaus County. It helps implement the County's general plan and ensures orderly growth, public safety, and compatibility among land uses. The Zoning Code establishes rules for:

- Permitted uses of land (e.g., residential, commercial, industrial);
- Development standards (e.g., building height, setbacks, lot size);
- Density and intensity of development;
- Special regulations (e.g., parking requirements, landscaping, signage); and
- Zoning districts and maps that designate where specific types of development can occur.

PLANNED INDUSTRIAL (PI)

Chapter 21.42 guides development within the Planned Industrial (PI) zone. The PI zone allows industrial uses such as mechanic shops, bus and truck terminals, contractors' yards, food processing, laboratories, public utility stations, and uses similar to those. Section 21.42.020 specifically notes, "Warehouses, including storage within a building but excluding storage of explosives" is a permitted use in the PI zone.

INDUSTRIAL BUSINESS PARK (IBP)

Chapter 21.61 guides development within the Industrial Business Park (IBP) zone. As described in Section 21.61.010, "The IBP zoning district is applied to areas appropriate for light industrial and business park land uses, including low-intensity manufacturing and assembly processes, research and development, and corporate headquarters offices. The land uses allowed and development standards required within the IBP district are intended to protect adjacent areas from impacts while allowing indoor, clean, and quiet industry. Land uses in the IBP zoning district are often organized as a business park, with tenants that may include some commercial activities. The IBP zoning district is consistent with the Planned Industrial land use designation of the Stanislaus County General Plan."

SALIDA COMMUNITY PLAN (SCP)

Chapter 21.66 guides development within the Salida Community Plan (SCP) zone. The SCP District shall be applied to all parcels within the defined Amendment Area for the Salida Community Plan pursuant to the County of Stanislaus Roadway Improvement, Economic Development and Salida Area Farmland Protection and Planning Initiative. Within the SCP, there are nine separate sub-zones, which are similar to other zones referenced in the Zoning Code.

Salida Community Plan District, Planned Industrial Zone (SCP-PI)

Salida Community Plan District, Planned Industrial Zone (SCP-PI) development-type standards. Subdivisions, new land uses and structures, and changes and alterations to existing land uses and structures designated in the Salida Community Plan as SCP-PI shall be designed, constructed, and/or established consistent with the PI District standards contained in Chapter 21.42.

Salida Community Plan District, Industrial Business Park Zone (SCP-IBP)

Salida Community Plan District, Industrial Business Park Zone (SCP-IBP) development-type standards. Subdivisions, new land uses and structures, and changes and alterations to existing land uses and structures designated in the Salida Community Plan as SCP-IBP shall be designed, constructed, and/or established consistent with the IBP District standards contained in Chapter 21.61, except upon making the findings set forth in Section 21.66.060(B), the Board of Supervisors may consider the range of permitted land uses specifically set forth in Title 21. This is intended to allow flexibility in approving uses as the market for modern business parks evolves with time.

Modesto Urban Area General Plan

State Planning and Zoning Law requires each city and county to prepare and adopt a comprehensive, long-term general plan for its jurisdiction and any adjacent related lands. The City of Modesto Urban Area General Plan was adopted in 2019. The goals, policies, and implementation actions described in the General Plan reflect the City's vision for growth, economic development, public facilities and services, mobility, and maintaining and improving Modesto's "quality of life."

The City is comprehensively updating its General Plan to guide City decisions about transportation, jobs, housing, parks, shopping, services, and more through the year 2050.

The following adopted Urban Area General Plan policies relate to land use.

BASELINE DEVELOPED AREA

LUP-1: Zoning within the incorporated City limits should be, and generally is, consistent with the General Plan Land Use Designations as presented on the Land Use Diagram. However, because these designations are broad in nature, there may be minor instances in which the existing zoning for a particular property is not consistent with the Land Use Designation for the property. These situations are still considered to be consistent with the overall goals and policies of the General Plan, and development of these properties may occur consistent with zoning. (UAGP Policy III.A.1)

LUP-2: Rezonings should also be consistent with the General Plan Land Use Designations. However, rezonings involving less than five (5) acres may occur even if they are not consistent with the Land Use Designation for the property, as long as the rezoning can be found consistent with the Land Use goals and policies of the General Plan. Rezonings of five (5) acres or more that are inconsistent with the applicable Land Use Designation(s) will require a General Plan amendment. (UAGP Policy III.A.2)

LUP-3: Facilitate infill development through active leadership and strategic provision of infrastructure and services, and supporting land uses. Provide incentives for infill development, redevelopment and growth in existing urbanized areas to enhance community character, optimize infrastructure investments, support increased transit use, promote non-motorized transportation, increase housing diversity and enhance commercial viability. Structure fee programs so that infill development is "priced" according to its relative infrastructure efficiencies and the community-wide benefits to be realized. (UAGP Policy III.B.1)

LUP-4: To maximize economic and social benefits, and resource efficiencies, prioritize and focus new development within the existing City limits. This will strengthen existing neighborhoods and maximize efficiencies of utility and infrastructure systems. New development should be accessible via all modes of transportation, both motorized and non-motorized, with an emphasis on availability of public services. (UAGP Policy III.B.2)

LUP-5: Complete neighborhoods promote livability, sustainability and safety for all residents. Neighborhoods are to contain: a mix of housing types including affordable and market-rate; a range of services and facilities such as schools, parks, retail, services & civic facilities; transit access within ½-mile of all dwelling units; and, complete streets with tree canopy cover that accommodate both motorized and non- motorized mobility. (UAGP Policy III.C.1)

LUP-6: Preserve, protect, and enhance established neighborhoods by providing sensitive transitions between and among adjoining neighborhoods, and by requiring new development – both private and public – to respect and respond to those existing physical characteristics, buildings, streetscapes, open spaces, and urban form that contribute to the overall character and livability of the neighborhood. (UAGP Policy III.C.2)

LUP-7: Corridor Studies guide infill development, and re-use / recycling of existing development, along major transportation corridors. Such development will balance vehicular circulation and access against all other travel modes – both motorized and non-motorized. Development along major transportation corridors should mix land uses effectively so that housing, retail and service needs are combined with pedestrian-friendly facilities and gathering places. (UAGP Goal III.D)

LUP-8: Development along major transportation corridors that occurs pursuant to an adopted corridor study should be compact, mixed-use, transit- / bicycle- / pedestrian-friendly, and scaled appropriately to match the context and transition to existing nearby neighborhoods. (UAGP Goal III.E)

LUP-9: Downtown Modesto is a high-priority area for both public and private investment. Therefore, the City should prioritize and focus infrastructure investments here. Downtown is planned to become a more urban, higher-density, mixed-use, pedestrian-oriented, economically vibrant, innovative center for living, working, socializing and recreating. (UAGP Goal III.F)

LUP-10: Commercial development should strengthen the vehicular, pedestrian and visual connections between shopping centers and their surrounding neighborhoods, and between neighboring retail sites, through physical improvements, public transit and coordinated land use and transportation planning. (UAGP Goal III.G)

LUP-11: Locate employment-intensive uses, such as medical and professional offices, light industry, R&D and skill training, in appropriate areas as designated by the General Plan and the zoning map. Locate Business Parks, Industrial development and other employment centers near access points to major transportation facilities so that they are accessible by all modes of transportation. (UAGP Goal III.H)

PLANNED URBANIZING AREA

The following Principal Comprehensive Planning District (CPD) Policies apply to all CPDs, regardless of whether they are located in the Baseline Developed Area or the Planned Urbanizing Area.

LUP-12: Since each Comprehensive Planning District contains a number of properties, unified direction from affected property owners should be encouraged, particularly for privately-initiated applications. In the case of disparate or unknown development intentions, the City may proactively seek consensus from affected property owners. (UAGP Policy III.I.2)

LUP-13: The Specific Plan(s) within each CPD should follow the policies and procedures as outlined in the City of Modesto's Specific Plan Procedures and Preparation Guide (Guide), which identifies all subsequent land use approvals required to be consistent with the Specific plan. The Guide should be updated in order to keep it current with regard to policies and practices. (UAGP Policy III.I.3)

LUP-14: Each Specific Plan should be accompanied by a long-range financing strategy that provides reasonable estimates of the costs of on- and off-site infrastructure to support the proposed development pattern. The strategy should generally address public facility funding for any development project that serves to implement the subject Specific Plan. If new public facilities are required that will also serve the broader community, the Specific Plan should include options for broad-based funding mechanisms. Each Specific Plan should address the need to provide water, wastewater and storm drainage infrastructure, in the context of the required Facilities Master Plan and Infrastructure Master Plan prepared at the developer's expense. (UAGP Policy III.I.4)

LUP-15: More than one Specific Plan may be processed within a given CPD, as long as the remaining area within the CPD can still comply with the General Plan policies presented in this

chapter. Conversely, a Specific Plan can be used to implement more than one CPD, when those districts are adjoining. A CPD may consist of more than one Specific Plan provided that the Specific Plans are consistent, compatible, and complement one another. This is particularly important for issues related to, but not limited to, land use plans, circulation plans and the Specific Plans' financing sections (which must be correlated to provide for adequate infrastructure throughout the CPD). If Specific Plans are adopted at different times within a CPD, the first Specific Plan should include an infrastructure plan for the entire CPD. (UAGP Policy III.I.5)

Modesto Zoning Code

The purpose of Title 10, Zoning Regulations, of the City's Municipal Code is to establish the zoning districts applied to property within the City, determine how the zoning districts are applied on the Zoning Map, and provides general permit requirements for development and new land use in accordance with the Modesto Urban Area General Plan.

The Zoning Map identifies zoning districts within the City at the parcel level. The Project site is not yet zoned under the Modesto Zoning Code. Figure 2.0-6a in Chapter 2.0 depicts the City's zoning districts near the Project site.

3.10.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed Project will have a significant impact on land use and population if it will:

- Physically divide an established community;
- 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;
- 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); or
- Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

METHODOLOGY

The analysis of population, employment, and housing considers whether the project would result in a substantial increase in population and housing within the City of Modesto and the surrounding region. The analysis of these impacts relies on data provided by the California Department of Housing and Community Development, Stanislaus County, and the City of Modesto. Determination of potential impacts on the existing housing environment in the City of Modesto was made with consideration of displacement of current residents caused by influx of new residents, potential

increases in housing values, and other factors. These determinations also assume maximum capacity, employment, and utilization of all aspects of the proposed Project.

There are no existing housing units on the Project site that would be annexed to the City of Modesto as part of the proposed Project. Construction and operation of the proposed Project would not remove any existing housing units within the Project site, and would not displace any residents. Therefore, no impact would occur related to the displacement of substantial numbers of people or existing housing, necessitating the construction of replacement housing elsewhere. This topic is not further discussed in this EIR.

IMPACTS AND MITIGATION MEASURES

Impact 3.10-1: The proposed Project would not physically divide an established community (Less Than Significant)

The Project site is located at the northern edge of the City of Modesto city limits and is adjacent primarily to undeveloped agricultural land to the east, north, and west, and to developed areas and agricultural uses to the south. Gregori High School is located at the northwest corner of the Project site. A portion of the area immediately south of the Project site is within the Modesto city limits. The community of Salida is west of the Project site, although the Project site is within the Salida Community Plan Area as well as the Modesto SOI.

The Project would extend development beyond the Modesto current city limits into an area that is primarily agricultural in nature. However, both the City of Modesto Urban Area General Plan and the Stanislaus County General Plan contemplate the development of urban land uses on the Project site . The Project would add four driveways along Kiernan Road and two driveways and a central drive aisle along Dale Road to connect the Project site to the existing circulation system and to allow access to and from the site. There would be no access to the Project site along Pirrone Road. Development of the Project site would not result in physical barriers, such as a highway, wall, or other division, that would divide an existing community, but would serve as an orderly extension of existing and planned development. The Project's impact on affecting established communities would be ***less than significant***.

Impact 3.10-2: The proposed Project would not conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project adopted to avoid or mitigate an environmental effect (Less than Significant)

The Project includes annexation to the City of Modesto. Land use plans, policies, and regulations that govern the land uses on the Project site and have jurisdiction over the Project include the City of Modesto Urban Area General Plan, Modesto Municipal Code, and the Salida Community Plan which is part of the Stanislaus County General Plan.

MODESTO URBAN AREA GENERAL PLAN

Since general plans often include numerous policies emphasizing differing legislative goals, a development project may be "consistent" with a general plan, taken as a whole, even though the project appears to be inconsistent or arguably inconsistent with some individual policies. (*Sequoyah Hills Homeowners Association v. City of Oakland* (1993) 23 Cal.App.4th 704, 719.) The Project is consistent with the key land use issues and development concepts of the Modesto Urban Area General Plan, which provide for logical growth of the City, emphasize community form, scale, and identity, encourage attractive, sustainable businesses, promote employment and economic development, and encourage a mix of land uses that balance public services and fiscal sustainability.

When annexed, the Project will be located within the City limits and will provide employment-generating uses that will promote employment and economic development. The Project is consistent with the General Plan land use policies that encourage an orderly pattern of development in the areas within the City's SOI, and encourage employment- and tax-generating businesses that support the economic diversity of the City.

The proposed Project includes an amendment to the City of Modesto Urban Area General Plan to designate the site Industrial (I), while maintaining the SCP as a land use overlay designation. Ultimately the General Plan land use designation on the Project site would be SCP-I. This designation would allow uses consistent with uses anticipated under the Salida Community Plan.

- **Salida Community Plan (SCP) Overlay.** An overlay designation for areas located within the Salida Community Plan area.
    - **Industrial (I)**. To allow industrial uses in the Modesto Urban Area consistent with the SCP. This designation provides for the full range of industrial uses, including but not limited to manufacturing, food processing, trucking, packing, and recycling, as well as those enterprises which may want to combine office and production aspects of their business in the same complex. The guiding intensity is a Floor Area Ratio of approximately 0.50.

When land uses are inconsistent with a General Plan there are two courses of action: 1) the uses are not allowed due to the inconsistency, or 2) the General Plan is changed through an amendment to the General Plan to create consistency. However, due to the Project site's location outside of the Modesto city limits but inside of the Salida Community Plan Amendment Area, a General Plan Amendment to designate the site Industrial (I), while maintaining the SCP as a land use overlay designation, is required. Ultimately the General Plan land use designation on the Project site would be SCP-I. This designation would allow uses consistent with uses anticipated under the Salida Community Plan. Approval of the General Plan amendment would ensure that the proposed Project would be substantially consistent with the Modesto Urban Area General Plan land use requirements and reflect the voter's adoption of the Initiative contemplating industrial uses on the Project site even if annexation to the City of Modesto is approved.

Additionally, the Project is consistent with all of the applicable General Plan policies that aim to avoid or mitigate an environmental effect. As shown in Table 3.10-4, the Project is consistent with all of the City's General Plan policies and does not conflict with any policy adopted to avoid or mitigate an environmental effect.

TABLE 3.10-4: CITY OF MODESTO URBAN AREA GENERAL PLAN POLICY CONSISTENCY

POLICY	*PROJECT CONSISTENCY*
MODESTO URBAN AREA GENERAL PLAN – COMMUNITY DEVELOPMENT ELEMENT	
Policy III.A.2 Rezoning. Rezonings should also be consistent with the General Plan Land Use Designations. However, rezonings involving less than five (5) acres may occur even if they are not consistent with the Land Use Designation for the property, as long as the rezoning can be found consistent with the Land Use goals and policies of the General Plan. Rezonings of five (5) acres or more that are inconsistent with the applicable Land Use Designation(s) will require a General Plan amendment.	**Consistent.** The Project would require a pre-zone for the Project site, with a new Modesto zoning designation of Heavy Industrial (M-2). The M-2 Zone is intended to provide suitable sites for a wide range of industrial, manufacturing, business park and other similar uses that are further from non-industrial and potentially incompatible uses. This pre-zoning would be consistent with the General Plan designation of Industrial (I), while retaining the SCP as a land use overlay designation on the Project site. This designation allows industrial uses in the Modesto Urban Area consistent with the SCP. This designation provides for the full range of industrial uses, including but not limited to manufacturing, food processing, trucking, packing, and recycling, as well as those enterprises which may want to combine office and production aspects of their business in the same complex.
Policy III.G.4 Commercial Development Guidelines. Apply neighborhood Compatibility Guidelines, Design Guidelines for Commercial & Industrial Development, and other applicable development guidelines, as appropriate to new construction, additions to existing structures, replacement of existing buildings / land uses, and other commercial development activity.	**Consistent.** The Project would comply with the City's design guidelines for commercial and industrial development. The proposed industrial and commercial uses would be constructed in a similar form and scale as other warehouse industrial projects in the City.
Policy III.H.1 Priority Areas. Besides Downtown, the Kiernan Business Park (KBP) area is the highest priority for employment center development. KBP will develop further as a more distinctive and attractive business park / office park that caters to medical, professional, technological and similar businesses in a campus-like setting.	**Generally Consistent.** The Project site is outside of the Kiernan Business Park area, but would not interfere with further development of or investment in the KBP. Similar to the requirements of this policy, the Project would develop distinctive and attractive commercial and warehouse industrial uses that would cater to a variety of industries.
Policy III.H.3 Employment Center Guidelines. Apply adopted Design Guidelines, such as those for Commercial & Industrial Development, as appropriate to new construction, additions to existing structures, replacement of existing buildings / land uses, and other employment center development.	**Consistent.** The Project would comply with City design guidelines for industrial development.

POLICY	*PROJECT CONSISTENCY*
MODESTO URBAN AREA GENERAL PLAN – COMMUNITY FACILITIES AND SERVICES ELEMENT	
Policy VI.A.1 Implement the demand management and conservation measures identified in the City's adopted Urban Water Management Plan (UWMP). During review of development proposals, require that all developments reduce their potable water demand. Refer to the UWMP for potential techniques to reduce potable water demand.	**Does Not Conflict.** The Project would implement Title 24 water conservation measures which would reduce the amount of potable water demand. Water for landscaping, office uses, and similar urban uses would be required. Water demand is discussed in Section 3.14, Utilities and Service Systems, of this EIR.
Policy VI.A.3 All new connections to the public water system are to have meters installed. In addition, on or before January 1, 2025, all existing municipal and industrial service connections are to have water meters installed.	**Consistent.** Per the standard requirements of City policy and consistent with section 11-1.06 of the City's municipal code, the Project will install a water meter prior to connecting to the public water system. Water demand is discussed in Section 3.14, Utilities and Service Systems, of this EIR.
Policy VI.A.5 For properties outside the City limits and sewer district boundaries, and for properties outside the City limits, but inside of, contiguous to, and/or near the former service area of Del Este Water Company, the extension of water service may be approved by the City Manager per City Council Policy 5.001, as amended.	**Does Not Conflict.** The Del Este Water Company was split into several sanitary sewer districts. The City of Modesto retained property within the Del Rio, Empire, and Grayson districts. The City of Modesto assumed all responsibility for the operation and maintenance of the Del Rio, Empire, and Grayson sanitary districts, and are now considered part of the same wastewater collection system. Wastewater service is discussed in Section 3.14, Utilities and Service Systems, of this EIR.
Policy VI.B.5 Construct, operate, maintain, and replace water infrastructure facilities in a manner that will provide the best possible service to the public. Ensure that infrastructure is installed before or concurrently with development. Take a comprehensive approach to financing, using a blend of special taxes, benefit assessments, and other methods to ensure that infrastructure installation occurs in a timely manner.	**Consistent.** The Project will install utility infrastructure concurrent with the development of the site. Utility infrastructure will be placed in rights-of-way, allowing easy access for maintenance. New water lines will be installed in Kiernan Ave. and Pirrone Rd., consistent with the City's Urban Water Master Plan. However, the Project will connect to the City's existing water system in Dale Road, just south of the Project site. The Project does not propose extending infrastructure beyond the Project site, and will engage in cost discussions with the City. Utility infrastructure is discussed in Section 3.14, Utilities and Service Systems, of this EIR.
Policy VI.E.1 Allocate the City's wastewater system capacity to existing and future residential, commercial, and industrial customers. Discharges from environmental cleanup sites may be issued conditional discharge permits subject to the availability of excess treatment capacity. In accordance with federal and state regulations, discharges to the wastewater system may not, or may not threaten to, upset or interfere with, the wastewater system.	**Does Not Conflict.** The Project will tie into the City's existing wastewater system along Dale Road, just south of the Project site, and be maintained in accordance with City policies. The Project's demand for wastewater treatment services is within the capacity of the City's wastewater system capacity. The Project site is not an environmental cleanup site, and, therefore, would not need a special discharge permit. Wastewater system capacity is discussed in Section 3.14, Utilities and Service Systems, of this EIR.

POLICY	*PROJECT CONSISTENCY*
Policy VI.E.3 Individual development projects are subject to review by the City for adequate wastewater collection service and treatment.	**Consistent.** The Project will comply with the City's standard policies and procedures for connecting to City infrastructure, including wastewater. Wastewater treatment and wastewater treatment plant capacity are discussed in Section 3.14, Utilities and Service Systems, of this EIR.
Policy VI.E.5 Prior to annexation, determine that adequate wastewater treatment and disposal capacity can be provided for the proposed annexation area.	**Consistent.** The Project will comply with the City's standard policies and procedures for connecting to City infrastructure, including wastewater. Wastewater treatment and wastewater treatment plant capacity are discussed in Section 3.14, Utilities and Service Systems, of this EIR.
Policy VI.E.14 Require each new development project to be served with public sanitary sewers. Utilities located in private streets shall be part of the public sewerage system and shall be connected to a sewer lateral.	**Consistent.** The Project will comply with the City's standard policies and procedures for connecting to City infrastructure, including wastewater. Wastewater treatment and wastewater treatment plant capacity are discussed in Section 3.14, Utilities and Service Systems, of this EIR.
Policy VI.E.15 For properties outside the City limits and sewer district boundaries, the extension of sewer service may be approved by the City Manager per City Council Policy 5.002, as amended.	**Does Not Conflict.** The Project will tie into the City's existing wastewater system and be maintained in accordance with City policies. The Project's demand for wastewater treatment services is within the capacity of the City's wastewater system capacity. Wastewater system capacity is discussed in Section 3.14, Utilities and Service Systems, of this EIR.
Policy VI.F.5 Minimize impervious surfaces and generally maximize infiltration of rainwater in soils with development to promote groundwater recharge, where appropriate. Strive to maximize permeable areas to allow more percolation of runoff into the ground through such means as bioretention areas, green strips, planter strips, decomposed granite, porous pavers, vegetated swales, and other water permeable surfaces. Require planter strips between the street and the sidewalk within the community, wherever practical and feasible.	**Does Not Conflict.** The Project will have landscaping along the northern, eastern, and southern edges of the Project site, in accordance with City policies. The Project site is in an area that is not served by existing public storm drain systems and will therefore need to retain all storm water on site. The proposed site plan includes an approximately 6.75-acre storm drainage basin. The final sizing could increase or decrease based a variety of engineering design factors that control storm drainage. The basin would allow percolation of stormwater into the pervious ground.
Policy VI.G.1 Meet the requirements of acceptable urban storm runoff as established by the Central Valley Regional Water Quality Control Board Basin Plan for surface discharges, and the Environmental Protection Agency for underground injection.	**Consistent.** The Project will comply with all applicable State and local laws, regulations, and policies, including those established by the CVRWQCB Basin Plan and EPA regulations.
Policy VI.G.3 Construction activities shall comply with the requirements of the City's Stormwater Management Plan under its municipal NPDES stormwater permit, and the State Water Resources Control Board's General Permit for Discharges of Storm Water Associated with Construction Activity.	**Consistent.** The Project will comply with all applicable State and local laws, regulations, and policies, including the City's Stormwater Management Plan, NPDES permit requirements, and SWRCB General Permit requirements.

POLICY	*PROJECT CONSISTENCY*
Policy VI.G.5 Ensure that new development complies with the City of Modesto's Stormwater Management Program: Guidance Manual for New Development Stormwater Quality Control Measures.	**Consistent.** The Project will comply with all applicable State and local laws, regulations, and policies, including the City's Stormwater Management Program.
Policy VI.G.6 Require new development to implement an appropriate selection of permanent pollution control measures in accordance with the City's implementation policies for the municipal NPDES stormwater permit.	**Consistent.** The Project will comply with all applicable State and local laws, regulations, and policies, including the City's NPDES permit.
Policy VI.G.8 Integrate Low Impact Development principles into proposed development projects' design. Low Impact Development is a storm water management and land development strategy that promotes conservation and use of natural on-site features combined with engineered small-scale hydrologic devices. In designing development projects, minimize the amount of impervious surface in order to maximize on-site infiltration of stormwater runoff and minimize the potential for storm water runoff from the site.	**Does Not Conflict.** The Project would include a storm drainage basin on the western portion of the site, capable of handling all of the stormwater created onsite. Stormwater infrastructure and facilities will be developed in accordance with Title 9 of the City's municipal code. Although much of the Project site will be impervious, stormwater will be directed to the drainage basin for retention, maximizing the on-site filtration of stormwater runoff and minimizing the potential for storm water runoff from the site.
Policy VI.L.1 Continue to comply with all the requirements of Assembly Bill 939, which mandates the diversion of solid waste of 50% by 2000, by way of source reduction, recycling, composting, and transformation.	**Consistent.** The Project will comply with all applicable State and local laws, regulations, and policies, including AB 939.
MODESTO URBAN AREA GENERAL PLAN – ENVIRONMENTAL RESOURCES, OPEN SPACE AND CONSERVATION ELEMENT	
AGRICULTURE POLICIES—PLANNED URBANIZING AREA. THE FOLLOWING POLICIES APPLY TO NEW DEVELOPMENT PROPOSED IN THE PLANNED URBANIZING AREA:	
a. Do not annex agricultural land unless urban development consistent with the General Plan has been approved by the City.	**Consistent.** The Project site is designated Salida Community Plan Business Park (SCP-IBP) and Salida Community Plan, Planned Industrial (SCP-PI). The proposed Project industrial warehouse and commercial uses would be consistent with the General Plan land use designations.
b. Support the continuation of agricultural uses on lands designated for urban uses until urban development is imminent.	**Consistent.** The Project site would remain in agricultural uses until the proposed Project is approved and ready to begin construction.
c. Encourage the County to retain agricultural uses on lands surrounding the General Plan area and on lands within the General Plan area pending their annexation to the City or development by mutual agreement with the County.	**Consistent.** Approval of the Project would result in annexation of the Project site to the City of Modesto. No other areas would be annexed, and surrounding land uses would not be converted to urban uses.
d. Where necessary to promote planned City growth, encourage development of those agricultural lands that are already compromised by adjacent urban development or contain property required for the extension of infrastructure or other public facilities, before considering urban development on agricultural lands that are not subject to such urban pressures.	**Consistent.** The Project site is contiguous with the existing City of Modesto city boundary. Development in Modesto continues north of the city, and development of the Project site makes sense from an urban planning perspective. The City already has plans to extend utility infrastructure north along Dale Road, and west along Kiernan Ave. and Pirrone Rd. The Project site is within the City's established Sphere of Influence, and is a logical location for urban development.

POLICY	*PROJECT CONSISTENCY*
e. For any subsequent project that is adjacent to an existing agricultural use, the project proponent may incorporate measures to reduce the potential for conflicts with the agricultural use. Potential measures to be implemented may include the following: **(1) Include a buffer zone of sufficient width between proposed residences and the agricultural use; and,** **(2) Inform residents about the possible exposure to agricultural chemicals.**	**Does Not Conflict.** The Project is an industrial warehouse use, and is not considered a sensitive receptor. The Project would allow vehicular access from Kiernan Ave., which is adjacent to urban development in the city. Vehicles could also access the site along Dale Road. Immediately east of which includes agricultural and low-density residential uses. No vehicular access would be permitted on Pirrone Rd., where agricultural uses remain to the north. The Project does not include residential uses, and therefore, has no residents.
f. Require development projects to comply with current LAFCo policy(ies) regarding preservation of agricultural resources.	**Does Not Conflict.** Policy 22 of the Stanislaus LAFCO Policies and Procedures, adopted March 25, 2025, is the Agricultural Preservation Policy. The policy recognizes that agriculture is vital to Stanislaus County's economy and environment. Accordingly, boundary changes for urban development should only be proposed, evaluated, and approved in a manner which, to the fullest extent feasible, is consistent with the continuing growth and vitality of agriculture within the County. Upon application for a sphere of influence expansion or annexation to a city providing one or more urban services (i.e. potable water, sewer services) that includes agricultural lands, a Plan for Agricultural Preservation must be provided with the application to LAFCO. This will be a condition of approval that a Plan be prepared if the proposed Project were approved by Modesto. The Plan for Agricultural Preservation shall include: a detailed analysis of direct and indirect impacts to agricultural resources on the site and surrounding area, including a detailed description of the agricultural resources affected and information regarding Williamson Act Lands; a vacant land inventory and absorption study evaluating lands within the existing boundaries of the jurisdiction that could be developed for the same or similar uses; existing and proposed densities (persons per acre); relevant County and City General Plan policies and specific plans; consistency with regional planning efforts (e.g. the San Joaquin Valley Blueprint and the Sustainable Communities Strategy); and an analysis of mitigation measures that could offset impacts to agricultural resources. The Plan for Agricultural Preservation shall specify the method or strategy proposed to minimize the loss of agricultural lands.

POLICY	*PROJECT CONSISTENCY*
	The Commission may consider approval of a proposal that contains agricultural land when it determines that there is sufficient evidence within the Plan for Agricultural Preservation that demonstrates there is not sufficient alternative land within the existing SOI, the annexation does not exceed the probable 20-year period for growth and that the development within the annexed area is imminent, the loss of agricultural land has been minimized, and the project demonstrates orderly and efficient use of the land. The Project site is currently outside the City's Sphere of Influence (SOI) and includes a proposed SOI amendment and annexation. The Project is immediately adjacent to existing urban growth, is a logical proposed use for the SCP area consistent with the SCP land use designations, and seeks to be efficient with the use of the land. Upon approval of the SOI amendment by LAFCo, the Project would be within the City's expanded SOI.
WILDLIFE AND OTHER NATURAL RESOURCES POLICIES – INCORPORATE THE FOLLOWING MEASURES INTO ENVIRONMENTAL IMPACT REPORTS FOR SPECIFIC PLANS IN THE PLANNED URBANIZING AREA.	
a. For all lands within the Planned Urbanizing Area, conduct site-specific surveys, by a qualified biologist, to determine whether any sensitive natural communities or species are present within the proposed development area. These studies focus on proposed development within any lands included within a potential biological resource study area, as delineated on Figure V-7-1 in the MEIR. Prior to considering development applications, coordinate with the USFWS and CDFW regarding listed species and potential for impacts. Employ the measures recommended by the USFWS and/or CDFW to avoid an incidental take. **Conduct surveys at the appropriate season to best determine the likelihood of occurrence and employ accepted methodologies as determined by USFWS and CDFW. Record the significant results of such surveys onto the City's existing biological resources map for future planning purposes.**	**Consistent.** In accordance with requirements in the Endangered Species Act and California regulations, Section 3.4 Biological Resources in the EIR evaluated the potential for sensitive species, including both plants and animals. Although riparian or vernal pool habitat as shown on Figure V-7-1 in the General Plan EIR, occupies the Project site, appropriate mitigation measures for minimizing Project impacts to species and habitats are included in Section 3.4 of this EIR.
b. Avoid and preserve all areas occupied or potentially occupied by special-status species, where feasible. Protect areas that can be avoided by fencing, signage, or establishment of buffer zones appropriate to the species and/or habitat involved. Generally, a minimum 100foot buffer of undeveloped land would be necessary. Improve this buffer area through sustainable	**Consistent.** Section 3.4 of the Draft EIR evaluated and disclosed potential impacts to sensitive plant and animal species in accordance with requirements in the Endangered Species Act and California regulations. Appropriate mitigation measures for minimizing impacts to special status species and habitats are included in Section 3.4 of

POLICY	*PROJECT CONSISTENCY*
habitat restoration. Require the protected habitat to be managed so as to contribute to the long-term conservation of the species and ecosystems on which they depend. **Where state and/or federally listed species are determined to be present, consult with the USFWS and/or CDFW in accordance with the California and/or federal Endangered Species Acts to determine mitigation measures to avoid and minimize impacts to those species. If other special-status species are determined to be present and cannot be avoided, then implement species-specific mitigation measures to minimize impacts on those species through informal consultation with USFWS and/or CDFW. Incorporate the mitigation measures and other recommendations of these agencies into the development plan.**	this EIR.
c. Additional measures to protect sensitive habitats may be implemented. Potential measures to be implemented may include measures listed in Table V-7-1 in the Final Master Environmental Impact Report.	**Does Not Conflict.** The measures included in Table V-7-1 of the General Plan EIR largely reiterate standard mitigation practices to reduce or eliminate impacts on special status species and habitats. Suggestions from state or federal regulatory agencies will be considered as well. The potential for the Project to impact special status species and habitats is addressed in Section 3.4, Biological Resources, of this EIR.
ARCHAEOLOGICAL AND CULTURAL RESOURCES POLICIES – POLICIES IN THE DOWNTOWN AREA AND BASELINE DEVELOPED AREA	
a. Implement regulations that identify important historic resources, and preserve the important aspects of those resources. Encourage adaptive reuse of National Register of Historic Places (NRHP), California Register of Historic Resources (CRHR) eligible or potentially eligible buildings, and local landmarks, including historically sensitive restoration.	**Does Not Conflict.** There are no historic structures or resources present on the Project site. Historic resources are discussed in Section 3.5, Cultural and Tribal Resources, of this EIR.
b. Perform restoration and renovation of landmark buildings in accordance with the "Secretary of the Interior's Standards for the Treatment of Historic Properties" and the State Historic Building Code. The standards serve as guidelines for rehabilitation, restoration, preservation, retaining, and preserving the historic character of a property.	**Does Not Conflict.** There are no historic structures or resources present on the Project site. Historic resources are discussed in Section 3.5, Cultural and Tribal Resources, of this EIR.
c. Ensure that zoning provisions for structures of historical significance are sufficiently flexible to ensure that parking or other structures requirements of the Zoning Ordinance allow the historic structures to remain viable in the future.	**Does Not Conflict.** There are no historic structures or resources present on the Project site. Historic resources are discussed in Section 3.5, Cultural and Tribal Resources, of this EIR.
d. The modification of historic structures and places can be mitigated through the application of existing regulations and consultation with the State Historic Preservation Officer (SHPO), an interim procedure	**Does Not Conflict.** There are no historic structures or resources present on the Project site. Historic resources are discussed in Section 3.5, Cultural and Tribal Resources, of this EIR.

POLICY	*PROJECT CONSISTENCY*
whereby the City evaluates proposals to modify historic structures and the proposed program(s) to reduce the impacts, if any, to a less-than-significant level in accordance with CEQA Guidelines §15064.5. If an historical resource evaluation has not been prepared for any such proposal, prepare one for the purpose of determining whether the proposed mitigation would reduce the impacts to a less-than-significant level. If the project appears to have impacts on eligible or potentially eligible structures, the project proponent will resolve adverse effects through consultation with the SHPO.	
e. When structures or areas of historical significance more than 50 years old are proposed for demolition or alteration, or where construction is proposed on a property adjacent to that structure or area and within 100 feet of it, the property owner is to submit data to the City that has been prepared by a qualified architectural historian regarding the structure's history or locations. Evaluate the historical significance of the proposal and require policies to be implemented to preserve all structures and places deemed historically significant.	**Does Not Conflict.** There are no historic structures or resources present on the Project site. Historic resources are discussed in Section 3.5, Cultural and Tribal Resources, of this EIR.
f. Maintain professional standard inventories of historic resources, with the findings of those inventories concurred by the SHPO and kept on file with the State Office of Historic Preservation. The records provide a preliminary assessment of eligibility at the initial study stage to indicate whether CEQA regulations would apply in the case of a project application or whether the resource has previously been determined ineligible. When no previous survey has been conducted, or an historical context prepared, buildings and structures more than 50 years old, and/or otherwise potentially significant, must be evaluated by a professional historian or architectural historian prior to project approval to determine whether the resource is a historically significant resource, for purposes of CEQA.	**Does Not Conflict.** There are no historic structures or resources present on the Project site. Historic resources are discussed in Section 3.5, Cultural and Tribal Resources, of this EIR.
g. When a landmark is established, have the character-defining elements of the landmark identified by a qualified architectural historian, qualified City staff member, or other professional qualified under Secretary of Interior Standards to convey the historic significance of the property and to facilitate review of future changes and the identification of potentially significant impacts to the property. Actions or activities that follow Secretary of Interior Standards, in consultation with SHPO, can be considered to have mitigated any potential adverse impacts to a less than significant level.	**Does Not Conflict.** There are no historic structures, resources, or landmarks present on the Project site. Historic resources are discussed in Section 3.5, Cultural and Tribal Resources, of this EIR.

POLICY	*PROJECT CONSISTENCY*
h. When proposed development lies within an archaeological resource study area (shown on Figure V-7-1 in the Master EIR), analyze the area to determine whether it has a high potential to have been used by Native Americans or contain prehistoric deposits. Resources to be utilized include archival research through the Central California Information Center at CSU Stanislaus, preliminary surface field reconnaissance, consultations with the Native American Heritage Commission (NAHC) and individuals and organizations identified by the NAHC. Any archaeological resources discovered shall be recorded and mapped. Require an evaluation of the significance of any such resources only when proposed development might affect the resources.	**Does Not Conflict.** There are no known archaeological resources present on the Project site. Archaeological resources are discussed in Section 3.5, Cultural and Tribal Resources, of this EIR. If an inadvertent discovery of a resource occurs during Project construction, Mitigation Measures 3.5-1 through 3.5-4 delineate the appropriate actions to take.
i. If land designated or proposed to be designated for development is discovered through archival research, consultation or by chance, to contain a sacred or traditional place, consult with the NAHC and the appropriate Native American groups and individuals for the purpose of determining the level of confidentiality required to protect the cultural place and for the purpose of developing treatment with appropriate dignity of the cultural place in any corresponding management plan. Avoid and preserve sacred sites whenever feasible.	**Does Not Conflict.** There are no known Native American resources present on the Project site. Native American resources are discussed in Section 3.5, Cultural and Tribal Resources, of this EIR. The City consulted with appropriate tribal entities and no information was provided to suggest known resources are on the site. If an inadvertent discovery of a resource occurs during Project construction, Mitigation Measures 3.5-1 through 3.5-4 delineate the appropriate actions to take.
j. Consistent with AB 52 of 2014, conduct consultations with the Native American Heritage Commission and the appropriate Native American Tribes for the purpose of determining the level of confidentiality required to protect identified cultural place(s), if any, and for the purpose of developing treatment with appropriate dignity of said cultural place(s) in any corresponding management plan. Avoid and preserve sacred sites whenever feasible.	**Does Not Conflict.** There are no known Native American resources present on the Project site. Native American resources are discussed in Section 3.5, Cultural and Tribal Resources, of this EIR. The City consulted with appropriate tribal entities under AB 52 and no information was provided to suggest known resources are on the site. If an inadvertent discovery of a resource occurs during Project construction, Mitigation Measures 3.5-1 through 3.5-4 delineate the appropriate actions to take.
k. For any project that involves earth-disturbing activities within the archaeological resource study area, or on a site determined to be archaeologically or culturally sensitive by City staff through consultation with Native American tribes or bands and a qualified archaeologist, require the project applicant to implement the following mitigation measures, at a minimum: **(1) Where excavation or construction would occur outside of areas where development has occurred, or where excavation / construction would occur at depths greater than existing foundations, roads, and/or trenches in the immediate vicinity, evaluate the site via**	**Does Not Conflict.** There are no known archaeological or culturally sensitive resources present on the Project site. Archaeological resources are discussed in Section 3.5, Cultural and Tribal Resources, of this EIR. If an inadvertent discovery of a resource occurs during Project construction, Mitigation Measures 3.5-1 through 3.5-4 delineate the appropriate actions to take, which may include further consultation with appropriate Native American tribes.

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a qualified archaeologist retained by the project applicant. Said evaluation would include at minimum a records search, a Phase I pedestrian survey, and preparation of an archaeological report containing the results of this cultural resources inventory identification effort for submittal to the Central California Information Center. If a Phase II archaeological evaluation is recommended, complete a report of the survey and any excavations with recommendations prior to project approval; **(2) In the event of the discovery of a burial, human bone, or suspected human bone, immediately halt all excavation or grading in the vicinity of the find and protect the area of the find. The project applicant shall immediately notify the Modesto Police Department and County Coroner of the find and comply with the provisions of California Health and Safety Code Section 7050.5, including California Public Resources Code Section 5097.98, if applicable. If human remains are identified, also retain a Native American monitor at the applicant's expense** **(3) A qualified archaeological monitor will be present and will have the authority to stop and redirect grading activities, in consultation with the Native Americans and their designated monitors, to evaluate the significance of any Native American archaeological resources discovered on the property; and,** **(4) Relinquish ownership of all Native American human remains and/or artifacts that are found within the project area, to the appropriate Native American Most Likely Descendent (MLD), as assigned by the Native American Heritage Commission, for proper treatment and disposition. The MLD will decide whether or not standard archaeological analysis will be allowed on human remains and associated artifacts from burials.** **(5) If paleontological resources are discovered during earth-moving activities, the construction crew shall immediately cease work in the vicinity of the find, and the City's Planning Manager shall be notified. A qualified paleontologist shall evaluate the resource and prepare a proposed mitigation plan in accordance with Society of Vertebrate Paleontology guidelines. The proposed mitigation plan may include a field survey of additional construction areas, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations determined by the lead agency to be necessary and feasible shall be implemented before construction activities can resume at the site where the paleontological resources were discovered.**	

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l. Whenever possible, avoid disturbing or damaging archaeological resources. Preservation in place to maintain the relationship between the artifacts and the archaeological context is the preferred manner of mitigating impacts to archaeological sites. Preservation may be accomplished by: **(1) Planning construction to avoid archaeological sites;** **(2) Incorporating sites within parks, green space, or other open space;** **(3) Covering the sites with a layer of chemically stable soil; and/or,** **(4) Deeding the site into a permanent conservation easement.** **When in-place mitigation is not feasible, data recovery through excavation may be necessary. A data recovery plan, which makes provisions for adequately recovering the scientifically consequential information about the site, shall be prepared and adopted prior to any excavation being undertaken. Such studies must be deposited with the Central California Information Center in Turlock, California. Special rules apply to any archaeological sites known to contain human remains (Health and Safety Code Section 7050.5; Guidelines Section 15126.4(b)). Data recovery shall not be required if the lead agency determines that testing or studies already completed have adequately recovered the necessary data, provided that the data have already been documented in another EIR and are available for review at the California Historical Resource Regional Information Center (Guidelines Section 15126.4(b)).**	**Does Not Conflict.** There are no known archaeological resources present on the Project site. Archaeological resources are discussed in Section 3.5, Cultural and Tribal Resources, of this EIR. If an inadvertent discovery of a resource occurs during Project construction, Mitigation Measures 3.5-1 through 3.5-4 delineate the appropriate actions to take.
m. Allow reasonable time for the qualified archaeologist to notify the proper authorities for a more detailed inspection and examination of the exposed cultural resources. During this time, excavation and construction would not be allowed in the immediate vicinity of the find; however, those activities could continue in other areas of the project site.	**Does Not Conflict.** There are no known archaeological resources present on the Project site. Archaeological resources are discussed in Section 3.5, Cultural and Tribal Resources, of this EIR. If an inadvertent discovery of a resource occurs during Project construction, Mitigation Measures 3.5-1 through 3.5-4 delineate the appropriate actions to take.
n. If any find is determined to be significant by the qualified archaeologist, representatives of the construction contractor and the City, the qualified archaeologist, and a representative of the Native American community (if the discovery is an aboriginal burial) will meet to determine the appropriate course of action.	**Does Not Conflict.** There are no known archaeological resources present on the Project site. Archaeological resources are discussed in Section 3.5, Cultural and Tribal Resources, of this EIR. If an inadvertent discovery of a resource occurs during Project construction, Mitigation Measures 3.5-1 through 3.5-4 delineate the appropriate actions to take.
o. All cultural materials recovered as part of a monitoring program are subject to scientific analysis,	**Does Not Conflict.** There are no known archaeological resources present on the Project site. Archaeological resources are discussed in

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professional museum curation, and a report prepared according to current professional standards.	Section 3.5, Cultural and Tribal Resources, of this EIR. If an inadvertent discovery of a resource occurs during Project construction, Mitigation Measures 3.5-1 through 3.5-4 delineate the appropriate actions to take.
Policies for the Planned Urbanizing Area include those presented for the Baseline Developed Area, above, and those shown below. **a. Any project subject to CEQA that involves substantial earth-disturbing activities should require consultation by the applicant for the purposes of determining archaeological and cultural resources impacts and creating appropriate mitigation to address such impacts.** **b. Any project that involves earth-disturbing activities within previously undisturbed soils in an area determined to be archaeologically or culturally sensitive by the City of Modesto through consultation with Native American tribes or bands and a qualified archaeologist should be subject to archaeological and Native American monitoring during all ground-disturbing activities.** **c. Any project that involves earth-disturbing activities within previously undisturbed soils in an area determined to be archaeologically or culturally sensitive by the City of Modesto through consultation with Native American tribes or bands and a qualified archaeologist should be required to carry out the following mitigation measures, at a minimum:** **(1) If prehistoric archaeological remains are discovered during project construction (inadvertent discoveries), all work in the area of the find shall cease, and a qualified archaeologist should be retained by the project sponsor to investigate the find, and make recommendations as to treatment and mitigation. In the event of the discovery of a burial, human bone, or suspected human bone all excavation or grading in the vicinity of the find should halt immediately and the area of the find should be protected and the project applicant immediately should notify the County Coroner of the find and comply with the provisions of California Health and Safety Code Section 7050.5, including California Public Resources Code Section 5097.98, if applicable. If human remains are identified, the project sponsor should also retain a Native American monitor;** **(2) A qualified archaeological monitor should be present and should have the authority to stop and redirect grading activities, in consultation with the Native Americans and their designated monitors, to evaluate**	**Consistent.** These topics, while found in a different part of the Modesto Urban Area General Plan specifically regarding the Planned Urbanizing Area, are addressed above. Potential impacts to historic, archaeological, and Native American resources are discussed in Section 3.5, Cultural and Tribal Resources, of this EIR. There are no historic structures or resources present on the Project site. There are no known archaeological resources present on the Project site. If an inadvertent discovery of a resource occurs during Project construction, Mitigation Measures 3.5-1 through 3.5-4 delineate the appropriate actions to take. There are no known Native American resources present on the Project site. The City consulted with appropriate tribal entities and no information was provided to suggest known resources are on the site. If an inadvertent discovery of a resource occurs during Project construction, Mitigation Measures 3.5-1 through 3.5-4 delineate the appropriate actions to take.

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the significance of any Native American archaeological resources discovered on the property; **(3) Native American monitors from the appropriate Native American Tribes, as determined by the NAHC should be allowed to monitor all groundbreaking activities, including all archaeological testing and data recovery excavations that are likely to affect Native American resources, as determined by a qualified archaeologist. The project proponent should be responsible for compensating Native American monitors. If human remains are discovered, the NAHC should assign a Most Likely Descendent (MLD); and,** **(4) The landowner agrees to relinquish ownership of all Native American human remains and associated burial artifacts that are found within the project area, to the appropriate Native American MLD, as assigned by the NAHC, for proper treatment and disposition. The MLD will decide whether or not standard archaeological analysis will be allowed on human remains and associated artifacts from burials.** **(5) If paleontological resources are discovered during earth-moving activities, the construction crew shall immediately cease work in the vicinity of the find, and the City's Planning Manager shall be notified. A qualified paleontologist shall evaluate the resource and prepare a proposed mitigation plan in accordance with Society of Vertebrate Paleontology guidelines. The proposed mitigation plan may include a field survey of additional construction areas, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations determined by the lead agency to be necessary and feasible shall be implemented before construction activities can resume at the site where the paleontological resources were discovered.**	
NOISE – THE FOLLOWING POLICIES APPLY TO DEVELOPMENT IN ALL AREAS OF THE CITY.	
a. Construction activities are to comply with Modesto Municipal Code Title 4, Chapter 9.	**Consistent.** Project construction shall comply with the City's noise requirements. Noise is discussed in Section 3.11 of this EIR. Impacts related to construction noise were determined to be less than significant. As discussed in Impact 3.11-1, while noise from construction activities on-site would be clearly audible above the existing ambient noise environment but would occur during the least noise-sensitive portions of the day as per Municipal Code section 4-9.103 – Enumeration. Construction activities would be consistent with the City's municipal code.
b. Implement noise-reducing construction practices as conditions of approval where substantial construction-	**Does Not Conflict.** Project construction is expected to occur intermittently over a phased 10-year

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related noise impacts would be likely to occur, such as with extended periods of pile driving, or where construction is expected to continue or where sensitive receptors would be affected by construction noise. Conditions of approval may include, but are not limited to: • **Require construction equipment, including air compressors and pneumatic equipment to have properly maintained mufflers;** • **Require impact tools to be equipped with shrouds or shields;** • **Require that the quietest equipment available be used; and,** • **Require selection of haul routes that affect the fewest number of people.**	buildout. Excessive noise activities such as pile driving would not be required to construct the Project. Construction noise is addressed in Section 3.11, Noise, of this EIR. As discussed above, impacts related to construction noise were determined to be less than significant.
g. At noise-sensitive land uses, increases in noise should not exceed 3 dBA where any other noise threshold or standard would be exceeded, and/or 5 dBA where noise levels would otherwise fall within acceptable limits, for the existing conditions scenario as compared to the buildout scenario.	**Consistent.** Project operation is anticipated to consist of vehicular truck traffic entering and exiting the site, office uses, commercial uses, warehousing, and manufacturing. Warehousing and manufacturing activities would occur within the onsite buildings. Dock doors to access Buildings 3 and 7 along Dale Road are directed inward to the site and shielded away from the existing agricultural residences to the east of the site. All impacts associated with excessive noise levels were determined to be less than significant or less than significant with mitigation. Operational noise would not exceed the City-identified thresholds at sensitive receptors.
h. Additional study and/or mitigation for outdoor recreation areas will be required if: • **For single-family dwellings, noise exceeds 65 dBA Ldn in one or more backyards;** • **For multi-family dwellings, noise exceeds 65 dBA Ldn at common recreation areas, such as swimming pools or play areas or at private patios and balconies; or,** • **For other uses, noise exceeds the level considered "conditionally acceptable" as shown on Table VII-2.**	**Consistent.** Project operation is anticipated to consist of vehicular truck traffic entering and exiting the site, office uses, commercial uses, warehousing, and manufacturing. Warehousing and manufacturing activities would occur within the onsite buildings. Dock doors to access Buildings 3 and 7 along Dale Road are directed inward to the site and shielded away from the existing agricultural residences to the east of the site. All impacts associated with excessive noise levels were determined to be less than significant or less than significant with mitigation. Operational noise would not exceed the City-identified thresholds at sensitive receptors.
i. Limit trucking to specific routes, times, and speeds that avoid or minimize adverse effects on sensitive receptors.	**Does Not Conflict.** The Project site is not along a City-designated truck route. However, Pelandale Ave. to the north and Standiford Ave. to the south are identified as truck routes, are accessible via Dale Road, and connect with SR 99 interchanges. Trucks accessing the Project site would follow identified truck routes applicable to the size and

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	type of vehicle being utilized. It is anticipated that the Project would operate continuously, and the site would be active 24 hours a day, seven days a week. Speed limits are posted for all roadways within and outside of the City, limiting noise occurring due to speeding vehicles. All impacts associated with excessive noise levels were determined to be less than significant or less than significant with mitigation, as discussed in Section 3.11, Noise, of this EIR.
n. For construction activities involving high-powered vibratory tools or pile driving within 200 feet of an existing structure, demonstrate that project construction would not exceed the Caltrans construction vibration thresholds to ensure that no damage to sensitive structures would occur.	**Consistent.** Construction of the Project would not require high-powered vibratory tools or pile driving.
AIR QUALITY -- THE FOLLOWING AIR QUALITY AND CLIMATE CHANGE-RELATED POLICIES WOULD APPLY THROUGHOUT THE UAGP PLANNING AREA.	
b. Implement measures to reduce vehicle use and associated emissions related to existing and future land use development in the City of Modesto. Potential measures to be implemented may include those shown in Section V-2 of the Final Master Environmental Impact Report.	**Does Not Conflict.** The Project consists of constructing warehouse, distribution, and manufacturing space, as well as a local-serving retail use, and would generate up to 13,110 net-new daily vehicular trips (Section 3.13, Transportation and Circulation). Although the Project involves a large industrial development that produces significant employee vehicle trips, the Project is required to implement a comprehensive package of mitigation measures that collectively constitute "measures to reduce vehicle use and associated emissions" within the meaning of this policy. Specifically, the Project is conditioned upon compliance with SJVAPCD Rule 9410 (Employer-Based Trip Reduction), which requires major employers with 100 or more eligible employees to implement an Employer Trip Reduction Implementation Plan (ETRIP) including commute marketing, ridesharing, subsidized transit passes, end-of-trip bicycle facilities, and employer-sponsored vanpools (Mitigation Measure 3.13-1). In addition, the Project applicant is required to implement a Voluntary Commute Trip Reduction program and an Employee Parking Cash-Out program, which together are estimated to reduce employee-generated VMT by approximately 10 percent (Mitigation Measure 3.13-2). To support reduced vehicle use, the Project is required to install EV charging conduit for a minimum of 50 percent of truck docking stations (Mitigation Measures 3.3-10 and 3.3-11), priority parking for employee carpool vehicles (Mitigation Measure

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	3.3-12), and pedestrian and bicycle frontage improvements along Kiernan Avenue, Dale Road, and Pirrone Road to improve active transportation access to the site (Mitigation Measure 3.13-3a). The Project is also required to comply with SJVAPCD Rule 9510 (Indirect Source Review), which directly implements the SJVAPCD's air quality attainment plans by requiring quantified emission reductions from the Project's mobile sources. While the Project's VMT per employee substantially exceeds the regional average and the associated air quality impacts remain significant and unavoidable even after mitigation (Section 3.3, Air Quality; Section 3.13, Transportation and Circulation), the Project does not conflict with this policy because it implements all feasible measures to reduce vehicle use and associated emissions as identified in the applicable regulatory framework. Therefore, the Project does not conflict with this General Plan Air Quality policy.
c. Implement measures to reduce emissions associated with energy use by residences and businesses. Potential measures to be implemented may include those shown in Section V-2 of the Draft Master EIR.	**Does Not Conflict.** The Project would implement Title 24 energy conservation measures which would reduce the amount energy demand. Energy demand is discussed in Section 3.7, Greenhouse Gases, Climate Change and Energy, of this EIR.
d. The City of Modesto recognizes the efforts of the San Joaquin Valley Air Pollution Control District to identify the cumulative transportation and air quality impacts of all General Plan amendments approved during the previous year. This measure is intended to track the effectiveness of current air quality–related programs and guide revision to these programs through periodic review of cumulative air quality impacts in the City. **The City of Modesto encourages employers to implement the following measures:** **(1) In-house matching services (for carpools and vanpools) at employers with over 100 weekday employees, or at large development sites occupied by several smaller employers, or coordination with Caltrans' "Commuter Computer" program;** **(2) Employer-based dissemination of commute information;** **(3) Employer subsidies for transit passes and incorporation of transit stop facilities into site design;** **(4) A program to guarantee rideshare participants a ride home in case of emergency;** **(5) Flex-time scheduling;** **(6) Site plan design that encourages pedestrian**	**Does Not Conflict.** The Project would comply with emissions requirements established by the SJVAPCD. The Project site will be divided into eight separate parcels, each of which could support one or more business enterprises. The measures suggested in the Modesto Urban Area General Plan to reduce cumulative air quality impacts were considered. As discussed in Impact 3.3-1, Mitigation Measures 3.3-1 through 3.3-14 are included to reduce operational and construction-related air quality emissions. Additionally, the Project applicant would be required to implement Mitigation Measure 3.13-1 and 3.13-2, which require compliance with SJVAPCD Rule 9410 (Employer Based Trip Reduction) and implementation of transportation demand strategies. Refer to the discussions in Impact 3.3-1 and 3.13-1 for the complete mitigation language.

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movement between adjacent land uses; (7) Incentives such as preferred parking for carpoolers; (8) Encouraging submission of site plans featuring mixed land uses or "neo-traditional" design; and, (9) Encouraging employers to experiment with telecommuting options, where feasible.	
The following policies are intended to accurately determine and fairly mitigate the local and regional air quality impacts of projects proposed in the City of Modesto.	
o. Determine project air quality impacts using analysis methods and significance thresholds recommended by the SJVAPCD.	**Consistent.** Air quality impacts created by the Project are evaluated in Section 3.3, Air Quality, of this EIR.
p. Ensure that identified air quality impacts are consistently and fairly mitigated.	**Consistent.** Air quality impacts created by the Project are evaluated in Section 3.3, Air Quality, of this EIR. Mitigation measures, if needed, are included in the evaluation.
q. Ensure all air quality mitigation measures are feasible, implementable, and cost effective.	**Consistent.** Air quality impacts created by the Project are evaluated in Section 3.3, Air Quality, of this EIR. Mitigation measures, if needed, are included in the evaluation. Per CEQA guidance, mitigation measures must be feasible and implementable. The City Council, however, makes the final decision regarding mitigation implementation.
u. Review of new development shall be coordinated with SJVAPCD staff to ensure all projects subject to the SJVAPCD Rule 9510 (Indirect Source Review) comply fully with the rule. This rule fulfills the SJVAPCD's emission reduction commitments in the PM10 and Ozone Attainment Plans through emission reductions from the construction and use of development projects through design features and onsite measures. Rule 9510 applies to any applicant that seeks to gain a final discretionary approval for a development project, or any portion thereof, which meets certain minimum thresholds.	**Consistent.** Since the SJVAPCD is a Responsible Agency under CEQA, it will be notified of the public availability of this EIR and invited to comment on the project and the accompanying environmental analysis.
w. … Future non-residential developments containing potentially significant TAC sources would be evaluated in consultation with SJVAPCD to ensure that they do not cause a significant health risk in terms of excess cancer risk greater than 20 in one million, or acute or chronic hazards with a Hazard Index greater than 1.0. This analysis shall be conducted following methodology and procedures recommended by SJVAPCD and OEHHA. If the site-specific analysis reveals significant exposures, additional measures shall be required as described below to reduce the risk to below the threshold. **If the analysis shows the cancer risk exposure is**	**Consistent.** A health risk assessment was prepared for the Project, and included in the EIR as Appendix B. Overall, the results show that the operational residential cancer risk would remain below the SJVAPCD threshold of 20 in a million at areas near the Project site that contain residential receptors, at a total of approximately 6 per million (at the location of maximum residential cancer risk), during Project operation. Additionally, other risks during Project operation would be below the 20 in a million threshold. The results also show that

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significant, then the project sponsor shall submit performance specifications and design details to demonstrate that lifetime residential exposures would be reduced to a level of less-than-significant under the applicable threshold subject to approval by the City. The specifications or design standards may include the following or other comparable measures: **i. Install air filtration systems rated MERV-13 or higher and a maintenance plan for the air filtration system shall be implemented.** **ii. Plant trees and/or vegetation between sensitive receptors and pollution sources, if feasible. Trees that are best suited to trapping particulate matter shall be planted, including the following: Pine (Pinus nigra var. maritime), Cypress (X Cupressocyparis leylandii), Hybrid popular (Populus deltoids X trichocarpa), and Redwoods (Sequoia sempervirens).** **iii. Design sites to locate sensitive receptors as far as possible from any freeways, roadways, diesel generators, distribution centers, and rail lines.** **iv. Locate operable windows, balconies, and building air intakes as far away from these sources as feasible. If near a distribution center, residents shall not be located immediately adjacent to a loading dock or where trucks concentrate to deliver goods.**	operational school cancer risk would be less than 1 per million during Project operation. It should be noted that this is a highly conservative estimate, since modeled assumed a 70-year timeframe starting at the third trimester, and therefore the real risk is anticipated to be far below this risk level. Furthermore, operational workplace cancer risk would also be below the threshold, at approximately 1 in a million at its peak value in the southern part of the Project site, for workers that may be located at or near this location during work conditions. However, it is very unlikely that any individual would be located at this location within the Project site for 40 years; therefore, this result also represents a conservative estimate. The results also show that construction-related cancer risks would be below the threshold. Construction-related residential cancer risk would be approximately 4 in a million; school cancer risk would also be approximately 4 in a million; and construction-related workplace cancer risk would be less than one in a million. Overall, aggregate (i.e., combined operational and construction-related health risks) is estimated to be a maximum of 10 in a million and is less than the 20 in a million threshold for residences, schools, and workers, consistent with SJVAPCD guidance. The site plan for the Project directs trucks to the interior of the site, away from sensitive receptors on Dale Road. Trucks would not congregate adjacent to existing residential uses.
The following policies are consistent with the SJVAPCD Air Quality Guidelines for General Plans and are intended to reduce emissions of PM10 and other particulates with local control potential.	
jj. Reduce particulate emissions from construction, grading, excavation, and demolition to the maximum extent feasible in accordance with the requirements of SJVAPCD Regulation VIII. Regulation VIII was adopted to reduce the amount of particulate matter suspended in the atmosphere as a result of emissions generated from anthropogenic (man-made) fugitive dust sources.	**Consistent.** The proposed Project would be required to minimize the generation of fugitive dust during construction activities by complying with the SJVAPCD's District Rule 8021. District Rule 8021 requires limitation of fugitive dust emissions from construction, demolition, excavation, extraction, and other earthmoving activities, by implementing control measures such as pre-watering the Project site, phasing construction

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	work to reduce the amount of disturbed surface at any one time, and applying water or other suppressants to unpaved haul/access roads and unpaved vehicle/equipment traffic areas.
The following controls are required to be implemented at all construction sites.	
mm. Effectively stabilize dust emissions using water, chemical stabilizer / suppressant, cover with a tarp or other suitable cover or vegetative ground cover, all disturbed areas, including storage piles, which are not being actively utilized for construction purposes.	The proposed Project would be required to minimize the generation of fugitive dust during construction activities by complying with the SJVAPCD's District Rule 8021. District Rule 8021 requires limitation of fugitive dust emissions from construction, demolition, excavation, extraction, and other earthmoving activities, by implementing control measures such as pre-watering the Project site, phasing construction work to reduce the amount of disturbed surface at any one time, and applying water or other suppressants to unpaved haul/access roads and unpaved vehicle/equipment traffic areas.
nn. Effectively stabilize dust emissions using water or chemical stabilizer / suppressant, all onsite unpaved roads and off-site unpaved access roads.	The proposed Project would be required to minimize the generation of fugitive dust during construction activities by complying with the SJVAPCD's District Rule 8021. District Rule 8021 requires limitation of fugitive dust emissions from construction, demolition, excavation, extraction, and other earthmoving activities, by implementing control measures such as pre-watering the Project site, phasing construction work to reduce the amount of disturbed surface at any one time, and applying water or other suppressants to unpaved haul/access roads and unpaved vehicle/equipment traffic areas.
oo. Effectively control fugitive dust emissions utilizing application of water or by presoaking all land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities.	The proposed Project would be required to minimize the generation of fugitive dust during construction activities by complying with the SJVAPCD's District Rule 8021. District Rule 8021 requires limitation of fugitive dust emissions from construction, demolition, excavation, extraction, and other earthmoving activities, by implementing control measures such as pre-watering the Project site, phasing construction work to reduce the amount of disturbed surface at any one time, and applying water or other suppressants to unpaved haul/access roads and unpaved vehicle/equipment traffic areas.
rr. Limit operations or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday (the use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit	The proposed Project would be required to minimize the generation of fugitive dust during construction activities by complying with the SJVAPCD's District Rule 8021. District Rule 8021 requires limitation of fugitive dust emissions from

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the visible dust emissions.) (Use of blower devices is expressly forbidden.)	construction, demolition, excavation, extraction, and other earthmoving activities, by implementing control measures such as pre-watering the Project site, phasing construction work to reduce the amount of disturbed surface at any one time, and applying water or other suppressants to unpaved haul/access roads and unpaved vehicle/equipment traffic areas.
SEISMIC AND GEOLOGIC HAZARDS	
a. Continue to use building codes as the primary tool for reducing seismic risk in structures. The current version of the California Building Code, as adopted by the City of Modesto, is intended to ensure that buildings resist major earthquakes of the intensity or severity of the strongest experience in California, without collapse, but with some structural as well as nonstructural damage. In most structures, it is expected that structural damage could be limited to repairable damage, even in a major earthquake.	**Consistent.** The Project will comply with all applicable State and local laws, regulations, and policies, including the California Building Code, as adopted by the City of Modesto.
b. Require all new buildings in the City to be built under the seismic requirements of the current adopted California Building Code.	**Consistent.** The Project will comply with all applicable State and local laws, regulations, and policies, including the California Building Code.
d. Enforce provisions of the Alquist-Priolo Earthquake Fault Zoning Act.	**Consistent.** The Project will comply with all applicable State and local laws, regulations, and policies, including the Priolo Earthquake Fault Zoning Act.

SOURCE: DE NOVO PLANNING GROUP, 2025.

Overall, the proposed Project would have a ***less than significant*** impact relative consistency with the General Plan.

MODESTO ZONING CODE

The Modesto Zoning Code implements the Urban Area General Plan. The Project site is not zoned under the Modesto Zoning Ordinance. The proposed Project would pre-zone the Project site to Heavy Industrial (M-2). The M-2 Zone is intended to provide suitable sites for a wide range of industrial, manufacturing, business park and other similar uses that are further from non-industrial and potentially incompatible uses. The proposed zone change would ensure that zoning would be consistent with the proposed General Plan designations within the Project site.

The zoning ordinance establishes permitted uses, development densities and intensities, and development standards for each zone to ensure that public health, safety, and general welfare are protected, consistent with the purpose of the Zoning Code. All existing City development standards and zoning requirements for the proposed zoning are applicable to any activities on the Project site.

The proposed warehouse, distribution, manufacturing, and local-serving retails uses are consistent with the Zoning Code. Several types of uses are permitted in the M-2 Zone. The permitted uses

include: contracting businesses with equipment and materials yard; distributing, freighting or trucking yard; machine shop; warehousing; wholesale businesses; retail; public facilities including storm drainage facilities; general or medical offices; package delivery services; self-storage; farm equipment sales, rental, repair, and service; truck and trailer sales, rental, repair, and service; service stations; light and heavy industrial manufacturing; transit and transportation equipment storage yards; and light recycling processing facilities. Although the exact occupants of the Project are unknown, these are some of the types of uses that could occupy the site.

The City will review each component of the proposed Project as plans (improvement plans, building plans, site plans, etc.) are submitted for final approval to ensure that they are consistent with the City's Zoning ordinance. Approval of the zone change would ensure that the proposed Project would be consistent with the Zoning Code and will have a ***less than significant*** impact relative to this topic.

CONCLUSION

In conclusion, implementation of the proposed Project will have a ***less than significant*** impact relative to this topic.

Impact 3.10-3: The proposed Project would not induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure) (Less than Significant)

Section 15126.2e) of the CEQA Guidelines requires that an EIR evaluate the growth-inducing impacts of a proposed action. A growth-inducing impact is defined by the CEQA Guidelines as:

> *The way in which a proposed Project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth…It is not assumed that growth in an area is necessarily beneficial, detrimental, or of little significance to the environment.*

Based on the CEQA Guidelines, growth inducement is any growth that exceeds planned growth of an area and results in new development that would not have taken place without implementation of the project. A project can have direct and/or indirect growth inducement potential. Direct growth inducement would result if a project, for example, involved construction of new housing. A project would have indirect growth inducement potential if it established substantial new permanent employment opportunities (e.g., commercial, industrial, or governmental enterprises) or if it would involve a construction effort with substantial short-term employment opportunities that would indirectly stimulate the need for additional housing and services to support the new employment demand (*Napa Citizens for Honest Government v. Napa County Board of Supervisors* (2001) 91 Cal.App.4th 342). Similarly, a project would indirectly induce growth if it would remove an obstacle to additional growth and development, such as removing a constraint on a required public service.

A project providing an increased water supply or wastewater treatment/collection in an area where this service historically limited growth could be considered growth-inducing.

The State CEQA Guidelines further explain that the environmental effects of induced growth are considered indirect impacts of the proposed action. These indirect impacts or secondary effects of growth may result in significant, adverse environmental impacts. Potential secondary effects of growth include increased demand on other community and public services and infrastructure, increased traffic and noise, and adverse environmental impacts such as degradation of air and water quality, degradation or loss of plant and animal habitat, and conversion of agricultural and open space land to developed uses.

Growth inducement may constitute an adverse impact if the growth is not consistent with or accommodated by the land use plans and growth management plans and policies for the area affected. Local land use plans provide for land use development patterns and growth policies that allow for the orderly expansion of urban development supported by adequate urban public services, such as water supply, roadway infrastructure, sewer service, and solid waste service.

COMPONENTS OF GROWTH

The timing, magnitude, and location of land development and population growth in a region are based on various interrelated land use and economic variables. Key variables include regional economic trends, market demand for residential and non-residential uses, land availability and cost, the availability and quality of transportation facilities and public services, proximity to employment centers, the supply and cost of housing, and regulatory policies or conditions. Since the general plan of a community defines the location, type, and intensity of growth, it is the primary means of regulating development and growth in California.

GROWTH EFFECTS OF THE PROJECT

Direct Population Growth: The Project does not propose any residential uses and therefore would have no impact on direct population growth. The proposed Project would not result in direct population growth beyond the City's capacity that is planned in the Urban Area General Plan.

Indirect Population Growth: As described above, projects that include employment-generating uses have the potential to result in indirect population growth through the creation of jobs or the extension of infrastructure into areas that were not previously served. Implementation of the Project would provide job growth to the area. It is anticipated that the Project would provide approximately 1,000 jobs to the northern part of the City. It is anticipated that the employment growth would be met both by existing residents and through the attraction of new residents. The Project would establish a variety of business opportunities that can support the skilled and educated workforce of Modesto and the local area. Estimating the number of these future employees who would relocate to the City would be highly speculative, because many factors influence personal housing location decisions (i.e., family income levels and the cost and availability of suitable housing

in the local area). Thus, the number of new employees who may relocate to the City to fill the newly created positions is unknown.

The employment-generating land uses proposed by the Project would be within the growth projections anticipated and analyzed in the Urban Area General Plan EIR. Overall, the proposed Project is not anticipated to exceed the planned growth (directly or indirectly) in the area beyond what is anticipated in the City's Urban Area General Plan or regional growth projections.

While the proposed Project will result in employment growth, it is not anticipated to significantly induce growth. Implementation of the proposed Project will have a ***less than significant*** impact relative to this topic.

CUMULATIVE IMPACTS

The cumulative setting for land use and planning impacts is the City of Modesto.

Impact 3.10-4: The proposed Project, in combination with cumulative development, would not result in the physical division of an established community. (Less than Significant)

The City of Modesto would continue to grow in a manner consistent with the Urban Area General Plan. The plan calls for infill growth, growth focused on the downtown area, and new growth in greenfield locations within the SOI and city planning area. Cumulative development in the City of Modesto would adhere to the development patterns, density, intensity, land use designations, and development standards outlined in the Urban Area General Plan and Zoning Ordinance. The city is surrounded by agricultural land and other urban areas, each with their own defined planning area boundary. As growth occurs in the City of Modesto, conformance with the Urban Area General Plan will be evaluated and analyzed to ensure compliance with growth assumptions. Therefore, cumulative development would not result in the division of an established community, and the cumulative impact would be ***less than significant***.

Impact 3.10-5: The proposed Project, in combination with cumulative development, would not conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted to avoid or mitigate an environmental effect. (Less than Significant)

Cumulative development in the City of Modesto would adhere to the development patterns, density, intensity, land use designations, and development standards outlined in the Urban Area General Plan and Zoning Ordinance. If future proposed land uses are not consistent with the Urban Area General Plan, there are two courses of action: 1) the uses are not allowed due to the inconsistency, or 2) the land uses are changed through an amendment to the Urban Area General Plan to create consistency. Approval of a General Plan amendment would ensure that future cumulative development in the city would be substantially consistent with the Modesto Urban Area General Plan land use requirements.

Cumulative land use impacts, such as the potential for conflicts with adjacent land uses and consistency with adopted plans and regulations, are typically site- and project-specific. Each cumulative project would be required to demonstrate consistency with applicable plans, including the City's Urban Area General Plan. Therefore, cumulative development would not conflict with an applicable land use plan, policy, or regulation, and the cumulative impact would be ***less than significant***.

Impact 3.10-6: The proposed Project, in combination with cumulative development, would not induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure) (Less than Significant)

Cumulative development in the City of Modesto would be guided by the goals, policies and exhibits in the Urban Area General Plan which establish the direction, scale, magnitude and priorities associated with Modesto's growth and development. As described in the Urban Area General Plan, Modesto's Growth Strategy establishes three geographic areas within the plan: (1) the Downtown Area; (2) the Baseline Developed Area, generally consisting of lands within the 2014 Modesto city limits, plus the unincorporated Beard Industrial Tract located south of SR132 / Yosemite Blvd., and minus the Village One and Tivoli specific plan areas; and, (3) the Planned Urbanizing Area, consisting of areas outside of the 2014 city limits (plus Village One and Tivoli) and within the planning area boundary. Future growth in the city would adhere to these identified planning areas as established. The Urban Area General Plan may be amended from time to time, as internal and external factors result in a need to update it. Examples of internal factors include changing priorities and recognition of new opportunities; external factors include new state laws and changing physical conditions. Nonetheless, the growth anticipated in the Urban Area General Plan is planned growth, supported by policies and physical improvements. Therefore, cumulative growth in the City of Modesto would not be unplanned, and the impact would be ***less than significant***.

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This section provides a general description of the existing noise sources in the Project vicinity, a discussion of the regulatory setting, and identifies potential noise impacts associated with the proposed Project. Project impacts are evaluated relative to applicable noise level criteria and to the existing ambient noise environment. Mitigation measures have been identified for significant noise-related impacts. This section is based in part on the following documents, reports and studies:

- *City of Modesto General Plan* (City of Modesto, 2019);
- *Public Draft Environmental Impact Report for the Modesto Urban Area General Plan* (City of Modesto, 2025);
- *Modesto Municipal Code* (City of Modesto, 2024); and
- *Noise and Vibration Assessment for the Scannell Industrial Project, Modesto California* (De Novo Planning Group, 2025) (See Appendix D).

Comments were received during the public review period or scoping meeting for the Notice of Preparation regarding this topic from the following individuals and organizations:

- Anita Young (resident) (March 24, 2025);
- Stanislaus County Environmental Review Committee (ERC) (March 27, 2025); and
- California Department of Fish and Wildlife (March 27, 2025).

Full comments are included in Appendix A.

3.11.1 ENVIRONMENTAL SETTING

KEY TERMS

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given area consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
Attenuation	The reduction of noise.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, defined as ten times the logarithm of the ratio of the sound pressure squared over the reference pressure squared.
CNEL	Community noise equivalent level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
Frequency	The measure of the rapidity of alterations of a periodic acoustic signal, expressed in cycles per second or Hertz.
Impulsive	Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.
L_{dn}	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.

L_{eq}	Equivalent or energy-averaged sound level.
L_{max}	The highest root-mean-square (RMS) sound level measured over a given period of time.
$L_{(n)}$	The sound level exceeded a described percentile over a measurement period. For instance, an hourly L_{50} is the sound level exceeded 50 percent of the time during the one hour period.
Loudness	A subjective term for the sensation of the magnitude of sound.
Noise	Unwanted sound.
SEL	Sound exposure levels. A rating, in decibels, of a discrete event, such as an aircraft flyover or train passby, that compresses the total sound energy into a one-second event.

FUNDAMENTALS OF ACOUSTICS AND VIBRATION

Noise

"Sound" is a vibratory disturbance created by a moving or vibrating source and is capable of being detected. "Noise" is defined as sound that is loud, unpleasant, unexpected, or undesired and may therefore be classified as a more specific group of sounds. The effects of noise on people can include general annoyance; interference with speech communication; sleep disturbance; and, in the extreme, hearing impairment.

Sound pressure levels are described in units called the decibel (dB). Decibels are measured on a logarithmic scale. A doubling of the energy of a noise source (such as doubling of traffic volume) would increase the noise level by 3 dB. The human ear is not equally sensitive to all frequencies within the sound spectrum. To accommodate this phenomenon, the A-scale was devised; the A-weighted decibel scale (dBA) approximates the frequency response of the average healthy ear when listening to most ordinary everyday sounds and is used in this analysis.

Human perception of noise has no simple correlation with acoustical energy. Due to subjective thresholds of tolerance, the annoyance of a given noise source is perceived very differently from person to person. The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at 3 feet is approximately 60 dBA, while loud jet engine noises at 1,000 feet equate to 100 dBA, which can cause serious discomfort. Table 3.11-1 lists several examples of the noise levels associated with common situations.

Two noise sources do not "sound twice as loud" as one source. As stated above, a doubling of noise sources results in a noise level increase of 3 dBA. It is widely accepted that (1) the average healthy ear can barely perceive changes of a 3 dBA increase or decrease; (2) a change of 5 dBA is readily perceptible; and (3) an increase (decrease) of 10 dBA sounds twice (half) as loud (Caltrans, 2013).

From the source to the receiver, noise changes both in the level and frequency spectrum. The most obvious change is the decrease in noise level as the distance from the source increases. Sound from a small localized source (approximating a "point" source) radiates uniformly outward as it travels

away from the source in a spherical pattern. For point sources, such as heating, ventilation, and air conditioning (HVAC) units or construction equipment, the sound level attenuates (or drops off) at a rate of 6 dBA for each doubling of distance (i.e., if the noise level is 70 dBA at 25 feet, it is 64 dBA at 50 feet). Vehicle movement on a road makes the source of the sound appear to emanate from a line (line source) rather than a point when viewed over some time interval. The sound level attenuates or drops off at a rate of 3 dBA per doubling of distance for line sources.

TABLE 3.11-1: TYPICAL NOISE LEVELS

COMMON OUTDOOR ACTIVITIES	*NOISE LEVEL (DBA)*	*COMMON INDOOR ACTIVITIES*
	--110--	Rock Band
Jet Fly-over at 300 m (1,000 ft)	--100--	
Gas Lawn Mower at 1 m (3 ft)	--90--	
Diesel Truck at 15 m (50 ft), at 80 km/hr (50 mph)	--80--	Food Blender at 1 m (3 ft) Garbage Disposal at 1 m (3 ft)
Noisy Urban Area, Daytime Gas Lawn Mower, 30 m (100 ft)	--70--	Vacuum Cleaner at 3 m (10 ft)
Commercial Area Heavy Traffic at 90 m (300 ft)	--60--	Normal Speech at 1 m (3 ft)
Quiet Urban Daytime	--50--	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	--40--	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall (Background)
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing

SOURCE: CALTRANS, TECHNICAL NOISE SUPPLEMENT, TRAFFIC NOISE ANALYSIS PROTOCOL. SEPTEMBER 2013.

A large object in the path between a noise source and a receiver can significantly attenuate noise levels at that receiver location. The amount of attenuation provided by this "shielding" depends on the size of the object and the frequencies of the noise levels. Natural terrain or landform features as well as man-made features (e.g., buildings and walls) can significantly alter noise exposure levels. For a noise barrier to work, it must be high enough and long enough to block the view from the receiver to a road or to the noise source. Effective noise barriers can reduce outdoor noise levels at the receptor by up to 15 dBA.

Several rating scales (or noise "metrics") exist to analyze effects of noise on a community. These scales include the equivalent noise level (L_{eq}), including L_{max} and L_{min}, which are respectively the highest and lowest A-weighted sound levels that occur ding a noise event, and the Community Noise Equivalent Level (CNEL). Average noise levels over a period of minutes or hours are usually expressed as dBA L_{eq}, which is the equivalent noise level for that period of time. The period of time averaging may be specified; for example, $L_{eq(3)}$ would be a three-hour average. Noise of short duration (i.e., substantially less than the averaging period) is averaged into ambient noise during the period of

interest. Thus, a loud noise lasting many seconds or a few minutes may have minimal effect on the measured sound level averaged over a one-hour period.

To evaluate community noise impacts, CNEL was developed to account for human sensitivity to nighttime noise. CNEL represents the 24-hour average sound level with a penalty for noise occurring at night. The CNEL computation divides a 24-hour day into 3 periods: daytime (7:00 AM to 7:00 PM), evening (7:00 PM to 10:00 PM), and nighttime (10:00 PM to 7:00 AM). The evening sound levels are assigned a 5 dBA penalty, and the nighttime sound levels are assigned a 10 dBA penalty prior to averaging with daytime hourly sound levels.

Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration is normally associated with activities such as railroads or vibration-intensive stationary sources, but can also be associated with construction equipment such as jackhammers, pile drivers, and hydraulic hammers. Vibration displacement is the distance that a point on a surface moves away from its original static position. The instantaneous speed that a point on a surface moves is described as the velocity, and the rate of change of the speed is described as the acceleration. Each of these descriptors can be used to correlate vibration to human response, building damage, and acceptable equipment vibration levels. During construction of a project, the operation of construction equipment can cause groundborne vibration. During the operational phase of a project, receptors may be subject to levels of vibration that can cause annoyance due to noise generated from vibration of a structure or items within a structure. Analysis of this type of vibration is best measured in velocity and acceleration.

The three main wave types of concern in the propagation of groundborne vibrations are surface or Rayleigh waves, compression or P-waves, and shear or S-waves.

- Surface or Rayleigh waves travel along the ground surface. They carry most of their energy along an expanding cylindrical wave front, similar to the ripples produced by throwing a rock into a lake. The particle motion is more or less perpendicular to the direction of propagation (known as retrograde elliptical).
- Compression or P-waves are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal, in a push-pull motion. P-waves are analogous to airborne sound waves.
- Shear or S-waves are also body waves, carrying their energy along an expanding spherical wave front. Unlike P-waves, however, the particle motion is transverse, or perpendicular to the direction of propagation.

The peak particle velocity (ppv) or the root mean square (rms) velocity is usually used to describe vibration amplitudes. The ppv is defined as the maximum instantaneous peak of the vibration signal and the rms is defined as the square root of the average of the squared amplitude of the signal. The

ppv is more appropriate for evaluating potential building damage, whereas the rms is typically more suitable for evaluating human response.

The units for ppv and rms velocity are normally inches per second (in/sec). Often, vibration is presented and discussed in dB units in order to compress the range of numbers required to describe the vibration. In this study, all ppv and rms velocity levels are in in/sec and all vibration levels are in dB relative to one microinch per second (abbreviated as VdB). The threshold of perception is approximately 65 VdB. Typically, groundborne vibration generated by human activities attenuates rapidly with distance from the source of the vibration. Even the more persistent Rayleigh waves decrease relatively quickly as they move away from the source of the vibration. Manmade vibration problems are, therefore, usually confined to short distances (500 feet or less) from the source.

Construction generally includes a wide range of activities that can generate groundborne vibration. In general, blasting and demolition of structures generate the highest vibrations. Vibratory compactors or rollers, pile drivers, and pavement breakers can generate perceptible amounts of vibration at distances within 200 feet of the vibration sources. Heavy trucks can also generate groundborne vibrations, which vary depending on vehicle type, weight, and pavement conditions. Potholes, pavement joints, discontinuities, differential settlement of pavement, and other anomalies all increase the vibration levels from vehicles passing over a road surface. Construction vibration is normally of greater concern than vibration of normal traffic on streets and freeways with smooth pavement conditions. Trains generate substantial quantities of vibration due to their engines, steel wheels, and heavy loads.

EFFECTS OF NOISE ON PEOPLE

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction;
- Interference with activities such as speech, sleep, and learning; and
- Physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a 1 dBA change cannot be perceived;
- Outside of the laboratory, a 3 dBA change is considered a just-perceivable difference;

- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- A 10 dBA change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response.

Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately 6 dB per doubling of distance from the source, depending on environmental conditions (i.e., atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres, or a street with moving vehicles, would typically attenuate at a lower rate.

EXISTING SENSITIVE RECEPTORS

Noise-sensitive receptors are generally considered to be humans who are engaged in activities that may be subject to the stress of significant interference from noise. Activities usually associated with sensitive receptors include, but are not limited to, talking, reading, and sleeping. Noise-sensitive receptors closest to the Project site include single-family residences proximate to the Project site. The City of Modesto has also defined sensitive receptors as: "Sensitive noise receptors are persons and facilities that could be adversely affected by noise. Sensitive receptors in Modesto include residences, hospitals, parks, churches, and schools."

EXISTING NOISE LEVELS

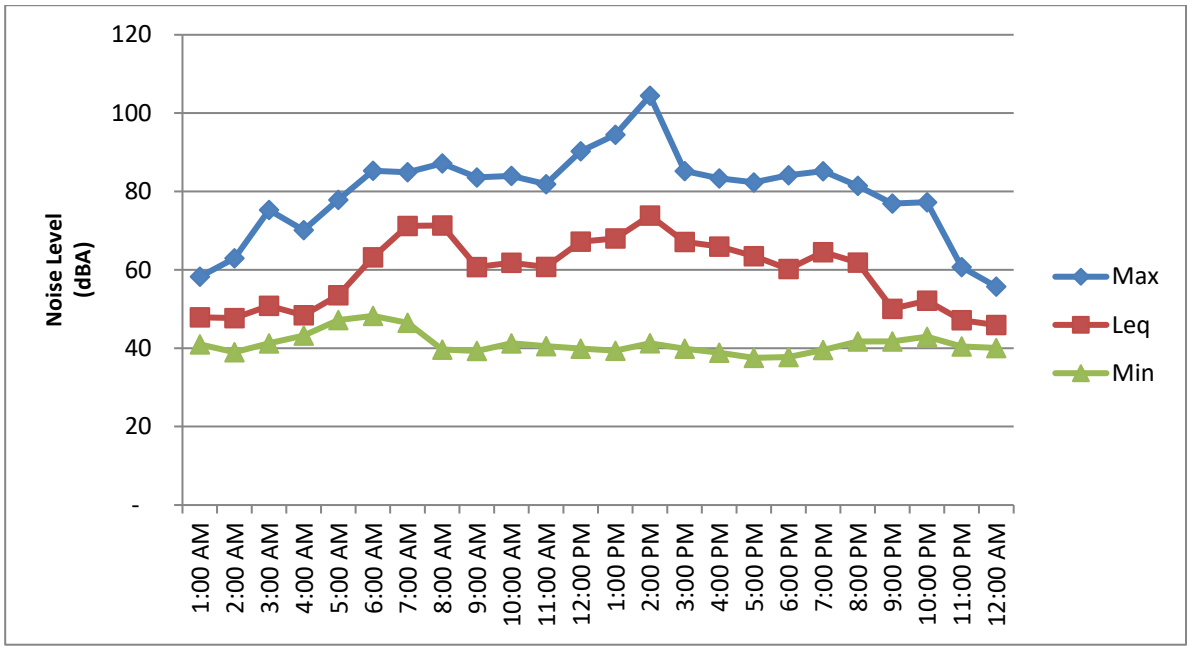
Existing Ambient Noise Levels

The existing noise environment in the Project area is influenced by traffic noise on nearby roads. The roadway contributing the most noise to the Project site is Kiernan Avenue and to a much lesser extent local roadways which includes Dale Road, Pirrone Road. As part of the Noise and Vibration Assessment prepared for the Project, ambient noise surveys were conducted on April 23 and 24, 2025 for the Project at locations shown in Figure 3.11-1.

Noise level measurements were taken using a Larson Davis Laboratories SoundTrack LxT sound level meter (LD LxT). The LD LxT were set up at a height of approximately five feet above the ground and equipped with a windscreen. Four measurement locations were taken at each of the Project site boundaries. The LD LxTs were calibrated before and after use with a Larson Davis Model CAL200 acoustical calibrator to ensure that the measurements would be accurate. The sound level meters were programmed to record noise levels in "slow" mode in A-weighted form. Meteorological conditions during all measurement periods were favorable, with clear skies. The noise level measurements were collected for approximately 24 hours at each location. The minimum (L_{min}), average (L_{eq}), and maximum noise levels (L_{max}) are taken at each ambient noise measurement location. Figures of the hourly noise levels at each location to depict existing noise levels at each of the Project site boundaries. The complete noise monitoring results are included in Attachment A of Appendix D.

As shown in Chart 3.11-1, average daytime noise levels at Noise Monitoring Location 1 is located at the northern Project site boundary. Measured noise levels range from 46 to 74 dBA Leq. The 24-hour weighted noise level at this location is 69.9 dBA CNEL.

CHART 3.11-1: HOURLY NOISE LEVELS AT NOISE MONITORING LOCATION 1 AT NORTHERN PROJECT SITE BOUNDARY

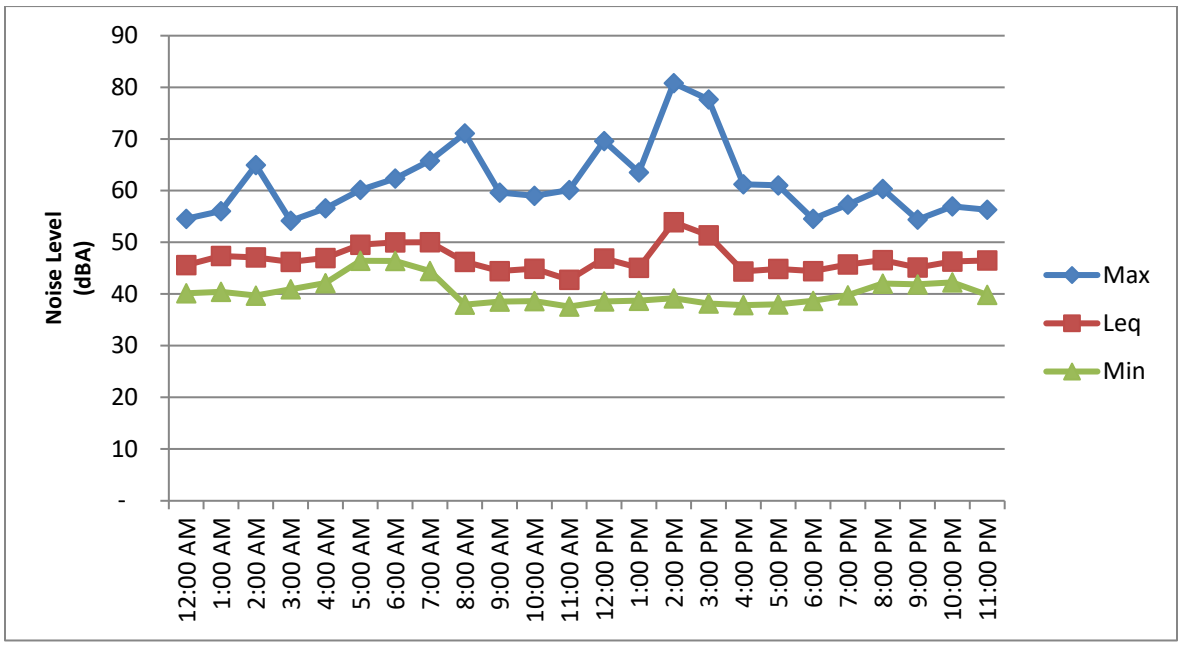


SOURCE: NOISE AND VIBRATION ASSESSMENT FOR THE SCANNELL INDUSTRIAL PROJECT, MODESTO CALIFORNIA (DE NOVO PLANNING GROUP, 2025)

Noise Monitoring Location 2 is located on the western property line. As shown in Chart 3.11-2, average daytime noise levels in the study area which range from 43 to 54 dBA Leq. The 24-hour weighted noise level at this location is 54.1 dBA CNEL. Noise sources include local traffic as well as a tractor. The measured noise levels are representative of a rural environmental setting.

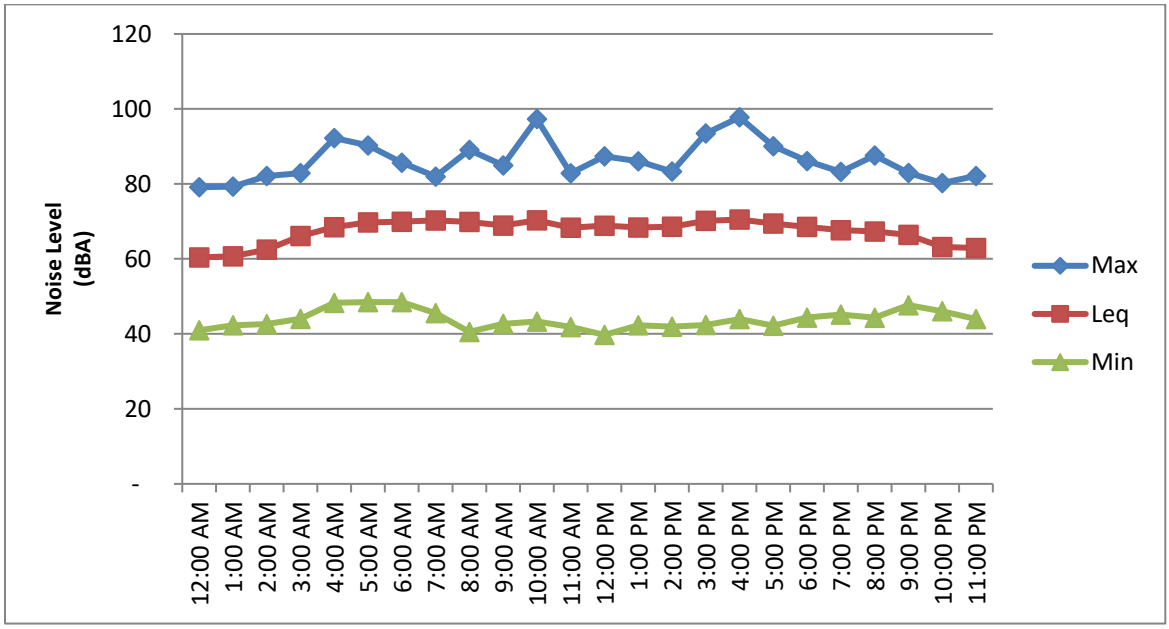
Noise Monitoring Location 3 is located on the southern property line. As shown in Chart 3.11-3, hourly noise levels at Noise Monitoring Location 3, average daytime noise levels in the study area range from 60 to 70 dBA L_{eq}. The 24-hour weighted noise level at this location is 73.5 dBA CNEL. The measured noise levels are representative of a location exposed to high levels of roadway traffic. Noise Monitoring Location 4 is at the eastern property line. As shown in Chart 3.11-3, average daytime noise levels in the study area range from 60 to 70 dBA L_{eq}. The 24-hour weighted noise level at this location is 73.5 dBA CNEL.

CHART 3.11-2: HOURLY NOISE LEVELS AT NOISE MONITORING LOCATION 2 AT WESTERN PROJECT SITE BOUNDARY



SOURCE: NOISE AND VIBRATION ASSESSMENT FOR THE SCANNELL INDUSTRIAL PROJECT, MODESTO CALIFORNIA (DE NOVO PLANNING GROUP, 2025)

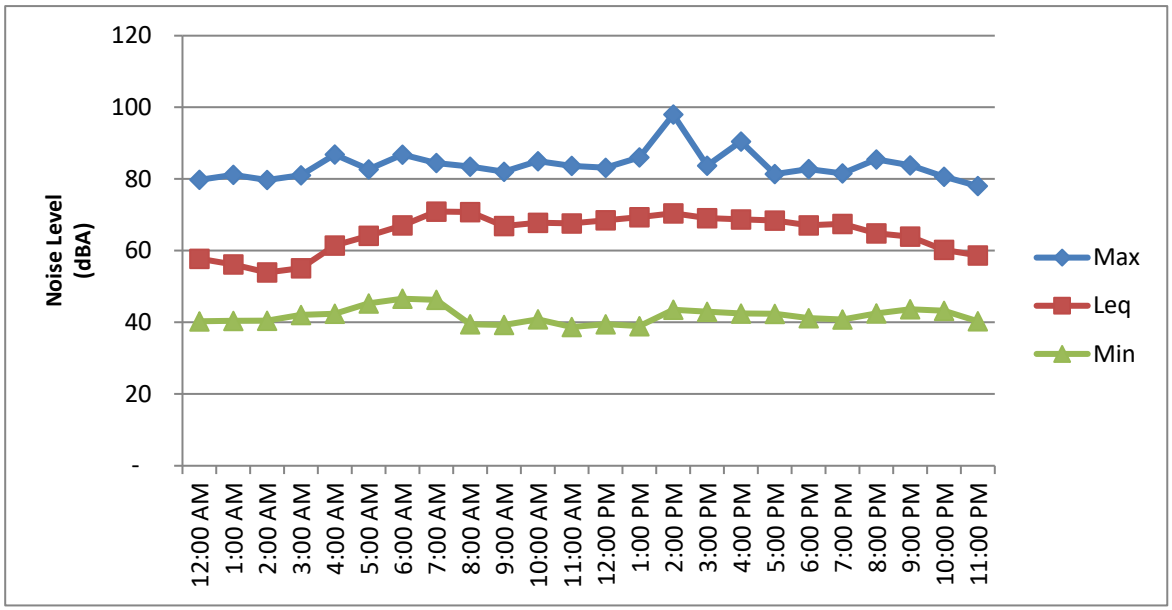
CHART 3.11-3: HOURLY NOISE LEVELS AT NOISE MONITORING LOCATION 3 AT SOUTHERN PROJECT SITE BOUNDARY



SOURCE: NOISE AND VIBRATION ASSESSMENT FOR THE SCANNELL INDUSTRIAL PROJECT, MODESTO CALIFORNIA (DE NOVO PLANNING GROUP, 2025)

Noise Monitoring Location 4 is at the eastern property line. As shown in Chart 3.11-3, average daytime noise levels in the study area range from 54 to 71 dBA L_{eq}. The 24-hour weighted noise level at this location is 70.2 dBA CNEL.

CHART 3.11-4: HOURLY NOISE LEVELS AT NOISE MONITORING LOCATION 4 AT EASTERN PROJECT SITE BOUNDARY



SOURCE: NOISE AND VIBRATION ASSESSMENT FOR THE SCANNELL INDUSTRIAL PROJECT, MODESTO CALIFORNIA (DE NOVO PLANNING GROUP, 2025)

3.11.2 REGULATORY SETTING

FEDERAL

There are no federal regulations related to noise that apply to the proposed Project. However, the Federal Transit Administration's *Transit Noise and Vibration Impact Assessment Manual* provides a standardized, technical approach for evaluating noise and vibration impacts associated with transit and construction projects. It supports the environmental review process required under the National Environmental Policy Act (NEPA) by offering methodologies for noise and vibration assessments. The manual provides guidance on the quantification of potential impacts and determining whether mitigation is necessary. This Manual provides the basis for the quantitative noise and vibration impacts for construction of the proposed Project.

STATE

California Environmental Quality Act

The California Environmental Quality Act (CEQA) Guidelines, Appendix G, indicate that a significant noise impact may occur if a project exposes persons to noise or vibration levels in excess of local general plans or noise ordinance standards, or cause a substantial permanent or temporary increase in ambient noise levels. CEQA standards are discussed more below under the Thresholds of Significance section.

Assembly Bill 1307 (Stats. 2023, ch. 160), codified as Sections 21085 and 21085.2 to the Public Resources Code, clarified that the effects of noise generated by project occupants and their guests on human beings is not a significant effect on the environment. Subsequently, the California

Supreme Court further clarified that such "social noise" – defined as "noise generated by human voices during social interactions" – is not subject to CEQA review. (Make UC a Good Neighbor v. Regents of University of California (2024) 16 Cal.5th 43.) Such "social noise" under AB 1307 shall include amplified music. (*West Adams Heritage Assn. v. City of Los Angeles* (2024) 106 Cal.App.5th 395.)

California Building Standards Code

Title 24 of the California Code of Regulations, also known as the California Building Standards Code, establishes building standards applicable to all occupancies throughout the state. Section 1207.11.2 requires that residential structures other than detached single-family dwellings be designed to prevent the intrusion of exterior noise so that the interior noise attributable to exterior sources shall not exceed 45 dBA CNEL in any habitable room. Section 1207.12 states, "if interior allowable noise levels are met by requiring that windows be unopenable or closed, the design for the structure must also specify a ventilation or air conditioning system to provide a habitable interior requirement. The ventilation system must not compromise the dwelling unit or guest room noise reduction".

Transportation and Construction Vibration Guidance Manual

The *Transportation and Construction Vibration Guidance Manual*, published by the California Department of Transportation (Caltrans), provides engineers, planners, and consultants with methods to assess vibration impacts stemming from transportation and construction activities. It provides assessment methods and thresholds to gauge whether vibrations generated during construction, blasting, heavy traffic, or the operation of maintenance equipment could be perceptible to humans or pose risks of structural damage. It outlines criteria relevant to people, buildings, and equipment, and offers simplified prediction and screening procedures for common construction equipment. Mitigation strategies—like wave barriers and equipment modifications are also included. Although it is not a formal regulation or standard, the manual serves as a reference for assessing and managing vibration.

LOCAL

City of Modesto General Plan

The City of Modesto has established guidelines and standards in the General Plan.

NOISE ELEMENT

The City of Modesto is affected by several different sources of noise, including automobile traffic, rail, aircraft, commercial activity, and periodic nuisances such as construction, loud parties, and other events. Chapter VII. Environmental Resources, Open Space and Conservation (Noise Element) is intended to identify these sources and provide objectives and policies that ensure that noise from these sources does not create an unacceptable noise environment (Modesto 2019). The Noise Element contains guidelines for noise compatible land use for long-term operations as shown in Table 3.11-2 (Table VII-2 of the General Plan). This Table of the Noise Element depicts "normally acceptable," "conditionally acceptable," "normally unacceptable," and "clearly unacceptable" noise

levels for various land use categories. These noise levels identify noise limitations for determining land use compatibility between a new development and neighboring uses. Table 3.11-2 (Table VII-2 of the General Plan) utilizes the community noise equivalent level (CNEL), which is the time-varying noise over a 24-hour period with a weighting factor applied to noises occurring during evening and nighttime hours.

TABLE 3.11-2: NOISE COMPATIBILITY MATRIX (TABLE VII-2 OF THE GENERAL PLAN)

LAND USE CATEGORY	*COMMUNITY NOISE EXPOSURE (L_{DN}) OR CNEL (DB)*						
	50	***55***	***60***	***65***	***70***	***75***	***80***
Residential: low-density single-family, duplex, mobile homes							
Residential: multi-family							
Transient lodging (hotel/ motel)							
Schools, libraries, churches, hospitals, nursing homes							
Auditoriums, concert halls, amphitheaters							
Sports arenas, outdoor spectator sports							
Playgrounds, neighborhood parks							
Golf courses, riding stables, water recreation, cemeteries							
Office buildings (professional, business, commercial)							
Industrial, manufacturing, utilities, agriculture							

NORMALLY ACCEPTABLE

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special insulation requirements

CONDITIONALLY ACCEPTABLE

Specified land use may be permitted only after detailed analysis of the noise reduction requirements and needed noise insulation features included in the design

NORMALLY UNACCEPTABLE

New construction or development should generally not be undertaken because mitigation was found to be infeasible to comply with noise element policies

LAND USE CATEGORY	*COMMUNITY NOISE EXPOSURE (L_{DN}) OR CNEL (DB)*						
	50	***55***	***60***	***65***	***70***	***75***	***80***
CLEARLY UNACCEPTABLE New construction or development should generally not be undertaken because mitigation was found to be infeasible to comply with noise element policies							

SOURCE: CITY OF MODESTO, 2019.

2. Noise Sources

Major sources of continuous or occasional noise include the following.

- Roadways, especially arterials and expressways
- Roadway noise is generally continuous throughout the day, tapering off in the evening. In the evening, noise from trucks, loud car stereos, emergency vehicles, and poorly muffled engines are especially noticeable. Typical noise ranges from 60 dB to 100 dB.
- Railroads – Union Pacific, Burlington Northern-Santa Fe, and Modesto & Empire Traction Noise and vibrations from freight and passenger rail occurs throughout the day and night, which can be very disruptive. Due to federal regulations, train horns must be sounded at particular volumes and durations. It is possible to establish a 'quiet zone' in some circumstances to reduce – but not eliminate – train horn noise. Typical noise can range from 70 dB to 90 dB at a distance of 100 feet.
- Modesto City-County Airport - Aircraft noise can occur at most hours of the day or night. Identifiable aircraft noise is negligible at a distance of more than two (2) or three (3) miles from the airport, but can be very significant and disruptive to nearby residences in the vicinity of the runway. CNEL volumes average about 60 dB at the eastern edges of the neighborhoods nearest to the airport. While CNEL averages noise levels, it should be noted that individual noise events, such as engine run-ups and takeoffs, can produce considerably higher short-term noise volumes.

Modesto's hospitals provide medical evacuation services by helicopter which adds noise in the areas adjacent to those hospitals. Additionally, industry and domestic noise, such as a party, someone working on a car in their garage, and/or power tools, add to the noise environment.

3. Sensitive Receptors

Sensitive noise receptors are persons and facilities that could be adversely affected by noise. Sensitive receptors in Modesto include residences, hospitals, parks, churches, and schools. The following policies apply to development in all areas of the City.

a) Construction activities are to comply with Modesto Municipal Code Title 4, Chapter 9.
b) Implement noise-reducing construction practices as conditions of approval where substantial construction-related noise impacts would be likely to occur, such as with extended periods of pile driving, or where construction is expected to continue or where

sensitive receptors would be affected by construction noise. Conditions of approval may include, but are not limited to:

- Require construction equipment, including air compressors and pneumatic equipment to have properly maintained mufflers;
- Require impact tools to be equipped with shrouds or shields;
- Require that the quietest equipment available be used; and,
- Require selection of haul routes that affect the fewest number of people.

c) Implement techniques, where feasible, to reduce noise impacts from new or widened roadways. Such techniques may include, but are not limited to:

- Traffic calming to reduce vehicle speeds, including narrowing travel lanes and limiting the number of motor vehicle lanes;
- Adding bicycle and parking lanes to move the noise source farther away from sensitive receptors; and,
- Use of earthen berms and landscaped walls to channel noise away from sensitive receptors.

d) Use the most recent noise contour map (Figure VII-2) to implement the requirements of Noise Insulation Standards contained in Title 24 of the California Code of Regulations. Developers may be allowed to demonstrate that detailed noise studies and / or mitigation are not necessary due to local conditions, changes in the expected future noise environment, or inapplicable assumptions made in the Master EIR.

e) Incorporate construction practices and acoustic treatment in new residential construction to reduce typical indoor noise levels to 45 dB. Developers of residential buildings within the 65 dBA contours shown in the General Plan Master EIR shall demonstrate that interior noise has been reduced to 45 dB. Other types of development should be protected against noise intrusion at least to the levels indicated on Table 3.11-3 (Table VII-2 of the General Plan).

f) For proposed non-transportation noise sources, reduce noise levels so as not to exceed the allowable noise exposure thresholds specified in Table 3.11-3 (Table V-II-3 of the General Plan), below, at the property line of residential or other noise-sensitive land uses.

TABLE 3.11-3: NOISE EXPOSURE THRESHOLDS – NON-TRANSPORTATION NOISE SOURCES (TABLE VII-3 OF THE GENERAL PLAN)

	CITYWIDE, EXCLUDING DOWNTOWN		*DOWNTOWN*	
	(7:00AM - 10:00PM)	*(10:00PM - 7:00AM)*	*(7:00AM - 10:00PM)*	*(10:00PM - 7:00AM)*
Hourly L_{eq}, dBA	55	45	60	50
Maximum level, dBA	75	65	80	70

*NOTES: * EACH OF THE NOISE LEVEL STANDARDS SHALL BE REDUCED BY FIVE (5) DBA FOR PURE TONE NOISES, NOISE CONSISTING PRIMARILY OF SPEECH OR MUSIC, OR FOR RECURRING IMPULSIVE NOISES. WHERE MEASURED AMBIENT NOISE LEVELS EXCEED THE STANDARDS, THE STANDARDS SHALL BE INCREASED TO THE AMBIENT LEVELS.*

*** IF THE EXISTING AMBIENT NOISE LEVEL AT THE RECEIVING USE EXCEEDS THE THRESHOLDS GIVEN IN TABLE V.3.9, THEN THE NOISE LEVEL STANDARDS SHALL BE INCREASED TO ACCOUNT FOR THE AMBIENT NOISE LEVEL.*

SOURCE: CITY OF MODESTO, 2019.

g) At noise-sensitive land uses, increases in noise should not exceed 3 dBA where any other noise threshold or standard would be exceeded, and/or 5 dBA where noise levels would otherwise fall within acceptable limits, for the existing conditions scenario as compared to the buildout scenario.
h) Additional study and/or mitigation for outdoor recreation areas will be required if:
    - For single-family dwellings, noise exceeds 65 dBA L_{dn} in one or more backyards;
    - For multi-family dwellings, noise exceeds 65 dBA L_{dn} at common recreation areas, such as swimming pools or play areas or at private patios and balconies; or,
    - For other uses, noise exceeds the level considered "conditionally acceptable" as shown on Table VII-2.
i) Limit trucking to specific routes, times, and speeds that avoid or minimize adverse effects on sensitive receptors.
j) Airport and aircraft noise analysis will be conducted in accordance with the Modesto City–County Airport's Master Plan and Federal Aviation Regulation (FAR Part 150). New construction must meet Modesto's noise compatibility standards. As airport operations increase, mitigation will be provided to existing residential and other sensitive uses, either through operations or direct property improvements, in order to meet Title 14 Code of Federal Regulations Part 150 land use compatibility guidelines.
k) Study, analyze and consider establishment of "Quiet Zones" along the rail corridors through downtown, along Yosemite Boulevard and along the east side of the planning area.
l) For new residential development proposed in areas within 200 feet of the center of the near mainline of active rail lines where single-event noise from trains is of concern, demonstrate that the proposed development will incorporate measures to reduce maximum noise levels generated during train passbys to 50 dBA L_{max} or less inside bedrooms and to 55 dBA L_{max} or less inside other noise sensitive occupied areas.
m) For new residential and vibration sensitive commercial development (including but not limited to lodging facilities, hospitals and similar uses) located within 200 feet of the center of the near mainline of active rail lines, demonstrate that the proposed development will incorporate measures to reduce vibration levels generated during train passby events to meet the FTA vibration criteria as shown in Master EIR Table V-3-6.
n) For construction activities involving high-powered vibratory tools or pile driving within 200 feet of an existing structure, demonstrate that project construction would not exceed the Caltrans construction vibration thresholds to ensure that no damage to sensitive structures would occur.

Modesto Municipal Code

CHAPTER 9: NOISE REGULATIONS

(Ord. 1269-C.S., amended by Ord. 2604-C.S., § 4, repealed and reenacted by Ord. 2752-C.S., § 1, effective 3-27-91)

Article 1. General Noise Regulations

4-9.101 Declaration of Policy.

It is hereby declared to be the policy of the City of Modesto that the peace, health, safety, and welfare of its citizens require protection from loud and raucous noises from any and all sources in the community.

(Added by Ord. 2752-C.S., § 1, effective 3-27-91)

4-9.102 Prohibited Generally.

It shall be unlawful for any person to willfully or knowingly make, continue, or cause to be made or continued any loud and raucous noise.

The term "loud and raucous noise" shall mean any sound which, because of its volume level, duration, or character, annoys, disturbs, injures, or endangers the comfort, health, peace, or safety of a reasonable person of ordinary sensibility within the limits of the City of Modesto.

The term "loud and raucous noise" specifically includes, but is not limited to, the kinds of noise generated by the activities enumerated in Section 4-9.103. The term "loud and raucous noise" specifically excludes the kinds of noise generated by the activities described in Section 4-9.104.

For any kind of noise not enumerated in Section 4-9.103, the factors which may be considered in determining whether a violation of the provisions of this section exists may include, but shall not be limited to, the following:

(a) The volume of the noise;
(b) Whether the nature of the noise is usual or unusual;
(c) Whether the origin of the noise is natural or unnatural;
(d) The volume and intensity of the background noise, if any;
(e) The proximity of the noise to residential sleeping facilities;
(f) The nature and zoning of the area within which the noise emanates;
(g) The density of the inhabitation of the area within which the noise emanates;
(h) The time of the day or night the noise occurs;
(i) The day of the week the noise occurs;
(j) The duration of the noise;
(k) Whether the noise is recurrent, intermittent, or constant; and
(l) Whether the noise is produced by a commercial or noncommercial activity.

4-9.104 Exemptions.

The term "loud and raucous noise" as used in this chapter does not include noise or sound generated by the following:

(a) Cries for emergency assistance and warning calls.
(b) Radios, sirens, horns, and bells on police, fire, and other emergency response vehicles.

(c) Parades, fireworks displays, and other special events for which a permit has been obtained from the City are exempted provided there is compliance with all conditions which have been noted in writing on the permit. That loud and raucous noise produced as a result of noncompliance with any condition specified on the permit is not exempted from the requirements of this chapter.
(d) Activities on or in publicly owned property and facilities, or by public employees while in the authorized discharge of their responsibilities, are exempt provided that such activities have been authorized by the owner of such property or facilities or its agent or by the employing authority.
(e) Religious worship activities, including but not limited to, bells, organs, singing, and preaching.
(f) Locomotives and other railroad equipment, and aircraft.
(g) The collection of solid waste is exempted to the extent that the noise of such collection is regulated by Section 5-5.15 (Collection Equipment). That noise not covered by Section 5-5.15 is not exempted from the requirements of this chapter.

(Added by Ord. 2752-C.S., § 1, effective 3-27-91)

3.11.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the Project will have a significant impact related to noise if it will result in:

- Generation of a 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;
- Generation of excessive groundborne vibration or groundborne noise levels; and/or
- 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.

Determination of a Significant Increase in Noise Levels

TEMPORARY CONSTRUCTION NOISE IMPACTS

Determining "substantial increases" in construction noise depends on factors such as duration, time of occurrence, whether the noise source is constant or impulsive, and overall changes in decibel levels. According to the City of Modesto noise ordinance, construction activities that operate between 9 p.m. and 7 a.m. (except Saturday and Sunday and State or federal holidays, when the prohibited time shall be before 9:00 a.m. and after 9:00 p.m.) and cause disturbances are prohibited and considered significant impacts since they are violations of the Municipal Code limits.

PERMANENT OPERATIONAL IMPACTS

A project may be considered to have a significant environmental impact if it substantially increases ambient noise levels in adjacent areas or exposes individuals to high noise levels. Significant impacts are also defined as those that either exceed local ordinances and criteria or substantially raise noise levels at sensitive locations.

Research on human perception of sound changes indicates:

- 3 dB increase is barely noticeable.
- 5 dB increase is clearly perceptible.
- 10 dB increase is perceived as twice as loud or half as quiet.

To assess ambient noise increases, the Modesto General Plan Noise Element states: "At noise-sensitive land uses, increases in noise should not exceed 3 dBA where any other noise threshold or standard would be exceeded, and/or 5 dBA where noise levels would otherwise fall within acceptable limits, for the existing conditions scenario as compared to the buildout scenario." In addition, Table VII-3 Noise Exposure Thresholds – Non-Transportation Noise Sources provide noise limits that cannot be exceeded based on location and time. Exceedances of the limits represent significant noise impacts.

VIBRATION IMPACTS

The City's General Plan Noise Element provides the following threshold.

For construction activities involving high-powered vibratory tools or pile driving within 200 feet of an existing structure, demonstrate that project construction would not exceed the Caltrans construction vibration thresholds to ensure that no damage to sensitive structures would occur.

The City's Noise Element has adopted standards for vibration-induced annoyance or structural damage from the California Department of Transportation (Caltrans). These vibration damage thresholds are shown in Table 3.11-4. The threshold for "Older residential structures" is 0.3 peak particle velocity (ppv) inch per second (in/sec) is selected for analysis. This threshold represents the adjacent uses to the Project site.

The Caltrans vibration annoyance potential guideline thresholds are shown in Table 3.11-5. As shown in this Table, the strongly perceptible threshold is 0.1 ppv. These thresholds are used to assess the potential for a significant vibration impact for human annoyance. Annoyance is evaluated within occupied buildings.

TABLE 3.11-4: VIBRATION DAMAGE THRESHOLD CRITERIA

STRUCTURE AND CONDITION	*MAXIMUM PPV (IN/SEC)*	
	TRANSIENT SOURCES	*CONTINUOUS/FREQUENT INTERMITTENT SOURCES*
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

PPV: PEAK PARTICLE VELOCITY; IN/SEC: INCH(ES) PER SECOND
NOTE: TRANSIENT SOURCES CREATE A SINGLE ISOLATED VIBRATION EVENT, SUCH AS BLASTING OR DROP BALLS. CONTINUOUS/FREQUENT INTERMITTENT SOURCES INCLUDE IMPACT PILE DRIVERS, POGO-STICK COMPACTORS, CRACK-AND-SEAT EQUIPMENT, VIBRATORY PILE DRIVERS, AND VIBRATORY COMPACTION EQUIPMENT.

SOURCE: CALTRANS 2020.

TABLE 3.11-5: VIBRATION ANNOYANCE CRITERIA

HUMAN RESPONSE	*MAXIMUM PPV (IN/SEC)*	
	TRANSIENT SOURCES	*CONTINUOUS/FREQUENT INTERMITTENT SOURCES*
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

PPV: PEAK PARTICLE VELOCITY; IN/SEC: INCH(ES) PER SECOND
NOTE: TRANSIENT SOURCES CREATE A SINGLE ISOLATED VIBRATION EVENT, SUCH AS BLASTING OR DROP BALLS. CONTINUOUS/FREQUENT INTERMITTENT SOURCES INCLUDE IMPACT PILE DRIVERS, POGO-STICK COMPACTORS, CRACK-AND-SEAT EQUIPMENT, VIBRATORY PILE DRIVERS, AND VIBRATORY COMPACTION EQUIPMENT.

SOURCE: CALTRANS 2020.

IMPACTS AND MITIGATION MEASURES

Impact 3.11-1: The proposed Project would not generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. (Less than Significant)

OPERATIONS PHASE NOISE

The operations phase of the Project would involve noise generation from stationary and mobile noise sources. Stationary noise sources associated with the proposed Project would include, but not limited to, mechanical equipment (e.g., HVAC units); landscape maintenance equipment; vehicles on the local internal roadway; and truck loading/unloading activities. The City of Modesto's Noise Element and Ordinance is designed to control unnecessary, excessive, and annoying sounds from

sources on private property by specifying noise levels that cannot be exceeded. Table VII-3, Noise Exposure Thresholds – Non-Transportation Noise Sources, of the City's General Plan defines the noise level exposure limits at properties affected by specific noise sources. HVAC units and other stationary equipment would be selected and installed to comply with the City of Modesto's Noise Ordinance. Because HVAC units are potentially continuous sources that may operate at night, the applicable Noise Ordinance requirement is that the noise shall not exceed these noise limits at the property lines of residential and other noise-sensitive land uses. Compliance with the City's noise limits would minimize these impacts to less than significant levels.

Parking lot noise was modeled using the 3-dimension noise model SoundPlan. SoundPlan allows a project site to replicate the roadway network, nearby buildings, terrain, and noise sources in a virtual environment to calculate noise exposure at offsite noise sensitive uses. This model represents the most sophisticated method for the quantification of environmental noise exposure. For the Project, the proposed warehouse buildings, parking areas, and travel lanes were prepared within SoundPlan. Traffic volumes for automobiles and trucks for the Project were assigned to each area within the large 145-acre site.

Noise generated by parking lot activities would be attenuated by both distance from the noise source and the proposed 45-foot buildings which act as noise barriers. The Project is estimated to generate 15,120 automobiles and 1,410 trucks on a daily basis. An automobile generates relatively low levels of noise of approximately 51 dBA at 10 mph whereas a truck would result in approximately 75 dBA at 10 mph. Truck volumes would occur intermittently with an average of 60 trucks per hour or one truck per minute with most of the truck traffic entering and leaving the Project site along Kiernan Avenue along the three driveways with a smaller volume of traffic occurring along the single driveway on Dale Road. Traffic noise from passenger vehicles and trucks from the Project and background traffic along these roadways were included within the SoundPlan modeling.

24-hour noise exposure levels from the Project's parking lot and vehicle movements at individual points at land uses proximate to the Project site are shown in Figure 3.11-2. Noise contours for these activities are also shown in Figure 3.11-3. To provide a comparison to existing conditions of the same locations, Figures 3.11-4 through 3.11-7 provide noise exposure levels at single points and noise contours under existing and cumulative conditions.

This information is also presented in tabular form in Table 3.11-6 to show the changes in noise levels between Future Plus Project and Future No Project conditions. As shown in this Table, noise levels attributable to the Project's traffic volumes associated with passenger vehicles and trucks as well as parking lot activities would be below the City's noise limit. This is because the Project would not result in traffic increases that would result in an audible change in noise levels (+3 decibels) over the course of a day (CNEL). The Project would also develop warehouses that would block traffic noise levels for receptors and land uses located to the north of the proposed buildings. Because Project related noise levels would be less than the City's noise threshold, the Project would consequently result in ***less-than-significant*** impacts related to noise exposure at the nearest noise sensitive uses. Locations located further from the analyzed locations would likewise result in ***less-than-significant*** noise impacts.

TABLE 3.11-6: OPERATIONS PHASE NOISE

NOISE SENSITIVE RECEPTORS	*FUTURE NO PROJECT (DBA CNEL)*	*FUTURE WITH PROJECT (DBA CNEL)*	*PROJECT INCREASE (DBA CNEL)*	*CITY NOISE THRESHOLD (DBA CNEL)*	*EXCEEDS THRESHOLD?*
Northern Property Line - Pirrone Rd Near Dale Rd	56.7	56.5	-0.2	3	No
Eastern Property Line - Dale Rd	70.8	72.7	1.9	3	No
Southern Property Line - Kiernan Ave	66.2	67.6	1.4	3	No
Western Residential Property Line	50.5	52.0	1.5	3	No
Joseph A Gregori High School	41.0	40.2	-0.8	3	No

SOURCE: NOISE AND VIBRATION ASSESSMENT FOR THE SCANNELL INDUSTRIAL PROJECT, MODESTO CALIFORNIA (DE NOVO PLANNING GROUP, 2025)

Noise from landscape maintenance, vehicles, and residential activities would be similar to noise currently occurring in other land uses. Noise from landscaping activities are specifically addressed under Municipal Code Section 4-9.103 (Enumeration). Compliance with these requirements would result in less than significant noise impacts. Noise impacts from stationary sources would be ***less-than-significant*** and no mitigation is required.

CONSTRUCTION NOISE

The development of the proposed Project would entail construction activities which include noise generated from grading/excavation and building construction activities. The assumptions are listed below:

- Site preparation would occur for approximately two weeks and would generate an average of 8 worker trips per day and no hauling trips.
- Mass grading activities would occur for four weeks, and would generate an average of 5 worker trips per day and 70 round trips per day for export of soil.
- Fine grading activities would occur for two weeks and would generate an average of 8 worker trips per day and no hauling trips.
- Building construction would take approximately 18 months and would generate an average of 83 worker trips per day and less than 1 trip per day for hauling of construction debris over the duration of the phase.
- Architectural coating would take approximately 6 weeks and would generate 17 worker trips per day.

Local residents would be subject to elevated noise levels due to the operation of Project-related construction equipment. Construction activities are carried out in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise levels surrounding the construction site as work progresses. Construction noise levels reported in the U.S. Environmental Protection Agency's (USEPA's) Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances were used to estimate future construction noise levels for the Project (USEPA 1971).

Typically, the estimated construction noise levels are governed primarily by equipment that produces the highest noise levels. Construction noise levels for each generalized construction phase (ground clearing, excavation, foundation construction, building construction, paving, and site cleanup) are based on a typical construction equipment mix for an industrial project and do not include use of atypical, very loud, and vibration-intensive equipment (e.g., pile drivers).

The degree to which noise-sensitive receptors are affected by construction activities depends heavily on their proximity. Estimated noise levels attributable to the development of the proposed Project are shown in Table 3.11-7, and calculations are included in Attachment B, Noise Calculations, of Appendix D.

TABLE 3.11-7: CONSTRUCTION NOISE LEVELS AT NOISE-SENSITIVE USES

	NOISE LEVELS (LEQ DBA)			
	RESIDENTS TO THE NORTH OF THE PROJECT SITE	*RESIDENTS TO THE EAST OF THE PROJECT SITE*	*MEDICAL USES TO THE SOUTH OF THE PROJECT SITE*	*RESIDENTS TO THE WEST OF THE PROJECT SITE*
CONSTRUCTION PHASE	*1,700 FEET AWAY*	*1,300 FEET AWAY*	*2,110 FEET AWAY*	*2,040 FEET AWAY*
Site Preparation	60	62	58	58
Grading	60	63	59	59
Building Construction	57	60	55	56
Paving	60	63	59	59
Architectural Coating	49	52	47	48
Maximum Construction Noise	**60**	**63**	**59**	**59**
FTA Construction Criterion	**80**	**80**	**80**	**80**
Exceeds Threshold	**No**	**No**	**No**	**No**

LEQ DBA: AVERAGE NOISE ENERGY LEVEL; MAX: MAXIMUM; AVG: AVERAGE; FT: FEET
NOTE: NOISE LEVELS FROM CONSTRUCTION ACTIVITIES DO NOT TAKE INTO ACCOUNT ATTENUATION PROVIDED BY INTERVENING STRUCTURES.

SOURCE: FHWA ROADWAY CONSTRUCTION NOISE MODEL.

Table 3.11-7 shows both the average noise levels of construction noise levels attributable to the Project based on an assessment distance at the center of the site. Average noise levels represent the noise exposure to sensitive uses based on the distance to the center of all Project components. Noise levels from general Project-related construction activities would range from 47 to 63 dBA L_{eq} for the average noise levels. Noise levels from construction equipment would be less than the 80 dBA noise criterion developed by the Federal Transit Administration for construction noise. This is due to the large project site and the large distance between offsite noise sensitive uses and the average location of construction vehicles.

Traffic volumes related to construction workers and truck trips needed for delivery of equipment and building materials. The amount of construction related traffic would be a small proportion of the overall traffic volume along Kiernan Avenue. A doubling of traffic is generally necessary to increase traffic noise levels by 3 dBA. Construction traffic would not double the traffic volumes along Kiernan Avenue and consequently would not result in a 3 dBA noticeable change in noise levels. This noise impact would be less than significant due to the traffic noise levels would be below

the 3 dBA threshold adopted by the City and because construction traffic would be limited to the allowed hours of construction activity.

While noise from construction activities on-site would be clearly audible above the existing ambient noise environment but would occur during the least noise-sensitive portions of the day as per Municipal Code section 4-9.103 – Enumeration. Consequently, noise associated with Project-related construction would result in ***less-than-significant*** impacts and no mitigation is required.

Impact 3.11-2: The proposed Project would not generate excessive groundborne vibration or groundborne noise levels. (Less than Significant)

Construction vibration impacts include human annoyance and building structural damage. Human annoyance occurs when construction vibration rises significantly above the threshold of perception. Building damage can take the form of cosmetic or structural damage.

The proposed Project would not generate or expose persons or structures to excessive groundborne vibration from the construction phase. Pile driving, blasting, and vibratory rollers are generally the sources of the most severe vibration during construction. Neither pile driving nor blasting would be used during Project construction. Conventional construction equipment would be used for grading and building construction activities.

Table 3.11-8 summarizes typical vibration levels measured during construction activities for various vibration-inducing pieces of equipment.

TABLE 3.11-8: VIBRATION LEVELS FOR CONSTRUCTION EQUIPMENT

EQUIPMENT		*PPV AT 25 FT (IN/SEC)*
Pile driver (impact)	upper range	1.518
	typical	0.644
Pile driver (sonic)	upper range	0.734
	typical	0.170
Vibratory roller		0.210
Large bulldozer		0.089
Caisson drilling		0.089
Loaded trucks		0.076
Jackhammer		0.035
Small bulldozer		0.003
NOTE: PPV: PEAK PARTICLE VELOCITY; FT: FEET; IN/SEC: INCHES PER SECOND.		

SOURCE: CALTRANS 2020; FTA 2018.

Grading, and construction would occur up to the property lines and, as noted above, some land uses are relatively close to the property lines. Table 3.11-9 shows the vibration annoyance criteria from construction-generated vibration activities proposed at the Project site and the Project related vibration level relative to residences near the Project site. As shown in Table 3.11-9, vibration decibel

levels would not exceed the criteria threshold even when construction activities occur under maximum (i.e., closest to the receptor) exposure conditions. Vibration generated by construction equipment would be below the FTA's annoyance criteria; therefore, impacts for vibration annoyance at the nearest sensitive receptors would be ***less than significant***.

Table 3.11-9 shows the ppv levels relative to structural damage to sensitive uses from vibration activities.

TABLE 3.11-9: BUILDING DAMAGE ASSESSMENT AT NEAREST USES

	VIBRATION LEVELS (PPV)			
EQUIPMENT	*NEAREST BUILDING TO THE NORTH OF THE PROJECT SITE* *285 FEET AWAY*	*NEAREST BUILDING TO THE EAST OF THE PROJECT SITE* *120 FEET AWAY*	*NEAREST BUILDING TO THE SOUTH OF THE PROJECT SITE* *430 FEET AWAY*	*NEAREST BUILDING TO THE WEST OF THE PROJECT SITE* *660 FEET AWAY*
Vibratory Roller/Compactor	0.01	0.02	0.00	0.00
Large bulldozer	0.00	0.01	0.00	0.00
Small bulldozer	0.0001	0.0003	0.0000	0.0000
Loaded trucks	0.00	0.01	0.00	0.00
Maximum	**0.01**	**0.02**	**0.00**	**0.00**
Building Damage Criteria	**0.3**	**0.3**	**0.3**	**0.3**
Exceeds Building Damage Criteria?	**No**	**No**	**No**	**No**

PPV: PEAK PARTICLE VELOCITY; MAX: MAXIMUM; AVG: AVERAGE; FT: FEET

SOURCE: FTA (CALCULATIONS CAN BE FOUND IN ATTACHMENT B).

As shown in Table 3.11-9, all ppv levels would be below the building damage threshold at the nearest offsite buildings.

The operations phase of the Project would not involve substantial sources of vibration from stationary and mobile sources. Stationary sources of vibration typically involve heavy machinery that imparts substantial levels of vibration to the ground. Onsite sources of vibration would include forklifts and unloading of trailers. Vibration generated by these sources is extremely limited due to the lack of ground impactive force. Any vibration imparted from these activities would be extremely localized and would not be perceptible outside of 10 feet from the source.

Mobile sources associated with the Project would include passenger vehicles and trucks. These vehicles travel on air-filled tires which do not generate substantial levels of vibration unless there are roadway surface irregularities such as potholes. Caltrans has conducted vibration measurements and found that maximum highway truck traffic would result in a maximum of 2.0 mm/second at a

distance of 5 meters from the centerline of the near lane[1]. The threshold for annoyance identified by Caltrans is 2.5 mm/second for continuous exposure to vibration. In addition Caltrans states "Because of the rapid dropoffs with distance, even trucks traveling close together often do not increase peak vibration amplitudes substantially. In general, more trucks will show up as more peaks, not necessarily higher peaks."[2] As such, trucks traveling along local roadways proximate to the Project site would generate vibrations below Caltrans annoyance threshold beyond 5 meters from the roadway. There are no vibration sensitive buildings within 5 meters of roadways where Project traffic would travel. As such, impacts related to the potential for cosmetic building damage would be ***less than significant***.

Impact 3.11-3: The proposed Project would not expose people residing or working in the Project area to excessive noise levels associated with a private airstrip or airport. (No Impact)

The Project site is not located 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. The nearest airport to the Project site is the Modesto City-County Airport which is located approximately 6 miles to the southeast. In addition, the Project involves the development of land uses which are not considered to be noise sensitive. Therefore, it would not result in exposure of people residing or working the in the Project area to excessive noise levels. There would be ***no impact***.

CUMULATIVE IMPACTS

The cumulative setting for noise impacts consists of the existing and future noise sources that could affect the Project site or surrounding uses.

Impact 3.11-4: Cumulative Exposure of Existing and Future Noise-Sensitive Land Uses to Increased Noise Resulting from Cumulative Development (Significant and Unavoidable and Cumulatively Considerable)

CONSTRUCTION NOISE

The Project would be constructed in phases and would occur at various locations within the Project site. Noise associated with construction activities would be located and diminishes substantially within 1,000 feet of the construction site. As such, it is unlikely that other related projects would

[1] California Department of Transportation. Transportation and Construction Vibration Guidance Manual. April 2020. Website: https://www.contracosta.ca.gov/DocumentCenter/View/34120/Caltrans-2013-construction-vibration-PDF

[2] Ibid.

occur within the same time frame and proximate to the Project site to substantially increase cumulative construction noise.

Noise generated by construction would be temporary, and would not add to the permanent noise environment or be considered as part of the cumulative context. The total noise impact of the proposed Project would be fairly small and would not be a substantial increase to the existing future noise environment. Implementation of the proposed Project would have a ***less than significant*** cumulative impact relative to this environmental topic.

OPERATIONS NOISE

Onsite activities at the Project site are generally localized due to the infrequency of occurrence, the relative low magnitude of noise generated by vehicle travel and loading/unloading activities, as well as the Project buildings acting as sound barriers to offsite uses. As such, noise generated by these activities are localized and the combination of noise generated by offsite uses would be limited by distance and the noise limits identified by the City's Municipal Code. Implementation of the proposed Project would have a ***less than significant*** cumulative impact relative to this environmental topic.

TRAFFIC NOISE

An assessment of changes in noise levels due to future cumulative traffic conditions and those with the Project over existing conditions was also conducted. Table 3.11-10 shows the increase in noise levels associated with future cumulative traffic growth as well as cumulative traffic growth in addition to that generated by the Project.

TABLE 3.11-10: OPERATIONS PHASE NOISE PLUS CUMULATIVE TRAFFIC GROWTH

NOISE SENSITIVE RECEPTORS	*EXISTING CONDITIONS*	*FUTURE NO PROJECT (DBA L_{EQ})*	*FUTURE WITH PROJECT OVER EXISTING (DBA L_{EQ})*	*CUMULATIVE + PROJECT INCREASE OVER EXISTING (DBA L_{EQ})*	*CITY NOISE THRESHOLD (DBA L_{EQ})*	*EXCEEDS THRESHOLD?*
Northern Property Line - Pirrone Road Near Dale Road	45.9	56.7	56.5	10.6	3	Yes
Eastern Property Line - Dale Road	64.0	70.8	72.7	8.7	3	Yes
Southern Property Line – Kiernan Avenue	65.3	66.2	67.6	2.3	3	No
Western Residential Property Line	49.2	50.5	52.0	2.8	3	No
Joseph A Gregori High School	38.3	41.0	40.2	1.9	3	No

SOURCE: SOUNDPLAN ESSENTIALS.

As shown in Table 3.11-10, there would be substantial increases in noise levels associated with future cumulative traffic and cumulative traffic with the Project along Dale Road. Dale Road (between Pirrone Road & Kiernan Avenue) currently has approximately 5,680 Average Daily Trips (ADT) under existing conditions for the year 2025. Future cumulative traffic growth (year 2046) along Dale Road would result in 14,150 ADT (without the Project) and future cumulative traffic plus Project traffic would result in a total of 22,114 ADT. Dale Road between Healthcare Way & Kiernan Avenue would likewise experience a substantial increase in traffic and traffic noise. Because of the substantial increase in vehicle traffic from existing conditions along Dale Road that would occur even without the Project, there would be significant impact from traffic noise increases associated with cumulative traffic conditions. As previously shown in Table 3.11-6, Project related traffic noise increase alone would be below the thresholds, however Project related traffic in combination with cumulative traffic growth would result in a significant increase above existing noise levels. Project-related mitigation would not reduce traffic noise level increases to a level that is below the noise threshold. Therefore, the impact is considered ***significant and unavoidable*** and ***cumulatively considerable***.

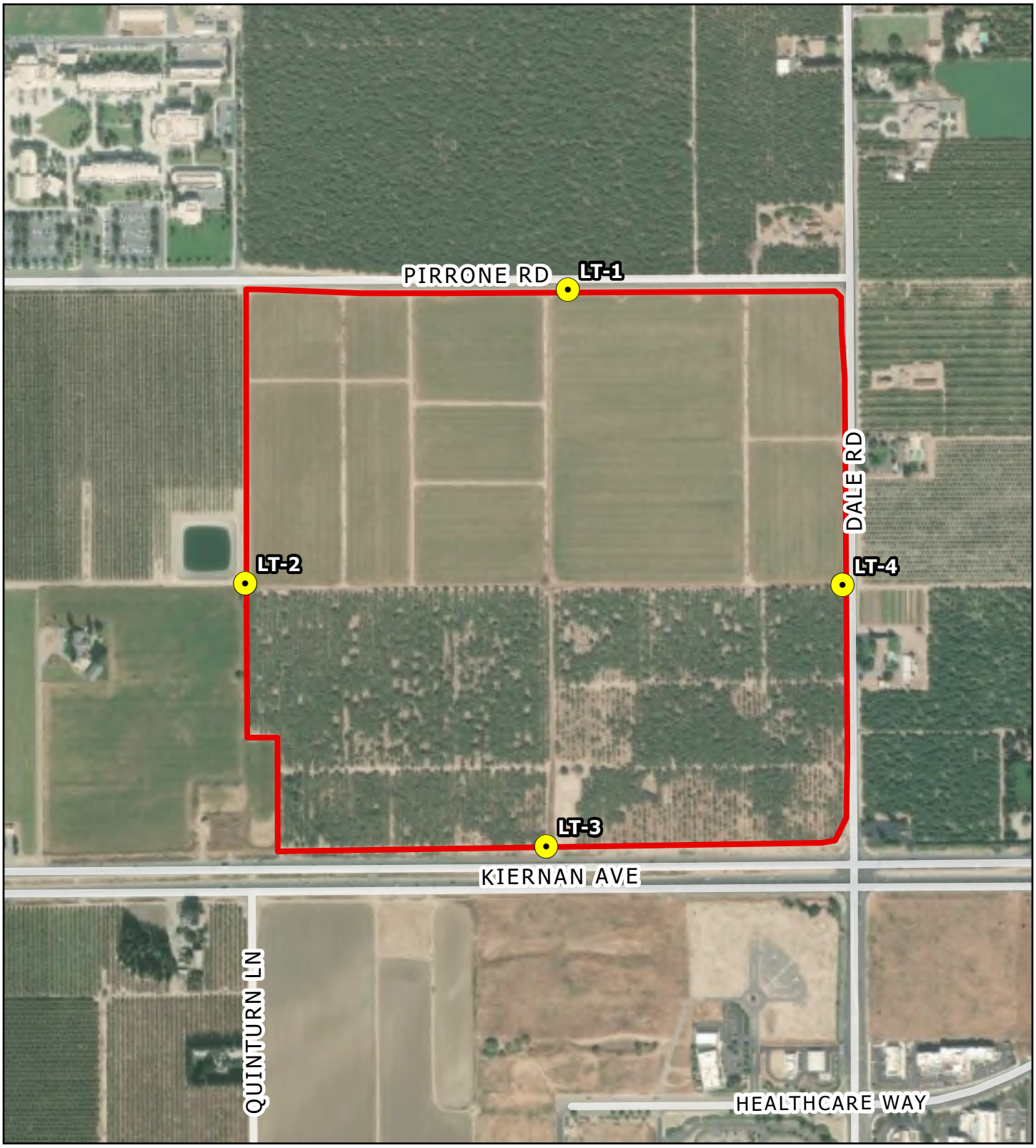
Impact 3.11-5: Cumulative Exposure of Existing and Future Noise-Sensitive Land Uses to Increased Vibration Resulting from Cumulative Development (Less than Significant and Less than Cumulatively Considerable)

CONSTRUCTION VIBRATION

The Project would generate vibration from construction equipment. Vibration from these activities would dissipate over very short distances of less than 50 feet from each piece of equipment. Construction of related projects would not occur within the same proximity of the Project. Implementation of the proposed Project would have a ***less than significant*** cumulative impact relative to this environmental topic.

OPERATIONS VIBRATION

Vibration generated by onsite operations at the Project would not involve sources of vibration that would result in perceptible levels of vibration at offsite buildings. As discussed previously in Impact 3.11-2, trucks travelling along local roadways would not result in substantial levels of vibration and multiple trucks traveling along roadways associated with the Project and cumulative traffic growth would not change the magnitude of vibrations due to the rapid attenuation of vibration with distance. Implementation of the proposed Project would have a ***less than significant*** cumulative impact relative to this environmental topic.



Legend

Project Parcel

Long-Term Noise Monitoring Location

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 3.11-1. Noise Measurement Locations

0 150 300 Feet

Sources: Stanislaus County GIS: MAXAR Imagery 9/23/2023.
Map Date: April 28, 2025.

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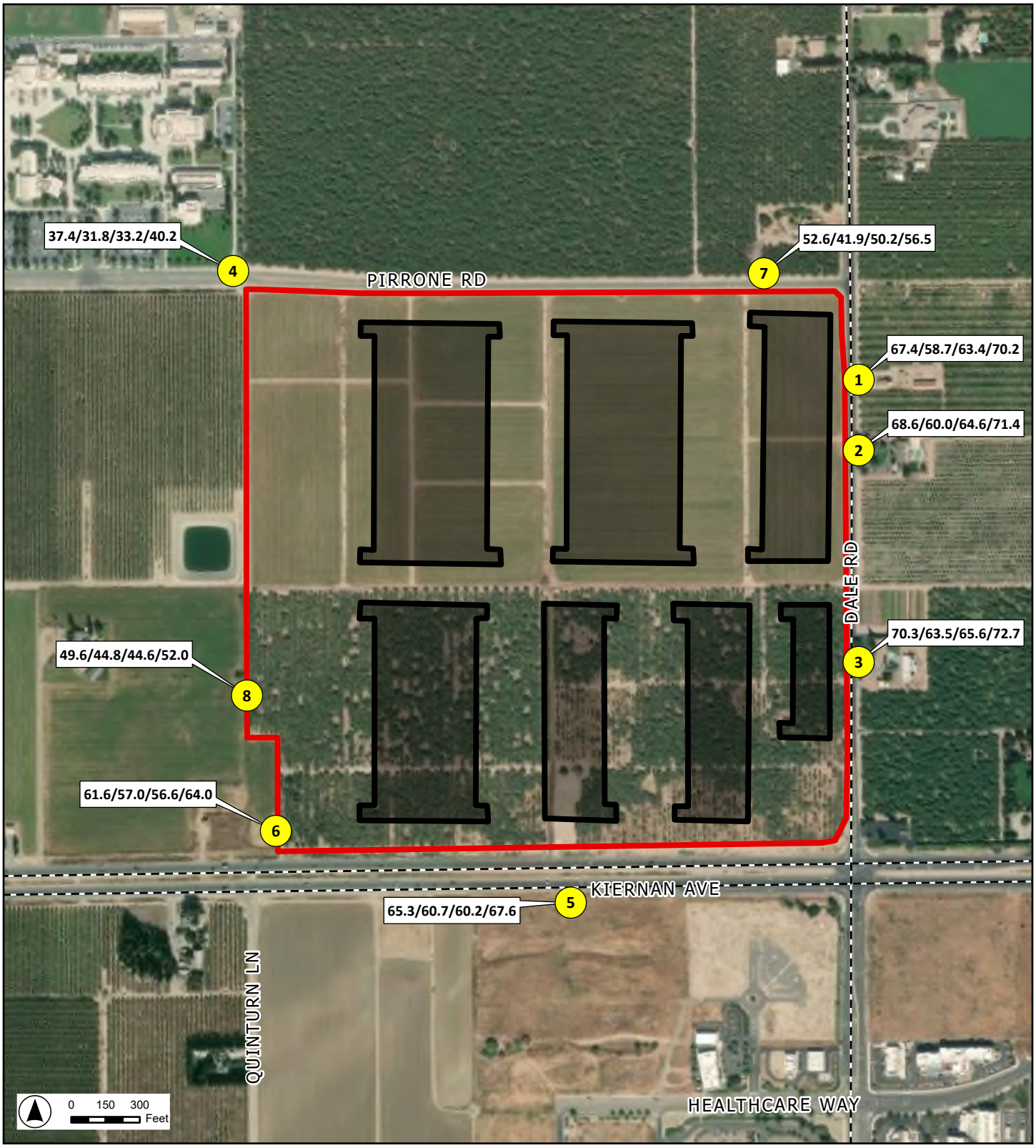

Legend

- Project Site
- Surface
- Receiver*
- Emission Line

** Noise levels for each receiver noted in the following order: Day/Evening/Night/LDEN*

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 3.11-2.
Project Parking Lot and Roadway Noise Levels Shown at Single Points

Sources: MAXAR Imagery 9/23/2023. Map Date: July 24, 2025.

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Legend

Surface

Emission Line

Levels in dB(A)

<45
45 - 50
50 - 55
55 - 60
60 - 65
65 - 70
70 - 75
>=75

Map Date: July 24, 2025.

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 3.11-3.
Project Parking Lot and Roadway Noise Levels Shown as Noise Contours

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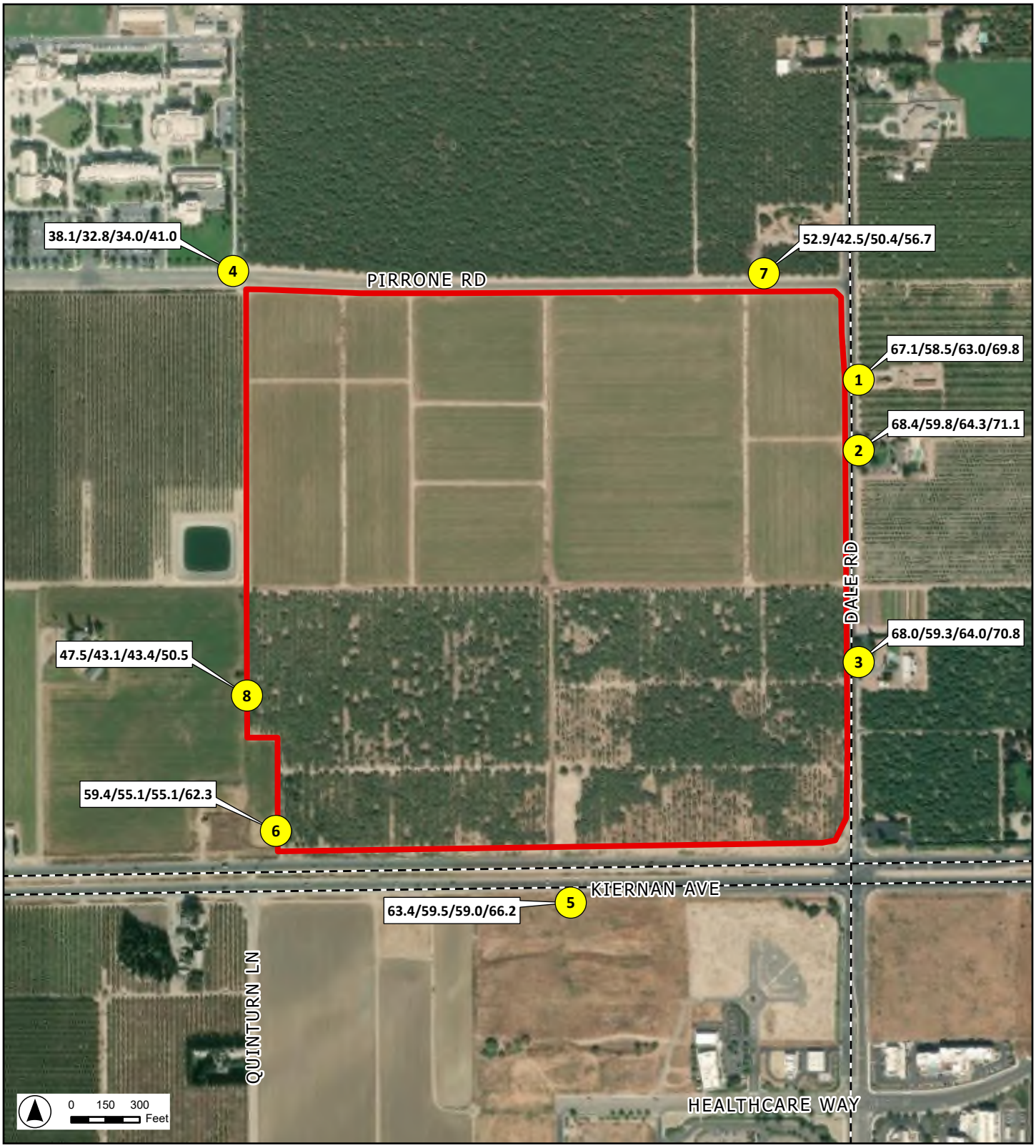

Legend

Project Site

Emission Line

Receiver*

** Noise levels for each receiver noted in the following order: Day/Evening/Night/LDEN*

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 3.11-4.
Cumulative Roadway Noise Levels
Shown at Single Points

Sources: MAXAR Imagery 9/23/2023. Map Date: July 24, 2025.

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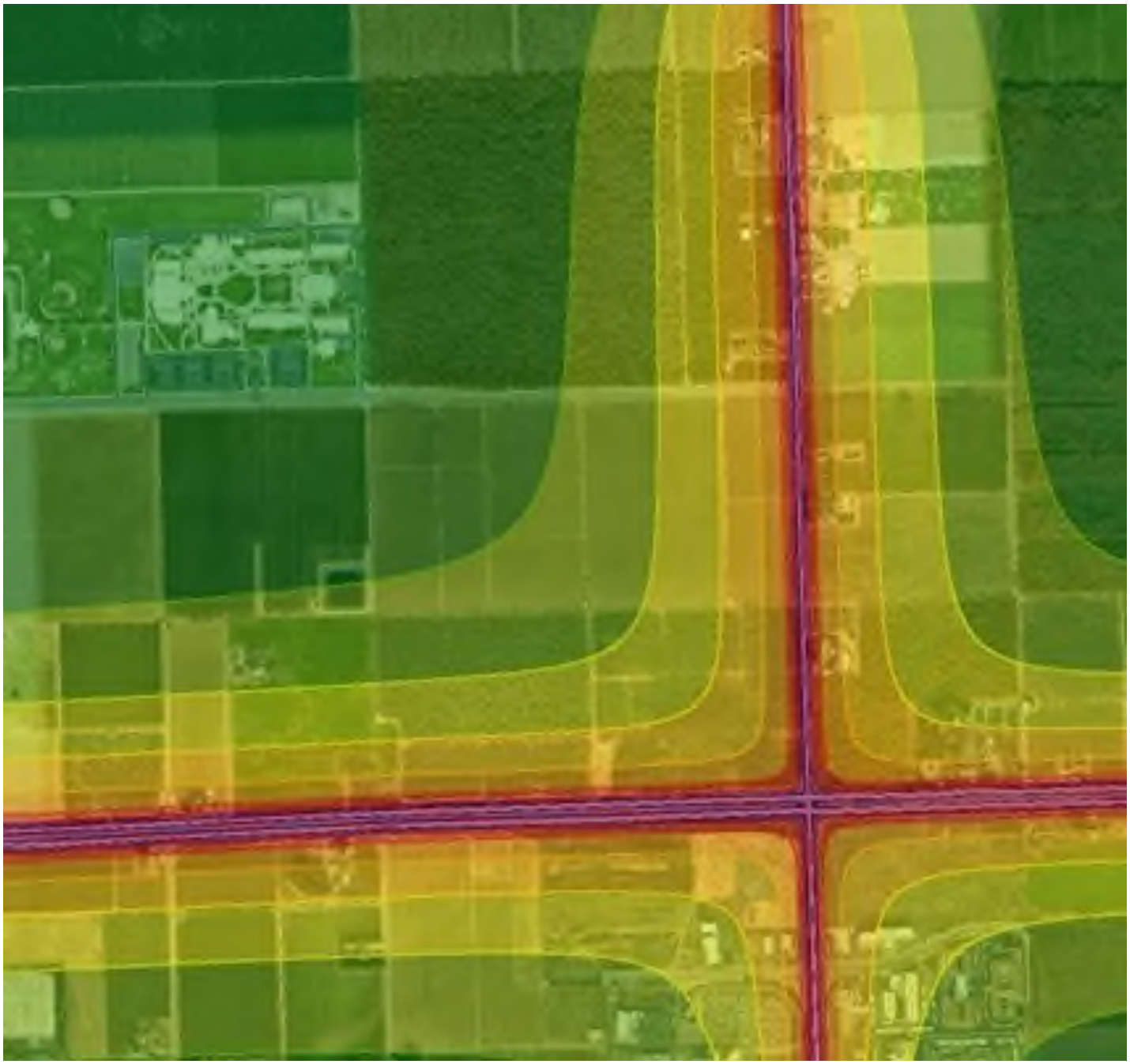

Legend

Emission Line

Levels in dB(A)

- <45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- 65 - 70
- 70 - 75
- >=75

Map Date: July 24, 2025.

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 3.11-5.
Cumulative Roadway Noise Levels
Shown as Noise Contours

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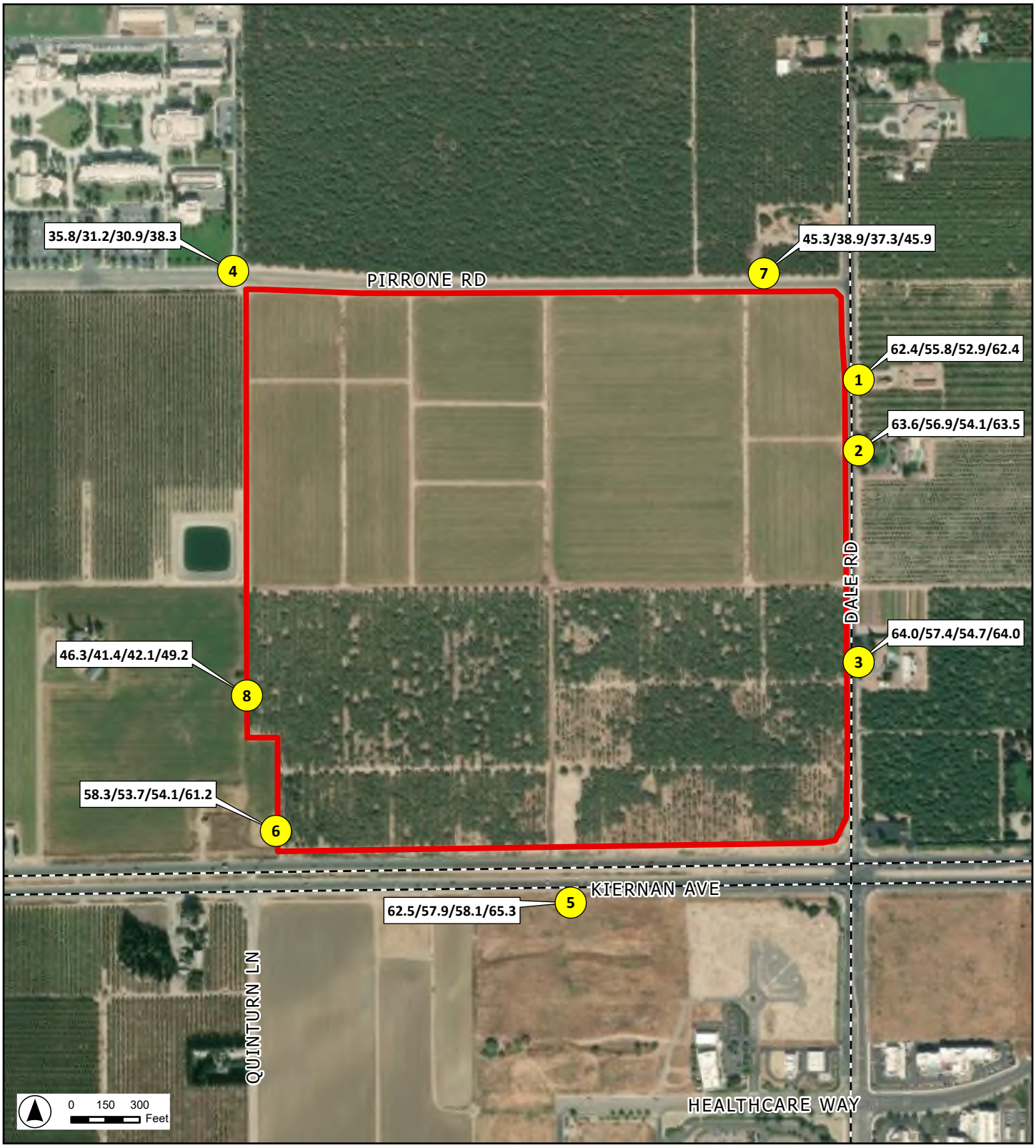

Legend

Project Site

Emission Line

Receiver*

** Noise levels for each receiver noted in the following order: Day/Evening/Night/LDEN*

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 3.11-6.
Existing Noise Levels Shown at Single Points

Sources: MAXAR Imagery 9/23/2023. Map Date: July 24, 2025.

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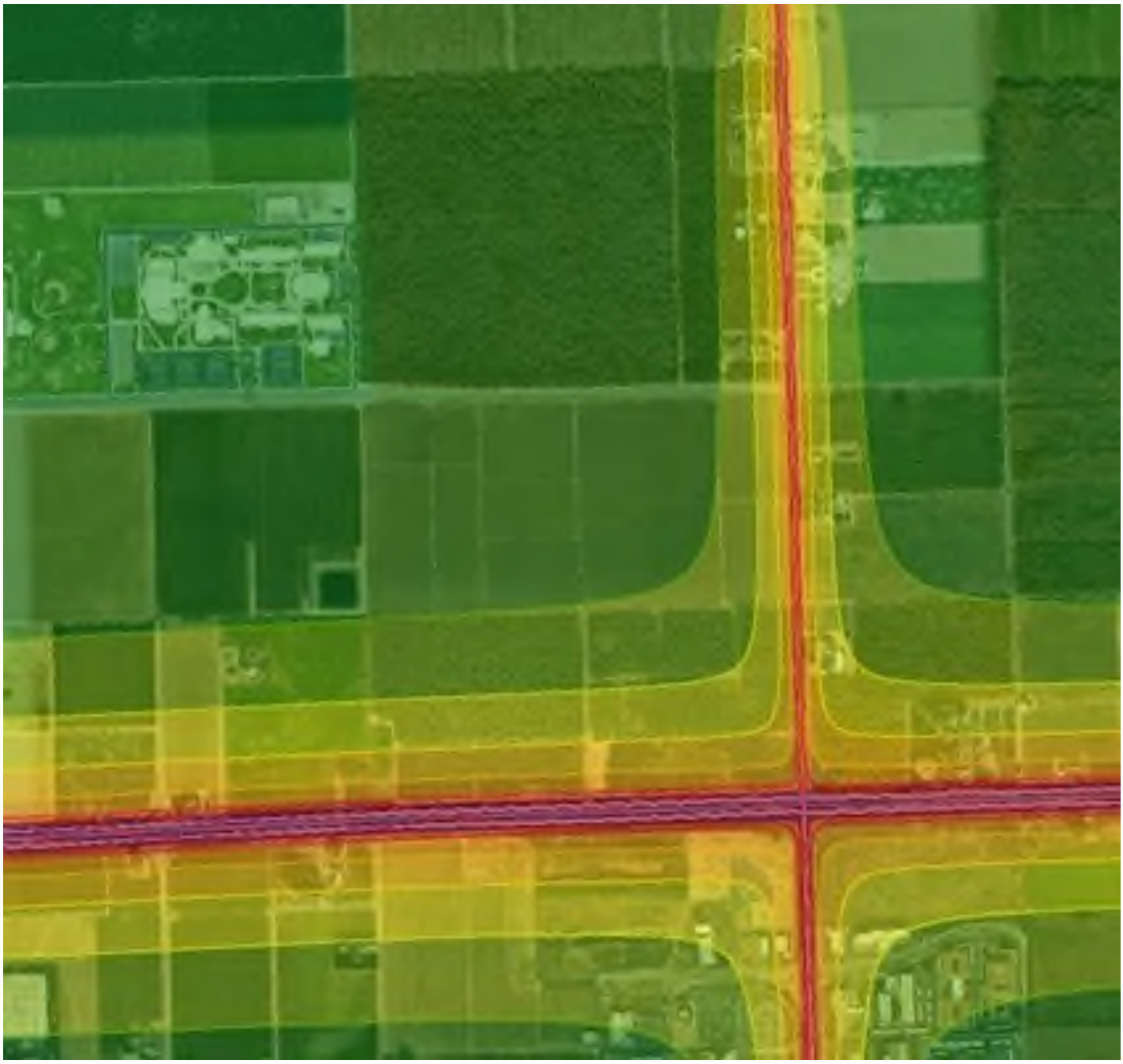

Legend

Emission Line

Levels in dB(A)

- <45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- 65 - 70
- 70 - 75
- >=75

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 3.11-7.
Existing Noise Levels Shown as Noise Contours

Map Date: July 24, 2025.

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This section describes and evaluates potential impacts associated with the provision of police protection and fire protection and emergency services for the proposed Project. The information in this section is primarily derived from the following:

- Stanislaus County General Plan (adopted August 23, 2016).
- Salida Community Plan (Appendix I-A8 of the Stanislaus County General Plan).
- Notice of Preparation of a Program Environmental Impact Report for the Salida Community Plan Amendment Area (Stanislaus County project no. PLN2024-0083).
- Stanislaus County Municipal Code (2024).
- City of Modesto Urban Area General Plan (adopted March 5, 2019).
- City of Modesto Municipal Code (2025); and
- Stanislaus Local Agency Formation Commission (LAFCO) Policies and Procedures (adopted July 24, 2024).

Two comment letters were received during the public review period or scoping meeting for the Notice of Preparation regarding the provision of public services. A letter on behalf of the Salida Fire Protection District (Salida FPD) identified that the Project site is currently within Salida FPD's service area. The letter requests that the EIR evaluate the potential impact of the Project on the Salida FPD and describe potential coordination between the City and Salida FPD. Another letter sent by Leonard Powell (an individual resident) requested that the provision of high-quality public services be maintained. These NOP comments are included in Appendix A, NOP Comments.

While the Project would generate new employment opportunities, these jobs are expected to be filled primarily by existing residents of Modesto and the surrounding region. It would be speculative to assume that individuals would relocate specifically to Modesto to take these positions, as the local labor force is expected to meet the Project's employment demand. Accordingly, the Project would not induce substantial population growth or result in new demand for housing. Moreover, the employment-generating land uses proposed by the Project are consistent with the growth projections evaluated in the City's Urban Area General Plan and EIR. As a result, the Project would not induce population growth or create demand for services beyond what is already anticipated in the General Plan.

Typically, the Public Services section of an EIR addresses multiple topics, notably a project's potential physical effects on the environment to provide adequate police protection services, fire and emergency response, schools, parks and recreation amenities, and other public facilities. Demand for these types of public services are driven by new residential uses which would result in direct, permanent population growth in an area. The proposed Project is completely industrial and retail in nature and does not provide any residential uses. Therefore, there would be no residents on the Project site. As such, there would be no school-aged children generated by the Project, and no demand for schools to be constructed which could have an effect on the environment. As a result, there would be ***no impact*** on schools. This topic is not further discussed in this EIR.

Similarly, demand for parks and recreation amenities is primarily driven by the presence of residential uses. As no residential uses would be provided as part of the Project, the Project would not generate additional demand for parks or recreation facilities to be constructed which could have an effect on the environment. Therefore, there would be ***no impact*** on parks or recreation facilities. This topic is not further discussed in this EIR.

Other public facilities could include libraries, government centers, or community centers. These facilities are constructed when there is a residential demand for such services. As the Project does not include any residential uses, the Project would not generate additional demand for other public facilities to be constructed which could have an effect on the environment. Therefore, the Project would have ***no impact*** on other public facilities. This topic is not further discussed in this EIR.

3.12.1 ENVIRONMENTAL SETTING

POLICE PROTECTION SERVICES

Modesto Police Department

The Modesto Police Department (MPD) provides law enforcement and police protection services throughout the city. The MPD operates out of the department headquarters at 600 10th Street and a leased office space at 12th and F Streets. In addition, a substation located at 3705 Oakdale Road mainly handles fingerprinting as well as some crime prevention operations. The Police Department also has space at the Neighborhood Center at Marshall Park, which also serves the Fire Department and Parks, Recreation, and Neighborhoods Department. In 2024, the MPD had 211 sworn officers and 159 professional non-sworn staff.[1]

ORGANIZATION

The MPD consists of Operations, Investigative Services, and Support Divisions. Several special details — including special investigations, animal control, traffic, drug enforcement, crime prevention, drug education, and training — are divided among the divisions. The Operations Division handles most daily law enforcement, with personnel divided into four shifts for each 24-hour period. MPD maintains continuous patrols on city streets, structured to allow coverage to fluctuate according to changes in demand.

POLICE RESPONSE TIMES

Response times are an important benchmark of police service. Response times can vary depending on the size of the city and department, geographical location, and levels of crime. Smaller cities

[1] Modesto Police Department, 2025. Annual Report, 2024. Available: https://www.modestogov.com/ArchiveCenter/ViewFile/Item/4391. Accessed: June 30, 2025.

usually have faster response times, due simply to the geography. Calls for service are prioritized into three broad categories.

MPD classifies calls for service as Priority 1, Priority 2, or Priority 3. Priority 1 calls are calls where a threat is posed to life or a crime of violence. Priority 2 calls are calls for service where there is an urgency or suspicious behavior. Priority 3 calls are calls for service where no emergency or severe problem is involved. Response rates vary by type of incoming call; calls reporting crimes in progress (Priority 1P) receive the highest priority and the quickest response. In 2025, MPD average response time for Priority 1 calls is 5 minutes and 51 seconds, from call entry to officer arrival.[2]

CRIMES BY CATEGORY IN MODESTO

In 2024, City law enforcement services received approximately 148,230 calls for service[3] including reports of Part 1 crimes, which consist of murder, robbery, rape, aggravated assault, burglary, grand larceny, and auto theft incidents. Statistics on the number of crimes by category of crime in Modesto during each year from 2021 to 2024, as reported by MPD, are shown in Table 3.12-1.

TABLE 3.12-1: MODESTO POLICE DEPARTMENT CRIME STATISTICS (2021-2024)

CATEGORY/CRIME	*2021*	*2022*	*2023*	*2024*
Homicide	10	9	7	7
Rape	132	106	134	126
Assault	1,144	1,094	903	894
Burglary	591	599	585	556
Motor Vehicle Theft	930	808	766	718

SOURCES: MODESTO POLICE DEPARTMENT ANNUAL REPORT, 2024.

Quality of life-related calls remained consistent, with 10,992 calls in 2024, a slight increase from 10,905 in 2023. These types of calls include issues such as disturbances, public nuisances, and neighborhood complaints—areas where community policing and proactive engagement continue to play a vital role.[4]

Stanislaus County Sheriff's Office

The Stanislaus County Sheriff's Office (SCSO) currently provides police protection services to the Project site, as it does with all unincorporated areas in the county. The Stanislaus County Sheriff's Office (SCSO) serves as the primary countywide law enforcement agency within its 1,515 square-mile jurisdiction, including 20 square miles of waterways. SCSO is responsible for patrolling,

[2] Modesto Police Department, 2025. Monthly Report, February 2025. Available: https://www.modestogov.com/ArchiveCenter/ViewFile/Item/4331. Accessed: June 30, 2025.

[3] Modesto Police Department, 2025. Annual Report, 2024. Available: https://www.modestogov.com/ArchiveCenter/ViewFile/Item/4391. Accessed: June 30, 2025.

[4] Modesto Police Department, 2025. Annual Report, 2024. Available: https://www.modestogov.com/ArchiveCenter/ViewFile/Item/4391. Accessed: June 30, 2025.

investigations, search and rescue, traffic enforcement, and responding to emergency calls. In addition, SCSO oversees adult detention facilities (including the county jail and Honor Farm), court security and bailiff services, civil processes like evictions and writs, and coroner duties. The Sheriff also provides contractual law enforcement services for the cities of Riverbank, Patterson, Waterford, and Hughson.

The SCSO employs over 800 sworn deputies and unsworn individuals. While SCSO allocates around 209 sworn deputy positions, recent reports indicate only about 186 are filled, highlighting vacancies and staffing shortages.[5] In 2024, the population of Riverbank, Patterson, Waterford, Hughson, and the unincorporated parts of the County was approximately 178,856 residents.[6] This results in a service ratio of approximately 1.04 sworn deputies per 1,000 residents, under current conditions, and a ratio of approximately 1.17 sworn deputies per 1,000 residents when SCSO is fully staffed.

FIRE PROTECTION SERVICES

Modesto Fire Department

Fire protection within the City limits are provided by the Modesto Fire Department (MFD), which serves an area of approximately thirty-seven square miles and approximately 80,000 housing units. MFD, Stanislaus Consolidated Fire Protection District, and Turlock Fire Department, are known as MST (Modesto - Stanislaus Consolidated - Turlock). Together, the MST serves the communities of Modesto, Ceres, Oakdale, Knights Ferry, Valley Home, Riverbank, Empire, Waterford, La Grange, Turlock, and Salida. Through MFD's regionalization efforts and contracts for services, its goal is to provide services more efficiently and to improve the quality of those services throughout Stanislaus County.

MFD has a minimum station staffing requirement of three (3) employees per engine (Captain/ Engineer/ Firefighter), four (4) employees per non-tiller truck company per shift (Captain/Engineer/2 Firefighters), and four (4) employees per tiller truck (Captain/2 Engineers/Firefighter).[7]

Within MFD, the Operations Division provides "all-risk" emergency and non-emergency services, including medical aids, technical rescues, public assists, hazardous materials, house fires,

5 KCRA, 2025. Report by Anahita Jafary. Stanislaus County Sheriff's Office concerned about deputy shortage. Reported on January 9, 2025. Available: https://www.kcra.com/article/stanislaus-county-sheriff-deputy-shortage/63386960. Accessed: July 8, 2025.

6 California Department of Finance, 2025. E-4 Population Estimates for Cities, Counties, and the State, 2021-2025 with 2020 Census Benchmark. May. Available: https://dof.ca.gov/forecasting/demographics/estimates/e-4-population-estimates-for-cities-counties-and-the-state-2021-2025-with-2020-census-benchmark/. Accessed: July 8, 2025.

7 City of Modesto, 2024. Memorandum of Understanding Between the City of Modesto and the Modesto City Firefighters Association. Article 20, Minimum Staffing Policy. July 1.

commercial fires, and vehicle accidents (Table 3.12-2). All sworn Modesto Fire MFD employees are trained at one of two levels - Emergency Medical Technician or Paramedic. Currently, twenty members are trained to the level of Emergency Medical Technician-Paramedic (EMT-P) and able to provide Advanced Life Support (ALS). In addition, the Operations Division responds to more than 1,400 fires each year and spends approximately 38 percent of its time committed to emergencies or fire suppression.[8]

At least thirty-four firefighters and one battalion chief are on duty each 24-hour shift, and MFD has a total of 150 authorized staff members and 140 sworn staff members. MFD also employs a Fire Marshal, Deputy Fire Marshal, and three Fire Technicians who direct most fire prevention programs. MFD operates nine engines, two ladder trucks, one Airport Rescue Fire Fighting engine, three ALS engines, a hazardous materials unit, and wildland units.

MFD strives to achieve the following standards in 90 percent of all cases: a service standard of "first in" response time in all areas of the city within six minutes of dispatch; a "full alarm assignment" consisting of four engines, one truck, one Battalion Chief, and 16 personnel on scene within 10 minutes; and a "second alarm assignment" consisting of three additional fire units with a minimum of nine personnel within 15 minutes of dispatch.

Between 2015 and 2023, MFD received an average of 24,762 calls annually, including approximately 65 percent medical aid, five percent fire emergencies, 28 percent other emergencies, and two percent hazardous materials incidents. MFD has experienced an increased demand for service due to growth, with fire and medical call volumes rising by 21.7 percent and 18.3 percent, respectively. As of 2024, average response time is six minutes and 34 seconds and approximately 90 percent of all calls were answered within six minutes of dispatch.

Fire services in unincorporated areas around Modesto, within the City's Sphere of Influence (SOI), are provided by the Burbank/Paradise, Salida, Industrial, Woodland Avenue, and Stanislaus Consolidated Fire Protection Districts. Each of these districts is at least partially within the City's SOI.

TABLE 3.12-2: MODESTO FIRE DEPARTMENT CALLS FOR SERVICE (2024)

INCIDENT TYPE	*MODESTO FIRE DEPARTMENT*	*SALIDA*
Calls for Service	34,051	1,812
EMS Calls	26,292	1,315
Vehicle Accidents	1,766	119
Fire Calls	1,824	106
Working Structure Fires	213	5

SOURCES: MODESTO FIRE DEPARTMENT ANNUAL REPORT, 2024.

[8] City of Modesto, 2025. Fire Department, Operations. Available: https://www.modestogov.com/1046/Operations. Accessed: July 8, 2025.

The rural level of service standard is characterized as a fire company equipped to handle basic structural fires and related emergencies that will arrive within 15 minutes of travel time, accompanied by other vehicles and capable of sustaining a 500-gallon-per-minute fire flow for one hour. The suburban level of service is characterized as a fire company equipped to handle all "risk emergencies" that will arrive within five to six minutes of travel time and capable of sustaining a flow for a 2,000-square-foot occupancy for one hour. An urban level of service is characterized as a fire company equipped to handle all risk emergencies that will arrive within five minutes of travel time 90 percent of the time, and capable of sustaining adequate fire flow for the designated risk level in the area. These are broad characterizations of levels of service and do not necessarily reflect the district's effectiveness or efficiency in dealing with a given emergency. MFD provides an urban level of service.

The Stanislaus Regional 9-1-1 Joint Powers Authority, which includes the various fire protection districts, distributes 911 emergency calls to the respective fire protection district with jurisdiction over the site of the emergency. There are mutual-aid agreements among the districts to provide cross-jurisdictional assistance should a fire district need assistance responding to an emergency.

ISO RATING

The Insurance Services Office (ISO) Public Protection Classification Program measures individual fire protection agencies against a Fire Suppression Rating Schedule, which includes such criteria as facilities and support for handling and dispatching fire alarms, first-alarm response and initial attack, and adequacy of local water supply for fire-suppression purposes. The ISO ratings are used to establish fire insurance premiums. In 2004, the last time a Municipal Services Review for the City of Modesto was updated, MFD was rated as a 2 on a scale of 1 to 10, with 1 being the highest possible protection rating and 10 being the lowest.[9]

However, the City of Modesto conducted an audit to identify current emergency response conditions and provide a long-range plan for the delivery of emergency services by MFD. To identify the efficacy of emergency services delivery, the City used the Public Protection Classification (PPC®) program evaluation system which objectively evaluates emergency response communications, fire suppression capabilities, water supply, and community risk reduction. Out of a possible 105 points, the City of Modesto scored 80.8 on the PCC® scale,[10] which equates to a PPC® rating of Class 2.[11]

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9 Stanislaus LAFCo, 2004. City of Modesto Sphere of Influence Plan, Master Services Element, and Municipal Services Review. Adopted September 22, 2004. p. 39.

10 City of Modesto Fire Department, 2015. Fire Department Program Service Audit, Master Plan, and ISO Community Fire Service Performance Review. September. pp. 39-50.

11 Verisk. 2025. ISO Mitigation. Scores and PPC Ratings. Available: https://www.isomitigation.com/ppc/program-works/scores-and-ppc-ratings/. Accessed: July 8, 2025.

FIRE STATIONS

MFD consists of ten fully staffed stations, with one closed station due to budget cuts and additional stations planned in northeast Modesto. Each station is equipped with a minimum of one "Type 1" engine and three firefighters. Fire stations are strategically located throughout the City so that residents are not more than three miles from a first responder.

Each fire station within the service area of the City of Modesto is listed below. Station 11, which serves the north area of Modesto, is the closest station to the Project site.

- Station 1: 610 11th Street, Modesto, CA 95354 (operational, under renovation)
- Station 2: 420 Chicago Avenue, Modesto, CA 95351 (operational)
- Station 3: 635 El Vista Avenue, Modesto, CA 95354 (operational)
- Station 4: 1505 Blue Gum Avenue, Modesto, CA 95351 (operational)
- Station 5: 200 W. Briggsmore Avenue, Modesto, CA 95350 (operational)
- Station 6: 2700 Standiford Avenue, Modesto, CA 95350 (operational)
- Station 7: 1800 Mable Avenue, Modesto, CA 95355 (operational)
- Station 8: 737 Airport Way, Modesto, CA 95354 (closed)
- Station 9: 4025 Fara Biundo Drive, Modesto, CA 95357 (operational)
- Station 10: 148 Imperial Avenue, Modesto, CA 95358 (operational)
- Station 11: 4225 Carver Road, Modesto, CA 95356 (operational)

Salida Fire Protection District

The Salida FPD is located south of the Stanislaus River, west of McHenry Avenue, and north of Shoemake Avenue. Salida FPD is adjacent to the northwesterly portion of the City of Modesto and includes the unincorporated community of Salida, the largest in Stanislaus County. Portions of Salida FPD's boundaries are within the City of Modesto's SOI. In September 2022, MFD entered into an agreement with Salida FPD through an operational contract to provide fire protection services and to help serve the community better. Salida FPD is currently being served by the City of Modesto for fire protection services.

The City of Modesto and the Modesto City Firefighters Association entered a Memorandum of Understanding (MOU) to identify minimum staffing levels and equipment. Salida Fire Station 12, located at 4820 Salida Boulevard is the primary fire station (a joint facility with the Stanislaus County Sherriff's Office) serving the unincorporated town of Salida. The MOU states, "[the] City shall provide, on a twenty-four (24) hour, seven (7) day per week basis, one (1) three (3) member company at Station 12. Additional qualified fire personnel may be assigned to the station as determined by the City Fire Chief or their designee to provide supplemental Fire Services or staffing for special events, anticipated weather events, or operational capacity. The minimum staffing level

for District shall be three (3) members per Engine Company. Due to staffing, nine (9) positions will be allocated."[12] The station includes one Type1 Engine, one Type III Engine, and one Water Tender.[13]

In 2023, Salida FPD had an ISO rating of 4/8Y;[14] the first number refers to the classification of properties within five road miles of a fire station and within 1,000 feet of a creditable water supply. The second number, with either the X or Y designation, applies to properties within five road miles of a fire station but beyond 1,000 feet of a creditable water supply. Salida FPD's response time averaged 5 minutes and 21 seconds in 2023.[15]

Stanislaus LAFCo Municipal Services Review

Resolution No. 2024-04 implemented a Municipal Service Review (MSR) and SOI Update for the fire protection districts in Stanislaus County. The MSR provides information about services and boundaries for Stanislaus County's fourteen fire protection districts, including the Salida FPD. Each district profile contains a summary, background information, and data on district operations and boundaries. Most profiles include tables and charts outlining district formation and duties, funding sources, attributes, types of service, stations, and calls for service. A map of the district's current SOI and boundaries are included within each district's profile. Followed by each district profile are the required MSR and SOI determinations for that respective district.

MISCELLANEOUS PUBLIC SAFETY

Multi-Jurisdictional Local Government Emergency Response

The Stanislaus County Office of Emergency Services (OES) is the single coordinating center for major emergency activities. In cooperation with others, OES maintains and oversees the Multi-Jurisdictional Hazard Mitigation Plan, which is the Countywide disaster preparedness program. OES also provides training for first responders, businesses, and other governmental agencies.

[12] City of Modesto, 2024. Memorandum of Understanding Between the City of Modesto and the Modesto City Firefighters Association. Article 20, Minimum Staffing Policy. July 1.

[13] Stanislaus LAFCo, 2023. Municipal Service Review and Sphere of Influence Update for the Fire Protection Districts in Stanislaus County. Resolution No. 2024-04. Approved: March 27, 2024. p. 105.

[14] Stanislaus LAFCo, 2023. Municipal Service Review and Sphere of Influence Update for the Fire Protection Districts in Stanislaus County. Resolution No. 2024-04. Approved: March 27, 2024. p. 104.

[15] Stanislaus LAFCo, 2023. Municipal Service Review and Sphere of Influence Update for the Fire Protection Districts in Stanislaus County. Resolution No. 2024-04. Approved: March 27, 2024. p. 104.

Community Health and Assistance Team

MPD's Community Health and Assistance Team (CHAT) is a program designed to use trained Outreach Specialists to respond to qualifying 911 calls, received through the 911 communications center, for mental health crises and similar non-criminal, non-violent incidents.

The Team currently consists of full-time staff who work in close collaboration with Stanislaus County social services, non-profit organizations and MPD's Homeless Engagement and Response Unit (HEART) team.

C.H.A.T. provides alternatives to traditional police responses and continues to evolve to meet the needs of the community.

3.12.2 REGULATORY SETTING

STATE

Police Protection

There are no federal or State regulations related to police protection services applicable to the proposed Project.

Fire Protection and Emergency Response

CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

In accordance with California Code of Regulations Title 8 Sections 1270 "Fire Prevention" and 6773 "Fire Protection and Fire Fighting Equipment," the California Occupational Safety and Health Administration (Cal/OSHA) has established minimum standards for fire suppression and emergency medical services. The standards include, but are not limited to, guidelines on the handling of highly combustible materials, fire hose sizing requirements, restrictions on the use of compressed air, access roads, and the testing, maintenance, and use of all firefighting and emergency medical equipment.

EMERGENCY RESPONSE/EVACUATION PLANS

The State of California passed legislation authorizing the Office of Emergency Services to prepare a Standard Emergency Management System (SEMS) program, which sets forth measures by which a jurisdiction should handle emergency disasters. Non-compliance with SEMS could result in the State withholding disaster relief from the non-complying jurisdiction in the event of an emergency disaster.

CALIFORNIA FIRE CODE

The 2022 California Fire Code (CFC), known as the California Code of Regulations, Title 24, Part 9, based on the International Fire Code (2021) provides regulations consistent with nationally recognized and accepted practices for safeguarding life and property from the hazards of: fire and

explosion; dangerous conditions arising from the storage, handling, and use of hazardous materials and devices; and hazardous conditions in the use or occupancy of buildings or premises.

CALIFORNIA HEALTH AND SAFETY CODE

State fire regulations are set forth in Sections 13000 et seq. of the California Health and Safety Code. This includes regulations for building standards (as also set forth in the California Building Code), fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards, and fire suppression training.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 1710

The purpose of the National Fire Protection Association (NFPA) 1710 – Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments is to: contain minimum requirements relating to the organization and deployment of fire suppression operations, emergency medical operations, and special operations to the public by substantially all career fire departments; address functions and objectives of fire department emergency service delivery, response capabilities, and resources; contain general requirements for managing resources and systems, such as health and safety, incident management, training, communications, and pre-incident planning; and address the strategic and system issues involving the organization, operation, and deployment of a fire department and does not address tactical operations at a specific emergency incident. According to these guidelines, a career fire department needs to respond within six minutes, 90 percent of the time with a response time measured from the 911 call to the time of arrival of the first responder.

The standards are divided as follows:

- Dispatch time of one (1) minute or less for at least 90 percent of the alarms.
- Turnout time of one (1) minute or less for EMS calls (80 seconds for fire and special operations response)
- Fire response travel time of four (4) minutes or less for the arrival of the first arriving engine company at a fire incident and eight (8) minutes or less travel time for the deployment of an initial full alarm assignment at a fire incident.
- Eight (8) minutes or less travel time for the arrival of advanced life support (ALS) (4 minutes or less if provided by the fire department

LOCAL

Stanislaus County Local Agency Formation Commission

State law established the Stanislaus County LAFCo to administer the local government reorganization process. This includes incorporation of new cities, formation of special districts, annexations to cities and special districts, and establishment of spheres of influence for all cities and special districts. The LAFCo is responsible for the orderly provision of services and the conservation of agricultural and open-space lands. It is composed of elected officials from Stanislaus County and

its cities, as well as members-at-large. The LAFCo decides whether land is to be annexed to the City of Modesto and which agency (i.e., county, city, or special district) will provide services to newly annexed areas.

Stanislaus County General Plan

The County General Plan applies to the unincorporated lands surrounding Modesto, including lands within the City's SOI. Lands within the City limits are not governed by the County General Plan. The County General Plan has the following applicable policies:

SAFETY ELEMENT

Policy Six. All new development shall be designed to reduce safety and health hazards.

Implementation Measure 1. Review development proposals and require redesign when necessary to ensure that buildings are designed and sited to minimize crime and assure adequate access for emergency vehicles. The County shall promote the design of structures, streetscapes, pathways, project sites, and other elements of the built environment that allow for surveillance of publicly accessible areas.

Implementation Measure 3. Development standards shall be imposed to provide street lighting, storm drainage, adequate setbacks, fire walls, and fire safe standards for defensible space, pursuant to California Code of Regulations Title 14, Fire Safe Regulations.

Implementation Measure 4. All building permits shall be reviewed to ensure compliance with the California Code of Regulation, Title 24, California Building Codes, and California Code of Regulations Title 14, Fire Safe Regulations.

Policy Seven. Adequate fire and sheriff protection shall be provided.

Implementation Measure 2. All discretionary projects in the County shall be referred to the Office of Emergency Services / Fire Warden, and the Local Fire Agency having jurisdiction for comment. The comments of these agencies will be used to condition or recommend modifications of the project as it relates to fire safety and rescue issues, including emergency access and evacuation routes. All projects in State Responsibility Areas or Very High Fire Hazard Severity Zone shall be routed to CALFire for comments.

Implementation Measure 4. Discretionary projects shall be considered for approval only when they are found to include adequate fire protection.

Implementation Measure 5. New development shall have water to meet the fire flow standards established in the current adopted fire code, and the current California Public Resources Code 4290, and when located within the State Responsibility Area and Very High Fire Hazard Severity Zones, the National Fire Protection Association 1142 Standard on Water Supplies for Suburban and Rural Fire Fighting.

Implementation Measure 6. All discretionary projects shall be referred to the Sheriff's Department for comment and evaluation of security features including crime prevention through design. Comments from the Sheriff will be used to either condition or modify the project.

Salida Community Plan

In 2007, the Stanislaus County Board of Supervisors approved the Salida Area Planning, Road Improvement, Economic Development, and Farmland Protection Initiative (herein referred to as the "Initiative"). Now known as the Salida Community Plan Amendment Area, the Initiative covered a 3,383-acre area with a proposed mix of uses, including 2,029 acres of employment uses (up to 27,783 employees), 1,110 acres of residential uses (5,000 dwelling units supporting an estimated population of 15,063), regional and local parkland, open space, a wastewater treatment plant, transportation improvements, and other uses. The Salida Community Plan covers the pre-2007 Existing Plan Area and the Amendment Area.

Although the Salida Community Plan does not have specific policies, it does acknowledge the need for additional public facilities, including police and fire, as the Salida area continues to build out.

PUBLIC UTILITIES AND FACILITIES

New public services and facilities will be needed to support new development within the Amendment Area and may also provide benefits to the existing Salida community. Examples of new public utilities include wastewater treatment service and water service. Facilities include sheriff or fire stations, utility substations, or other utility improvements such as water or wastewater treatment facilities. While provisions have been made for the location of such facilities within the Amendment Area, the Board of Supervisors retains discretion to allow such facilities to be located outside the Amendment Area.

EMERGENCY RESPONSE

Emergency response and law enforcement services are provided by the Salida FPD and SCSO, respectively. An additional fire station site may be needed to adequately serve emergency response needs of the community. A new fire station site has been designated for a location on Stoddard Road north of Pirrone Road, as shown in the Salida Community Plan. Final determination of a fire station site is within the purview of the Salida FPD and Stanislaus County.

Modesto Urban Area General Plan

State Planning and Zoning law requires each city and county to prepare and adopt a comprehensive, long-term general plan for its jurisdiction and any adjacent related lands within a municipality's sphere of influence. The City of Modesto Urban Area General Plan (UAGP) was adopted in 2019. The goals, policies, and implementation actions described in the General Plan reflect the City's vision for

growth, economic development, public facilities and services, mobility, and maintaining and improving Modesto's "quality of life."

The City is comprehensively updating its General Plan to guide City decisions about transportation, jobs, housing, parks, shopping, services, and more through the year 2050.

A discrete reference number is assigned to each policy to facilitate its identification elsewhere in this EIR (e.g., policies are designated as PS-X or FS-X, where X is the discrete number).

POLICE PROTECTION SERVICES

The following adopted UAGP policies apply in the Baseline Developed Area and, where relevant, in the Planned Urbanizing Area. In general, however, MPD is only authorized to provide services within the incorporated Modesto city limits.

PS-1: Maintain an adequate personnel level to organize patrol areas, and provide investigative responses to achieve a comfortable and safe community climate conducive to a high quality of life. To the maximum economic extent feasible, police operations should include proactive law enforcement and administrative efforts, all to be expanded as the City's population grows. (UAGP Policy VI.J.1)

PS-2: Strive to reduce the level of crime below levels of other progressive departments with comparable populations and demographics. (UAGP Policy VI.J.2)

PS-3: Provide sworn officers in sufficient numbers to support basic police services consistent with other progressive departments with comparable populations and demographic statistics. The recommended long-term police staffing goal is a ratio of 1.85 sworn officers per one thousand residents. (UAGP Policy VI.J.3)

PS-4: Strive to provide civilian staff in sufficient numbers to support sworn staff and to support continuing civilianization of services such as Crime Prevention, Investigative Support, Crime Scene Investigation, Accident Reports, and other documentation of incidents and other forms of clerical support. (UAGP Policy VI.J.4)

PS-5: Maintain efforts to educate the public about crime deterrence through programs like the Neighborhood Watch Program within residential neighborhoods, Traffic Watch Program on residential streets, and the Business Watch Program within commercial and industrial areas. (UAGP Policy VI.J.5)

PS-6: Review proposed projects in order to evaluate security features, encourage Crime Prevention Through Environmental Design (CPTED), and evaluate traffic flow with respect to speed and collision mitigation. Ensure that the following CPTED principles, as modified by periodic amendments thereto, are incorporated in specific sites and situations, including new development.

a) Territoriality is a design concept that clearly delineates private space from semi- public and public spaces and also creates a sense of ownership. Ownership thereby creates an environment where appearances of such strangers and intruders stand out and are more easily identified through:

- The enhanced feeling of legitimate ownership by reinforcing existing natural surveillance and natural access control strategies with additional symbolic or social ones;
- The design of space to allow for its continued use and intended purpose; and,
- The use of pavement treatments, landscaping, art, signage, screening and fences define and outline ownership of space.

b) Natural surveillance is a design concept directed primarily at keeping intruders under observation. Provision of natural surveillance helps to create environments where there is sufficient opportunity for people engaged in their normal behavior to observe the space around them. Areas can be designed so they are more easily observed through:

- Design and placement of physical features to maximize visibility. This may include: building orientation, windows, entrances and exits, parking lots, refuse containers, walkways, guard gates, landscape trees and shrubs, use of wrought iron fences or walls, signage and other physical obstructions;
- Placement of persons or activities to maximize surveillance possibilities; and,
- Minimum maintained lighting standards that provide for nighttime illumination of parking lots, walkways, entrances, exits, and related areas to promote a safe environment.

c) Access control is a design concept directed primarily at decreasing criminal accessibility. Provision of natural access control limits access and increases natural surveillance to restrict criminal intrusion, especially into areas where they will not be easily observed. Intruders are more readily recognized through:

- The use of sidewalks, pavement, gates, lighting and landscaping to clearly guide the public to and from entrances and exits; and,
- The use of gates, fences, walls, landscaping and lighting to prevent or discourage public access to or from dark or unmonitored areas.

d) Activity support is the presence of activity planned for the space, and involves placing activity where the individuals engaged in an activity will become part of the natural surveillance system. Examples include:

- Place safe activities in areas that will discourage would-be offenders, to increase the natural surveillance of these activities and the perception of safety for normal users, and the perception of risk for offenders;

- Place high-risk activities in safer locations to overcome the vulnerability of these activities by using natural surveillance and access control of the safe area;
- Locate gathering areas in locations that provide for natural surveillance and access control or in locations away from the view of would-be offenders; and,
- Improve the scheduling of space to allow for effective use and appropriate intensity of accepted behaviors.

e) Proper maintenance of landscaping, lighting treatment, and other features can facilitate the principles of CPTED. Functions include:

- Proper maintenance of lighting fixtures to prescribed standards;
- Landscaping that is maintained at prescribed standards; and,
- Minimizing the conflicts between surveillance and landscaping as groundcover, shrubs and trees mature. (UAGP Policy VI.J.6)

FIRE PROTECTION SERVICES

The following UAGP policies address fire protection services in the Baseline Developed Area, Downtown Area, and Planned Urbanizing Area:

FS-1: Maintain adequate fire flows in relation to structure size, design, and requirements for construction and/or built-in fire protection systems in accordance with the California Fire Code and adopted local ordinances. Determination of adequate fire flows includes factors such as storage capacity, system gridding, hydrant spacing, and spacing and sizing of water mains. (UAGP Policy VI.K.1)

FS-2: Ensure adequate ingress and egress to all structures for fire fighting and rescue purposes independent of privately owned and maintained driveways. Provide protection of life and property through the use of engineered fire protection systems, including roof systems. (UAGP Policy VI.K.2)

FS-3: Practice timely adoption of the current edition of the California Fire Code including local ordinances designed to address local conditions. The California Fire Code may be amended to suit local conditions. (UAGP Policy VI.K.3)

FS-4: Ensure that fire stations, apparatus, equipment, and personnel are in place concurrent with construction in the Planned Urbanizing Area. (UAGP Policy VI.K.4)

FS-5: Future fire station sites and facilities should be closely coordinated with existing and planned public parks, libraries, and other activity centers in order to encourage maximum efficiency of public facilities. (UAGP Policy VI.K.5)

FS-6: Promote fire-safe behaviors within the community through public fire education activities and programs. (UAGP Policy VI.K.6)

FS-7: Maintain its readiness to mitigate man-made or natural disasters through maintenance and implementation of the Multi-Hazard Functional Plan, the Multi-Hazard Mitigation Plan, and the Emergency Operations Plan. (UAGP Policy VI.K.7)

FS-8: Maintain equipment, staffing, and facilities to provide Emergency Medical Services, Fire Prevention and Suppression, Urban Search and Rescue, and Hazardous Materials Response Capabilities. (UAGP Policy VI.K.8)

FS-9: Provide an adequate Fire and Life Safety Delivery system through the achievement of the following standards.

(a) Maintain an emergency response system capable of achieving the following standards in 90 percent of all cases.
- The first fire emergency response unit arrives within six minutes of dispatch.
- A full alarm assignment consisting of four engines, one truck, one Battalion Chief, and 16 personnel arrives within ten minutes of dispatch.
- A second alarm assignment consisting of three additional fire units with a minimum of nine personnel arrives within 15 minutes of dispatch. (UAGP Policy VI.K.9)

FS-10: Protect life and property by requiring engineered fire protection systems and fire resistive roof systems as part of all new construction; in situations where access is limited, fire sprinklers shall be required for new construction. (UAGP Policy VI.K.10)

FS-11: Provide an effective prevention program aimed at fire loss reduction through inspection, investigation, and public education. (UAGP Policy VI.K.11)

FS-12: Coordinate with affected fire protection districts when an annexation to the City is proposed, and before it has been finalized, regarding fire protection and other emergency services. (UAGP Policy VI.K.12)

The UAGP also provides the following urban services policy within the Planned Urbanizing Area only.

FS-13: Each Specific Plan should be accompanied by a long-range financing strategy that provides reasonable estimates of the costs of on- and off-site infrastructure to support the proposed development pattern. The strategy should generally address public facility funding, including schools, for any development project that serves to implement the subject Comprehensive Plan. If new public facilities are required that will also serve the broader community, the Specific Plan should include options for broad-based funding mechanisms. Each Specific Plan should address the need to provide water, wastewater and storm drainage infrastructure, in the context of the required Facilities Master Plan and Infrastructure Master Plan prepared at the developer's expense. (UAGP Policy III.I.4)

FS-14: Negotiate with affected fire protection districts when an annexation to the City is contemplated and before it has been effected to determine whether the boundary change may result in the erosion of fire protection or other emergency services. Any resulting agreements must be approved by City Council and the governing board of the fire protection district prior to City Council approval of the annexation. Options range from the consolidation of the fire protection district into Modesto City Fire to revenue sharing. (UAGP Policy VI.K.13)

Modesto Municipal Code

Title 3, Chapter 4 of the Modesto Municipal Code guides the preparation and carrying out of plans for the protection of people and property within the City in the event of an emergency. The Modesto Municipal Code also codifies the creation of the Modesto Disaster Council, a group of City leaders, such as the Mayor and Director of Emergency Services, to implement emergency and mutual aid plans and agreements in the event of an emergency. Section 3-5.01 of the Modesto Municipal Code also requires the City to participate in adopted mutual aid operational plans in the event of an emergency.

3.12.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed Project will have a significant impact on public services if it would result in:

- Substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:
    - Fire Protection; or
    - Police Protection.

IMPACTS AND MITIGATION MEASURES

Impact 3.12-1: The proposed Project would not require the construction of police department facilities which may cause substantial adverse physical environmental impacts (Less than Significant)

Although SCSO currently provides police protection services to the Project site, responsibility for patrol and response would transfer to the MPD upon annexation to the City.

In 2024, the MPD had 211 sworn officers and 159 professional non-sworn staff.[16] Modesto Urban Area General Plan policy PS-3 (UAGP Policy VI.J.3) prioritizes providing sworn officers in sufficient numbers to support basic police services consistent with other progressive departments with comparable populations and demographic statistics, with a police staffing goal of 1.85 sworn officers per 1,000 residents. In 2024, Modesto's population was approximately 219,705 residents.[17] At the desired staffing ratio, MPD would need approximately 407 sworn officers to provide protection services to the City. Therefore, the current staffing ratio is approximately 0.96 sworn officers per 1,000 residents, far below the desired levels of police protection. However, staffing levels in the City of Modesto are determined by the City Council in consultation with the City Manager and Chief of Police.

The Project proposes the development of approximately 145 acres of currently undeveloped land with up to 2,503,230 square feet (maximum development scenario) of industrial, warehouse, and manufacturing land uses within the northern portion of the City. While the Project would generate new employment opportunities, these jobs are expected to be filled primarily by existing residents of Modesto and the surrounding region. It would be speculative to assume that individuals would relocate specifically to Modesto to take these positions, as the local labor force is expected to meet the Project's employment demand. Accordingly, the Project would not induce substantial population growth or result in new demand for housing. Because the employment-generating land uses proposed by the Project are consistent with the growth projections evaluated in the City's Urban Area General Plan and EIR, the Project would not induce population growth or create demand for police protection services beyond what is already anticipated in the General Plan.

Development of the Project site, as proposed, would be consistent with the Salida Community Plan and UAGP land use and zoning identified for the site and would not result in significant growth beyond that identified and planned for in the UAGP. Although demand for services may increase, the Project would not directly increase demand for police protection services to the extent that new or physically altered police department facilities would be needed to maintain acceptable service ratios, response times, or other performance objectives.

UAGP Policy VI.J.6 (policy PS-6 above) requires MPD to review development proposals to evaluate security features, encourage CPTED, and evaluate traffic flow with respect to speed and collision mitigation. UAGP Policy VI.J.1 (policy PS-1 above) requires the City to maintain an adequate personnel level to organize patrol areas and provide investigative responses to achieve a

[16] Modesto Police Department, 2025. Annual Report, 2024. Available: https://www.modestogov.com/ArchiveCenter/ViewFile/Item/4391. Accessed: June 30, 2025.

[17] California Department of Finance E-4 Estimates (2001-2010), (2011-2020), (2021-2025), (2025).

comfortable and safe community climate conducive to a high quality of life, with police staffing and facilities.

The Project would be subject to the City's Infrastructure Financing Program Capital Facilities Fee which may be used for the purchase, construction, expansion, rehabilitation, or acquisition of public facilities, including but not limited to police stations. Payment of the fee is required to implement the goals and objectives of the General Plan and to mitigate the impacts caused by future development in the City. The payment of fees would be available to finance public facilities and/or compensation measures, and to pay for each development's fair share of the construction costs of these improvements, and/or the costs of the compensation measures. Payment of the public facilities fee in compliance with the City's Capital Facilities Fee would reduce potential impacts associated with the Project's contribution toward the future need for new or physically altered police department facilities. As the Project would not directly require the need for new or physically altered police facilities in order to maintain acceptable service ratios, response times or other performance objectives which may cause substantial adverse physical environmental impacts, implementation of the proposed Project would have a ***less-than-significant*** impact on police protection services and facilities.

Impact 3.12-2: The proposed Project would not require the construction of fire department facilities which may cause substantial adverse physical environmental impacts (Less than Significant)

The City of Modesto UAGP includes policies and implementation measures to ensure that the MFD continues to provide adequate facilities and staffing levels. Below is a list of relevant policies:

- Maintain equipment, staffing, and facilities to provide Emergency Medical Services, Fire Prevention and Suppression, Urban Search and Rescue, and Hazardous Materials Response Capabilities. (UAGP Policy VI.K.8)
- Provide an adequate Fire and Life Safety Delivery system through the achievement of the following standards.
    - Maintain an emergency response system capable of achieving the following standards in 90 percent of all cases.
    - The first fire emergency response unit arrives within six minutes of dispatch.
    - A full alarm assignment consisting of four engines, one truck, one Battalion Chief, and 16 personnel arrives within ten minutes of dispatch.
    - A second alarm assignment consisting of three additional fire units with a minimum of nine personnel arrives within 15 minutes of dispatch. (UAGP Policy VI.K.9)
- Coordinate with affected fire protection districts when an annexation to the City is proposed, and before it has been finalized, regarding fire protection and other emergency services. (UAGP Policy VI.K.12)

Continued growth within the City will increase the overall demand for fire protection services in the City. Growth in accordance with buildout of the existing UAGP is expected to generate the typical range of service calls, including structure fires, car fires, electrical fires, emergency medical

response, and others. Any new facilities would require environmental review once a location and design of such facility is developed. The City's cost to maintain equipment and facilities and to train and equip personnel will also increase. Growth in rural areas and fire districts will also increase the demand for fire protection services in those areas.

While the Project would generate new employment opportunities, these jobs are expected to be filled primarily by existing residents of Modesto and the surrounding region. It would be speculative to assume that individuals would relocate specifically to Modesto to take these positions, as the local labor force is expected to meet the Project's employment demand. Accordingly, the Project would not induce substantial population growth or result in new demand for housing. Because the employment-generating land uses proposed by the Project are consistent with the growth projections evaluated in the City's Urban Area General Plan and EIR, the Project would not induce population growth or create demand for fire protection services beyond what is already anticipated in the General Plan.

Development of the Project site, as proposed, would be consistent with the Salida Community Plan and UAGP land use and zoning identified for the site and would not result in significant growth beyond that identified and planned for in the UAGP. Although demand for services may increase, the Project would not directly increase demand for fire protection services to the extent that new or physically altered fire department facilities would be needed to maintain acceptable response times or other performance objectives.

The Project would be subject to the City's Infrastructure Financing Program Capital Facilities Fee which may be used for purchase, construction, expansion, rehabilitation, or acquisition of public facilities, including but not limited to fire stations. Payment of the fee is required to implement the goals and objectives of the General Plan and to mitigate the impacts caused by future development in the City. The payment of fees has been identified to finance public facilities and/or compensation measures, and to pay for each development's fair share of the construction costs of these improvements, and/or the costs of the compensation measures. Payment of the public facilities fee in compliance with the City's Capital Facilities Fee would reduce potential impacts associated with the Project's contribution toward the future need for new or physically altered fire department facilities.

Additionally, all future development projects in Modesto are reviewed to ensure adequate fire protection and suppression service. The Project site is within the jurisdiction of the Salida FPD for purposes of fire services. Pursuant to a contract between the Salida FPD and the City, Salida FPD pays the City to provide fire services, and the City provides those services from the City's Fire Department. The Salida FPD currently imposes a Special Tax under a Community Facilities District to pay for City fire services under the Contract. The Modesto Fire Department must have access to adequate onsite hydrants with adequate fire-flow pressure available to meet the needs of fire suppression units. The proposed Project would include the installation of fire hydrants, and the MFD would conduct fire flow tests prior to building occupancy.

Fire services will be funded and delivered during and after the annexation transition through property tax. Under the current MOU under which MFD provides fire services to Salida FPD, the Salida FPD Special Tax under the Community Facilities District would continue to apply to the Project site after annexation to Modesto.

As the Project would not directly require the need for new or physically altered fire facilities in order to maintain acceptable service ratios, response times or other performance objective which may cause substantial adverse physical environmental impacts, implementation of the proposed Project would have a ***less-than-significant*** impact on fire protection services and facilities.

CUMULATIVE IMPACTS

Cumulative setting would include all areas covered in the service areas of the Modesto Fire Department and Modesto Police Department.

Impact 3.12-3: The proposed Project, in combination with cumulative development, would not require the construction of police department facilities which may cause substantial adverse physical environmental impacts (Less than Significant)

Implementation of the proposed Project would contribute toward an increased demand for police services and facilities within the City of Modesto. The proposed Project and all related future projects would be subject to all fees that are paid toward the enhancement of public services within the City. Payment of the applicable development fees by the Project applicant, and ongoing revenues that would come from property taxes, sales taxes, and other revenues generated by the proposed Project, would assist in maintaining existing police services. Therefore, the cumulative impact on police services would be ***less than significant***.

Impact 3.12-4: The proposed Project, in combination with cumulative development, would not require the construction of fire department facilities which may cause substantial adverse physical environmental impacts (Less than Significant)

Implementation of the proposed Project would contribute toward an increased demand for fire protection services and facilities within the City of Modesto. The proposed Project and all future projects would be subject to all fees that are paid toward the enhancement of public services within the city. Payment of the applicable development fees by the Project applicant, and ongoing revenues that would come from property taxes, sales taxes, and other revenues generated by the proposed Project, would assist in maintaining existing fire protection services. Therefore, the cumulative impact on fire protection services would be ***less than significant***.

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This section analyzes the potential impacts of the proposed Project on the transportation system. This section identifies the potential transportation impacts of future buildout of the Project and recommends mitigation measures to lessen their significance. Information in this section is derived primarily from the following (as well as other information described in this section):

- *CEQA Transportation Impact Analysis Report for the Scannell Industrial Project* (Fehr & Peers, 2026) (see Appendix E).
- *City of Modesto General Plan* (City of Modesto, 2019).
- *Public Draft Environmental Impact Report for the Modesto Urban Area General Plan* (City of Modesto, 2025).
- *Modesto Municipal Code* (City of Modesto, 2024).
- State of California, Governor's Office of Planning and Research (OPR), *Technical Advisory on Evaluating Transportation Impacts in CEQA* (OPR, December 2018); and
- *Trip Generation Manual, 11th Edition* (ITE, 2021).

Comments were received during the public review period or scoping meeting for the Notice of Preparation regarding this topic from the following: Leonard Powell (March 19, 2025), Anita Young (March 24, 2025), Garry Pearson (March 27, 2025), Tina Rocha (March 27, 2025), San Joaquin Valley Air Pollution Control District (March 25, 2025), Modesto City Schools (March 25, 2025), and Adams Broadwell Joseph & Cardozo (March 27, 2025). Each of the comments related to this topic are addressed within this section. Full comments received are included in Appendix A.

According to Senate Bill (SB) 743, which became effective statewide on July 1, 2020. The legislation associated with this landmark law specified that "automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion shall not be considered a significant impact on the environment pursuant to this division, except in locations specifically identified in the guidelines, if any."

Therefore, unlike previous Draft EIRs published in Modesto, this Draft EIR uses VMT as the primary significance criteria and Level of Service (LOS) to aid the City of Modesto and Caltrans in the understanding of potential increases in vehicle delay at key signalized intersections (Policy TR-4: Effective Transportation Assessment) and determine improvements to the local and regional transportation system. Pages 22 through 57 of Appendix F present the results of Existing Conditions Impacts and Mitigation Measures and the Cumulative Conditions Impacts and Mitigation Measures.

In December 2018, the California Office of Planning and Research (OPR) published final technical guidance for implementing SB 743. On December 28, 2018, the Resources Agency adopted CEQA Guidelines Section 15064.3. Under that guideline, vehicles miles traveled (VMT) was chosen as the primary metric used to identify transportation impacts. Hence, this chapter includes an extensive review of the Project's VMT. This section also addresses many other important transportation-related areas of concern including pedestrian/bicycle facilities, transit facilities and services, emergency vehicle response, hazardous conditions, and temporary construction-related conditions.

3.13.1 ENVIRONMENTAL SETTING

PROJECT LOCATION

The Scannell Industrial Project (proposed Project) consists of approximately 145 acres located at the northwest corner of Kiernan Avenue and Dale Road intersection, within the unincorporated Community of Salida. The Project site consists of active agricultural fields and orchards to the northern and southern portions of the Project site, respectively. The Project site and surrounding properties are in agricultural use. The Project site is primarily bounded by lands within the unincorporated County to the north, east and west.

ROADWAY SYSTEM

The roadway system in the Project vicinity consists of a series of freeways, highways, expressways, and surface streets, including but not limited to the following:

- **State Route (SR) 99 (SR 99)** – A six-lane freeway with a posted speed limit of seventy miles-per-hour (MPH) within the study area. SR 99 provides inter-city connections throughout the Central Valley, including nearby cities such Modesto, Turlock, and Merced. The freeway extends between US 50 in Sacramento to I-5 in Kern County. SR 99 is also designated as a Surface Transportation Assistance Act (STAA) truck route.
- **Kiernan Avenue (SR 219)** – SR 219 is a four-to-six lane east-west state highway with a posted speed limit of 55 MPH. This roadway is classified as an expressway between Stoddard Road and McHenry Avenue. Kiernan Avenue (SR 219) is also designated as a STAA truck route.
- **McHenry Avenue (SR 108)** – A north-south roadway that extends from SR 120 in Escalon to its terminus at Needham Street/Downey Avenue in central Modesto. SR 108 aligns with McHenry Avenue between its terminus in Modesto to just south of Ladd Road, where SR 108 diverts onto a leg of Patterson Road to the east. McHenry Avenue is a four-to-six lane, principal arterial roadway between Granger Avenue and Kiernan Avenue (SR 219). McHenry Avenue is a two-lane facility north of Kiernan Avenue (SR 219).
- **Patterson Road (SR 108)** – A two-lane, east-west roadway classified as a minor arterial by Stanislaus County. SR 108 aligns with Patterson Road between McHenry Avenue and Callander Avenue in the City of Riverbank.
- **Broadway Avenue** – A two-lane, minor arterial roadway through Salida's main commercial district with a posted speed limit of 25 MPH. The roadway extends a half mile from the interchange of Kiernan Avenue (SR 219) and SR 99 to western terminus at Finney Road. The road is separated by a raised center median with angled parking along most of the opposite curb.
- **Carver Road** – A two-lane, north-south minor collector roadway with a posted speed limit of 30 MPH. The roadway extends over 3.5 miles through northwest Modesto, connecting 9th Street to Kiernan Avenue (SR 219), before continuing further north as a local roadway serving rural residential land uses.

- **Dale Road** – A north-south principal arterial connecting Standiford Avenue to the south and Ladd Road to the north. The roadway is four-to-six lanes wide with a posted speed limit of 35 MPH. Speeds increase to 40 MPH between Bangs Avenue and Kiernan Avenue (SR 219). North of Kiernan Avenue (SR 219), the roadway narrows to a minor arterial with two-lanes of travel and no posted speed limit.
- **Hammett Road** – A two-lane, north-south minor arterial roadway with no posted speed limit that extends through primarily agricultural land west of Modesto. It connects Pirrone Road and Beckwith Road with a full-access connection to SR 99 near the Pirrone Road terminus.
- **Ladd Road** – A two-lane, east-west minor arterial roadway with no posted speed limit that connects Stoddard Road to McHenry Avenue. Ladd Road serves mostly agricultural uses and rural residential properties.
- **Pelandale Avenue** – A six-lane, east-west roadway connecting SR 99 to McHenry Avenue (SR 108). Pelandale Avenue is a principal arterial roadway with a posted speed limit of 45 MPH between SR 99 and Dale Road, and an expressway between Dale Road to McHenry Avenue (SR 108) with a posted speed limit of 50 MPH. Pelandale Avenue is a designated City of Modesto truck route.
- **Pirrone Road** – A two-to-four-lane, east-west minor arterial roadway with a posted speed limit of 40 MPH. Pirrone Road is fragmented into two segments: a western segment between SR 99 and Sisk Road, and an eastern segment between Stoddard Road and Dale Road. The eastern segment narrows to a two-lane roadway east of Joseph A. Gregori High School.
- **Salida Boulevard** – A north-south minor arterial roadway with a posted speed limit of 45 MPH. Salida Boulevard runs parallel to SR 99 between the state highway and the Union Pacific Railroad tracks and serves many commercial and heavy commercial uses.
- **Sisk Road** – A four-lane, north-south minor arterial roadway with posted speed limit of 40 MPH. The roadway parallels SR 99 between Carpenter Road and Kiernan Avenue (SR 219), before diverting north to its terminus at the Modesto Main Canal. Sisk Road narrows to two lanes north of Pelandale Avenue and continues as a two-lane minor collector north of Kiernan Avenue (SR 219).
- **Stoddard Road** – A two-lane, north-south minor arterial roadway with no posted speed limit that connects Bangs Avenue to Ladd Road. Stoddard Road expands to accommodate an additional northbound lane between Kiernan Avenue and the northern boundary of Joseph A. Gregori High School.
- **Tully Road** – A north-south roadway that connects 9th Street in central Modesto to Ladd Road. Tully Road is a four-lane minor arterial roadway between 9th Street and Standiford Avenue and continues north of Standiford Avenue as a four-lane principal arterial. Tully Road narrows to two-lane principal arterial between Pelandale Avenue and SR 219 and continues north as a local roadway facility serving more rural residential uses.

PEDESTRIAN AND BICYCLE FACILITIES

There is an existing 10-foot-wide Class II on-street bicycle lane on Kiernan Avenue (SR 219) along the Project frontage. The City of Modesto Non-Motorized Transportation Plan identified the facility as a high-stress facility, suitable only for the most confident cyclists. There are no bicycle facilities along the Project frontage on Dale Road.

Kiernan Avenue is part of the State Highway System (SHS) which falls under the jurisdiction of Caltrans. Although no pedestrian facilities are provided along the Project frontage, walking is permitted adjacent to the roadway. ADA accessible curb ramps are provided on each corner of the Kiernan Avenue/Dale Road intersection. However, only the southwest corner of the intersection provides an existing sidewalk connection. Crosswalks are provided along the north, east, and south legs of the intersection.

Caltrans considers bicycle and pedestrian improvements along Kiernan Avenue to be a high-priority item to meet active transportation and safety goals. Additionally, the City of Modesto Non-Motorized Transportation Plan proposes several bicycle network expansion and enhancement projects across the City, including a Class I shared-use bike and pedestrian path along Dale Road between Pelandale Avenue and Kiernan Avenue (SR 219).

Dale Road and Kiernan Avenue are key roadway corridors that connect local communities to Joseph A. Gregori High School and Stanislaus Elementary School within the study area. Pedestrian and bicyclist activity along the Project site frontages is currently low, primarily due to the lack of dedicated pedestrian and bicycle infrastructure. Bicycle use is limited to recreational riders along Kiernan Avenue (SR 219).

Recent development projects along Dale Road, south of Kiernan Avenue, have included sidewalk improvements along their respective frontages. Each new development has contributed to expanding pedestrian infrastructure in the area.

TRANSIT SERVICE

Transit service is provided by Stanislaus Regional Transit Authority (StanRTA). StanRTA operates a fixed-route, Paratransit, and Dial-a-Ride bus service with stops throughout Stanislaus County. There are two nearby transit stops at Kaiser Hospital and Gregori High School, each located a quarter mile or less from the Project site. Route 48 provides weekday and Saturday fixed route service to the transit stops with 60-minute headways, and a shorter Sunday service is also provided with 60-minute headways.

TRUCK ROUTES

STAA truck routes allow large trucks to operate on the interstate freeway system and certain primary routes. On surface streets, STAA routes are designated either as Terminal or Service Access routes. Terminal routes are approved by the agency with jurisdiction over the roadway to enable the truck to reach its ultimate destination. Service Access routes allow STAA trucks to exit the interstate onto a local road, for one mile only, for food, fuel, lodging, or repair.

SR 99 is a National Network STAA route, an interstate truck route located approximately 1.5 miles from the Project site. SR 219 (Kiernan Avenue) and SR 108 (McHenry Avenue) are designated as Terminal Access STAA routes, providing connections to the Project site from surrounding truck routes.

Additionally, the City of Modesto has jurisdiction to designate additional truck routes along its surface streets. Local truck routes within the Project vicinity include Pelandale Avenue between SR 99 and McHenry Avenue, Standiford Avenue/Sylvan Avenue between SR 99 and Claus Road, and Tully Road between Pelandale Avenue and 9th Street. Trucks traveling along these routes may be subject to additional restrictions such as size and weight limits. All STAA and local truck routes are shown on Figure 3 of Appendix E. Commercial vehicles over seven tons are currently prohibited along Ladd Road west of McHenry Avenue. The same restriction applies to Dale Road, Stoddard Road, Carver Road, and Tully Road between Kiernan Avenue and Ladd Road, as well as Pirrone Road between Stoddard and Dale Road.

3.13.2 REGULATORY SETTING

Existing transportation polices, laws, and regulations that apply to the Project are summarized below. This information provides a context for the impact discussion related to the Project's consistency with applicable regulatory conditions and development of significance criteria for evaluating Project impacts.

STATE

The State of California has enacted legislation that outlines the State's commitment to encourage land use and transportation planning decisions and investments that reduce VMT and contribute to reductions in greenhouse gas (GHG) emissions in line with State climate goals. The legislation with applicability to the Project traffic analysis includes:

- Assembly Bill (AB) 32 (2006).
- SB 375 (2008); and
- SB 743 (2013).

Each are discussed below, in addition to Caltrans responsibilities and VMT guidance.

Assembly Bill 32 (the California Global Warming Solutions Act of 2006)

AB 32 (Stats. 2006, ch. 488) establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. AB 32 also requires that "(a) the statewide GHG emissions limit shall remain in effect unless otherwise amended or repealed; (b) it is the intent of the Legislature that the statewide GHG emissions limit continues in existence and be used to maintain and continue reductions in emissions of GHGs beyond 2020; (c) the California Air Resources Board (CARB) shall make recommendations to the Governor and the Legislature on how to continue reductions of GHG emissions beyond 2020." Vehicle emissions are a significant source

of GHGs; therefore, GHG reduction targets include reductions in vehicle emissions, providing a nexus between AB 32 and transportation analyses.

Senate Bill 375

SB 375 (Stats. 2008, ch. 728) requires metropolitan planning organizations (MPOs) to prepare a Sustainable Communities Strategy (SCS) as part of their regional transportation plans (RTPs). The SCS demonstrates how the region will meet its GHG reduction targets through integrated land use, housing, and transportation planning. Specifically, the SCS must identify a transportation network that is integrated with the forecasted development pattern for the Project site and will reduce GHG emissions from automobiles and light trucks in accordance with targets set by the CARB. SB 375 also provides streamlining (i.e., limited CEQA review) for certain transit priority projects that are consistent with the SCS.

Senate Bill 743

SB 743 (Stats. 2013, ch. 743) creates or encourages several statewide changes to the evaluation of transportation and traffic impacts under CEQA. First, it directs OPR to amend the CEQA Guidelines to establish new metrics for determining the significance of transportation impacts of projects within transit priority areas (TPAs) and allows OPR to extend use of the new metrics beyond TPAs. The California Natural Resources Agency certified and adopted the amended CEQA Guidelines in December 2018. In the amended CEQA Guidelines, OPR selected VMT as the preferred transportation impact metric and applied their discretion to recommend its use statewide. The amended CEQA Guidelines state that "generally, VMT is the most appropriate measure of transportation impacts" and the provisions requiring the use of VMT shall apply statewide as of July 1, 2020. The amended CEQA Guidelines further state that land use "projects within one-half mile of either an existing major transit stop or a stop along an existing high-quality transit corridor should be presumed to cause a less-than-significant transportation impact."

Second, SB 743 establishes that aesthetic and parking impacts of a residential, mixed-use residential, or employment center projects on an infill site within a TPA shall not be considered significant impacts on the environment.

Third, SB 743 added section 21099 to the Public Resources Code, which states that automobile delay, as described by LOS or similar measures of vehicular capacity or traffic congestion, shall not be considered a significant impact on the environment upon certification of the CEQA Guidelines by the Natural Resources Agency. Since the amended CEQA Guidelines were certified in December 2018, LOS or similar measures of vehicular capacity or traffic congestion are not considered a significant impact on the environment under CEQA.

Lastly, SB 743 establishes a new CEQA exemption for a residential, mixed-use, and employment center project a) within a TPA, b) consistent with a Project for which an EIR has been certified, and c) consistent with an SCS. This exemption requires further review if the project or circumstances changes significantly.

TECHNICAL ADVISORY ON EVALUATING TRANSPORTATION IMPACTS IN CEQA

To aid in SB 743 implementation, OPR released a *Technical Advisory on Evaluating Transportation Impacts in CEQA* (Technical Advisory) in December 2018. The Technical Advisory provides advice and recommendations to CEQA lead agencies on how to implement the SB 743 changes. This includes technical recommendations regarding the assessment of VMT, thresholds of significance, VMT mitigation measures, and screening thresholds for certain land use projects. Lead agencies may consider and use these recommendations at their discretion and with the provision of substantial evidence to support alternative approaches.

The Technical Advisory identifies "screening thresholds" to quickly identify when a project should be expected to cause a less-than-significant impact without conducting a detailed study. The Technical Advisory suggests that projects meeting one or more of the following criteria should be expected to have a less-than-significant impact on VMT:

- **Small projects** – projects consistent with a SCS and local general plan that generate or attract fewer than 110 trips per day.
- **Projects near major transit stops** – certain projects (residential, retail, office, or a mix of these uses) proposed within ½ mile of an existing major transit stop or an existing stop along a high-quality transit corridor.
- **Affordable residential development** – a project consisting of a high percentage of affordable housing may be a basis to find a less-than-significant impact on VMT.
- **Local-serving retail** – local-serving retail development tends to shorten trips and reduce VMT. The Technical Advisory encourages lead agencies to decide when a project will be local-serving but acknowledges that retail development, including stores larger than 50,000 square feet, might be considered regional-serving. The Technical Advisory suggests lead agencies analyze whether regional-serving retail would increase or decrease VMT (i.e., not presume a less-than-significant).
- **Projects in low VMT areas** – residential and office projects that incorporate similar features (i.e., density, mix of uses, transit accessibility) as existing development in areas with low VMT will tend to exhibit similarly low VMT.

The Technical Advisory also identifies the following recommended numeric VMT thresholds for residential, office, and retail projects:

- **Residential** development that would generate vehicle travel exceeding 15 percent below existing (baseline) residential VMT per capita may indicate a significant transportation impact. Existing VMT per capita may be measured as a regional VMT per capita or as city VMT per capita.
- **Office** projects that would generate vehicle travel exceeding 15 percent below existing regional VMT per employee may indicate a significant transportation impact.
- **Retail** projects (and other non-residential/non-office projects) that results in a net increase in total VMT may indicate a significant transportation impact.

For mixed-use projects, the Technical Advisory suggests evaluating each component independently and applying the significance threshold for each project type included. Alternatively, the lead agency

may consider only the project's dominant use. The Technical Advisory also provides guidance on impacts to transit. Specifically, the Technical Advisory suggests that lead agencies should not treat the addition of new transit users as an adverse impact. As an example, the Technical Advisory suggests that "an infill development may add riders to transit systems and the additional boarding and alighting may slow transit vehicles, but it also adds destinations, improving proximity and accessibility. Such development also improves regional vehicle flow by adding less vehicle travel onto the regional network.

California Department of Transportation

Caltrans is responsible for planning, designing, constructing, operating, and maintaining the SHS. Federal highway standards are implemented in California by Caltrans. Any improvements or modifications to the SHS within the study area would need to be approved by Caltrans.

The following Caltrans planning documents emphasize the State of California's focus on transportation infrastructure that supports mobility choice through multimodal options, smart growth, and efficient development:

- Smart Mobility Framework (Caltrans February 2010).
- Complete Streets Implementation Action Plan (Caltrans February 1, 2010).
- California Transportation Plan 2040 (Caltrans June 2016).
- Strategic Management Plan 2015-2020 – 2019 Update (Caltrans 2019); and
- State Highway System Management Plan (Caltrans May 2019).

VMT-Focused Transportation Impact Study Guide

On May 20, 2020, the VMT-Focused Transportation Impact Study Guide (TISG) was adopted. TISG provides guidance on how Caltrans will review land use projects, with focus on VMT analysis and supporting state land use goals, state planning priorities, and GHG emission reduction goals. The TISG also identifies land use projects' transportation impacts to the SHS and potential non-capacity increasing mitigation measures.

TISG emphasizes that VMT analysis is Caltrans' primary review focus, and references OPR's Technical Advisory as a basis for the guidance in the TISG. Notably, TISG recommends the use of the recommended thresholds in the Technical Advisory for land use projects. TISG also references the Technical Advisory for screening thresholds that would identify projects and areas presumed to have a less-than-significant transportation impact. Caltrans supports streamlining for projects that meet these screening thresholds because they help achieve VMT reduction and mode shift goals.

Local Development Review (LDR) Safety Review Practitioner's Guidance

The Local Development Review (LDR) Safety Review Practitioners Guidance (Caltrans, 2024) advises practitioners how to evaluate project-related safety impacts on the SHS. It stops short of including specific thresholds of significance. The analytical approach described in the guidance focuses on vulnerable road users (i.e., bicyclists and pedestrians) and underserved communities; enhancing safety for pedestrians, bicyclists, transit, and vehicular modes; and applying both reactive and

systemic perspectives. Lastly, it reiterates Caltrans supports for shifting away from using delay-based metrics for analysis in CEQA.

The guidance outlines how queuing should be reviewed for traffic safety impacts. Appendix B "Freeway Exit-Ramp Queuing Analysis" provides practitioners with specific guidance on analysis of project effects on freeway off-ramp queuing. The following test is applied at freeway off-ramps:

- If the Project adds two or more car lengths to the ramp queue that will extend into the freeway mainline, then the location must be reviewed for traffic safety impacts. This review must evaluate speed differential between the off-ramp queue and the mainline of the freeway during the same period.

Traffic safety mitigation may be requested if freeway exit ramp queuing does not occur under the existing condition, but project-generated traffic volumes will cause a queue to extend onto the freeway mainline, creating a speed differential of thirty miles per hour (mph) or greater. When the speed differential increases above the 30-mph threshold, rear-end collisions increase resulting in an increase in severe injury and fatal collisions. Traffic safety mitigation shall not be requested under conditions where queueing already exists on a freeway exit ramp. The significance of that traffic safety impact by the project must be determined on a case-by-case basis.

The guidance does not offer any suggested practices for evaluating queuing at turn lanes on the SHS. However, queues that spill out of a left-turn lane on a conventional highway can present similar safety concerns as a freeway off-ramp. They are therefore evaluated in the traffic study in the same manner as off-ramps are treated. Vehicle queuing is analyzed using 95th percentile queues (from Simtraffic) for key turning movements at turn lanes and off-ramps on the SHS. Since the queuing results are reported on state highway facilities, the precise (non-rounded) 95th percentile queue (in feet) is reported in accordance with Caltrans District 10 preferences.

Lastly, the guidance identifies the following six challenge areas as high priorities in California as they represent the greatest opportunity to reduce fatalities and severe injuries: lane departures, impaired driving, speed management, pedestrians, bicyclists, and intersection. This topic, which pertains to details related to the collision history on the SHS near the Project site, is analyzed in the traffic study.

CALTRANS 2024-2028 STRATEGIC PLAN

The Caltrans 2024–2028 Strategic Plan lists Safety as its top goal through 2028. Caltrans has adopted the Safe System Approach which seeks to design roadway environments to mitigate human mistakes and account for injury tolerances to encourage safer behaviors and facilitate safe travel by the most vulnerable users.

INTERSECTION SAFETY AND OPERATIONAL ASSESSMENT PROCESS GUIDE (ISOAP)

In 2024 Caltrans adopted the Intersection Safety and Operational Assessment Process Guide (ISOAP), which presents a data-driven, performance-based framework incorporating the Safe

System Approach to screen intersection strategies and identify optimal solutions for new or improved intersections on the SHS. ISOAP objectively helps select intersection control and geometric designs for the expected users within the context of an intersection's location. Land use and place type are to be considered in determining appropriate intersection strategies.

ISOAP applies to new intersections or the major modification of existing intersections on the SHS, including but not limited to the following:

- Connecting a new public road, private road, or high-volume (average daily traffic volumes of 1,000 or greater) driveway to a state highway or a new interchange to a freeway.
- Changing the type of traffic control, such as from stop-control to signal-control or from a two-way stop to all-way stop.
- Installing a pedestrian hybrid beacon at an intersection.
- Making major physical changes to intersection approaches, including at ramp terminals, such as adding a leg to an intersection or widening to provide an additional through or turn lane.

Although not required for CEQA, an ISOAP evaluation must be completed and approved by Caltrans prior to obtaining an encroachment permit for improvements within the SHS.

LOCAL

City of Modesto General Plan

The City of Modesto General Plan (2019) provides a long-term framework and policy guide for the City's growth, development, and land use. It establishes goals, policies, and programs to guide the City's housing, transportation, economic development, public services, environmental protection, and quality of life. The plan aims to ensure safe and sustainable development that meets the needs of current and future residents while preserving the City's character and resources.

The City of Modesto General Plan Road Circulation Diagram shows the following major roadway improvements near the Project site:

- **Pirrone Road extension** between Stoddard Road and Sisk Road (classified as a minor arterial, four-lane wide cross-section)
- **Hammett Road extension** between SR 99 and Stoddard Road (classified as a minor arterial, four-lane wide cross-section)
- **Dale Road widening** between Kiernan Avenue and Ladd Road (classified as a minor arterial, four-lane wide cross-section)

Relevant transportation policies outlined in the City of Modesto General Plan include:

- Policy V.A.1 Gap Closures: Identify gaps in the pedestrian and bicycle transportation systems and plan facilities to close those gaps.
- Policy V.A.2 Encourage Pedestrians and Bicycle Use: Streets, pedestrian paths, and bike paths contribute to a system of fully connected routes to all destinations. Their designs

encourage pedestrian and bicycle use when small and spatially defined by buildings, trees, and lighting, and when high-speed traffic is discouraged.

- Policy V.A.5 Mediating Mode Conflicts: In the case of conflict between motorized and non-motorized transportation modes, roadway or right-of-way features may be added or altered to protect pedestrians and bicyclists, consistent with Urban Area General Plan goals.
- Policy V.A.6 Level of Service and Mitigating Travel Demand: Level of Service and Quality of Service (see Tables V-1 and V-2, respectively) for all transportation modes (vehicle, transit, bicycle and pedestrian) on City roadways should be improved over time consistent with the financial resources reasonably available to the City and without unreasonably burdening property owners or developers. On roadways where the automobile LOS is expected to be level F, consider mitigation measures other than road widening, such as the addition of bicycle lanes, improved pedestrian access, improved transit service, and the establishment of walkable development patterns to improve the quality of service for all travel modes.
- Policy V.B.2 Traffic Study: If required, a Comprehensive Traffic Study should conform to the City of Modesto *Traffic Impact Study Criteria*. These *Criteria* will be amended to reflect general plan goals and policies, including definition of metrics for both motorized and non-motorized transportation modes.
- Policy V.C.5 Travel Mitigation Outside of Downtown: Outside of the downtown area, consider and balance the effects of automobile traffic mitigation on non-automobile travel – particularly in areas where the city is attempting to improve conditions that support non-automobile travel – when considering solutions to traffic circulation problems.
- Policy V.C.6 Prioritizing Transportation Investments: Strive to achieve quality of service, as depicted in Table V-2 (FDOT Figure 1-2, 2009) for each non-automobile travel mode appropriate to the location in the City.
    1. Downtown Area: Pedestrian and bus quality of service should be A/B. Bicycle quality of service should be C/D or better. *(Air quality, public health, energy conservation, environmental justice)*
    2. Baseline Developed Area: Pedestrian quality of service should be C/D on arterial streets and A/B on local and collector streets. Bicycle quality of service should be A/B on local and collector streets, C/D on arterial streets, and E/F on expressways. Bus quality of service should range from C/D to E/F, depending upon boardings. Consider improving accessibility along impacted routes by implementing Transportation Demand Management strategies.
- Policy V.D.1 Median Refuges: Add median refuges along arterials and four-lane collectors in areas where pedestrian traffic is to be facilitated to give pedestrians a safe halfway point for street crossings.
- Policy V.D.2 Bulbouts: Add sidewalk bulbouts to areas where pedestrian traffic is to be facilitated to reduce crossing distance and improve visibility of pedestrians to other roadway users.
- Policy V.D.5 ADA Compliance: Construct or modify curbramps and sidewalks to comply with the Americans with Disabilities Act.

- Policy V.D.7 Street Trees: Plant and maintain large species trees along streets to separate pedestrians from moving traffic for safety and to create an inviting walking environment.
- Policy V.E.3 Opportunities to Add Bicycle Facilities: When streets are repaired or resurfaced, add bicycle facilities to those streets as appropriate with striping, stencils, and/or signage.
- Policy V.E.8 Bicycles at Signalized Intersections: Protected intersection design features, bike boxes and bicycle detection systems may be used to delineate bicycle facilities, improve safety, and allow bicycle traffic to trigger the green phase of a traffic signal. In accordance with California Vehicle Code Section 21450.5, sensors that detect the presence of a waiting bicycle should be added to signalized intersections when signals are installed, upgraded and/or maintained. Other markings and signage may be used as approved by the City Engineer.
- Policy V.F.3 Minimum Service Density: Provide service on a half-mile grid where feasible to make the service as accessible as possible. Newly developed areas should provide a street pattern capable of accommodating transit service on a half-mile grid. Sidewalks should be provided in the development of new roadway systems to accommodate bus stops, and to minimize walking distance between them.
- Policy V.F.7 Bus Pullouts: Consider Bus pullouts with new development in the Planned Urbanizing Area to support transit passenger loading and unloading.
- Policy V.F.8 Park-and-Ride: Work with new development to provide park-and-ride spaces to promote and support transit ridership.
- Policy V.H.1 Roadway Facilities, Defined: The roadway network consists of the facility types listed below. Figures V-1 through V-6 of the General Plan constitute the Transportation Diagram, which describes the proposed general location and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other facilities within the Modesto Urban Area.
    1. Freeway - This classification defines the highest volume, total access–control highways with high design speeds (55–65 mph).
    2. State Highway - This classification applies to streets that are acquired, laid-out, constructed, improved, or maintained as a state highway pursuant to constitutional or legislative authorization. This facility type can be designated a freeway, expressway, arterial, or other roadway classification.
    3. Expressway - The purpose of an expressway is to facilitate automobile and transit trips across town rapidly. Bicycles can be accommodated. Pedestrians are generally not expected. Expressways should have signalized intersections or roundabouts at arterial streets (one mile apart) and right-turn-only access to collector streets (one-half mile apart). The City Engineer has authority to design Expressway intersections (within City right-of-way), consistent with provisions contained within the City's Standard Specifications, on a case-by-case basis. Expressways may include Class I, II or IV bicycle facilities. Driveway access from fronting properties should not be allowed without specific authorization from the City Council (see Policy V.H.15).

4. Arterial Street - Arterials allow movement of people by all modes and provide safe and convenient access to businesses for people using any travel mode. Arterial streets may be classified either as principal or minor arterials. A principal arterial typically has six lanes, while a minor arterial has four lanes. All arterials should have on-street bicycle facilities. Driveway access from fronting properties should be designed according to the City's Standard Specifications.
5. Collector Street - Collectors are primarily lined with residential development and serve a function similar to that of local streets, but with higher traffic volumes. Collector streets serve pedestrian and bicycle traffic, as well as automobiles and sometimes transit. Collectors may be classified either as "major" or "minor;" a major collector typically has four lanes, while a minor collector has two lanes. Driveway access from fronting properties should be designed according to the City's Standard Specifications.
6. Local Street - The primary purpose of local streets is to connect people to their neighbors and neighborhood. Cars are not excluded, but they are not the focus of transportation. Driveway access from fronting properties should be designed according to the City's Standard Specifications.

- Policy V.H.2 Level of Service: LOS "D" is the threshold of significance for measuring traffic impacts.
- Policy V.H.3 Coordinate Planning Efforts. Coordinate the City's streets and highways system with Caltrans,' the County's, and other jurisdictions' existing facilities and plans.
- Policy V.H.5 Driveway Consolidation. Consolidate driveways to reduce potential vehicle-pedestrian conflicts.
- Policy V.H.8 Intersection Control: The type(s) of intersection control(s) (e.g., traffic signal, traffic circle, roundabout, etc.) will be determined by the City Engineer at the time of project design.
- Policy V.H.9 Standard Specifications. The City's Standard Specifications Manual applies to the construction of new roadway facilities. More design detail is provided in the City's adopted *Standard Specifications*.
- Policy V.H.13 Truck Routes. Evaluate the need to identify new truck routes and the potential abandonment of existing truck routes due to increased truck traffic, increased size of trucks, and conflicts with pedestrian-oriented areas and noise-sensitive land uses.
- Policy V.H.15 Expressways: This classification defines high-volume, access-controlled roadways. Expressway locations / alignments are shown in the Circulation and Transportation Diagram, Figures V-1, and V-2. Street Details in the City of Modesto's Standard Specifications illustrate the intersection cross-section requirements for expressway intersections with arterial and collector streets, which are summarized on the following exhibit within this policy.

  This General Plan provides for expressways throughout the City. Continue to include these expressways in the Circulation and Transportation plan and to implement them in cooperation with the development community according to applicable design standards.

1. Regulate and limit the number and design of expressway access locations in order to ensure the overall operational viability of expressways in the community.
2. Any consideration of access to expressways is contingent on the ability of an applicant to provide a properly designed solution consistent with the adopted City standard specifications for access to expressways. The City Engineer may approve variations and deviations from adopted standard specifications pursuant to Section 7-1.701(I)(2) of the Municipal Code.
3. Any access to expressways from private parcels will be at the sole expense of the property owner, including any reconstruction of the expressway that may be necessitated.
4. Expressway access to non-residential uses may be allowed on a case-by-case basis per the following criteria:
    - When an applicant demonstrates to the City Council's satisfaction that economic purposes are clearly restricted by denial of access to a particular parcel, and when the applicant demonstrates to the City Council's satisfaction that there are either no or only highly restrictive alternative access solutions available to a particular parcel; or,
    - For infill site developments, when an applicant demonstrates to the City Council's satisfaction that the economic benefits derived from development of the remnant parcel override the need to limit access to that parcel; or,
    - It is recognized that City of Modesto emergency facilities, such as police and fire stations, may be located on expressways and that direct access would be desirable. In these cases, direct access is allowed subject to approval by the City Engineer. Design of such access should have City Council approval prior to implementation.
5. The City has adopted access management policies that include design standards for expressway access (General Plan Amendment 2001-02, August 28, 2001, modified by General Plan Amendment 2010-01). The purpose of the guidelines and design standards is to provide safe ingress and egress to adjacent parcels while at the same time not degrading the carrying capacity, flow, and efficiency of the expressway.

The Community Development chapter of the General Plan discusses potential growth through the annexation of the *Salida Community Plan* (Stanislaus County, 2007) area, an unincorporated area north of the Modesto city limits. The plan states that if the Salida Comprehensive Planning District is annexed to the City of Modesto, the City of Modesto does not propose to change any land use designations as defined in the *Salida Community Plan* (Stanislaus County, 2007), and that the *Salida Community Plan* should continue to guide growth and development for the area if annexed.

As previously noted, SB 743 prohibits the use of automobile delay and LOS as performance measures for determining transportation impacts under CEQA. Therefore, General Plan policies focused on intersection LOS significance thresholds were not evaluated as part of this EIR but will instead be evaluated as part of a separate non-CEQA Local Transportation Analysis (LTA) Report.

2024 City of Modesto Non-Motorized Transportation Plan

The City of Modesto Non-Motorized Transportation Plan (City of Modesto, 2024) is a strategic framework aimed at improving and promoting walking, biking, and other forms of non-motorized travel within the city. It focuses on enhancing safety, connectivity, accessibility, and infrastructure to encourage residents to choose active transportation modes, thereby supporting healthier lifestyles, reducing traffic congestion, and minimizing environmental impacts. The plan outlines specific projects, policies, and programs designed to create a more pedestrian- and bicycle-friendly community in Modesto. Relevant transportation policies and actions outlined in the Plan include:

- Policy 1: Integrate bicycle and pedestrian network and facility needs into all City planning documents and capital improvement projects.
  - Action 1.5: Ensure that all traffic impact studies, analyses of proposed street changes, and development projects address impacts on bicycling and walking facilities.
- Policy 3: Design a low-stress bikeway network to serve people of all ages and abilities.
  - Action 3.1: Design a network of continuous low-stress bikeways as identified in this Plan.
- Policy 4: Design a connected, convenient, and comfortable pedestrian network to serve people of all ages and abilities.
  - Action 4.1: Include sidewalks on all new or retrofitted roadways.
  - Action 4.6: Plan and develop well-connected streets, sidewalks, and pathways that provide the most direct paths of travel for pedestrians. Provide connections between or through cul-de-sacs and remove barriers to walking where feasible.
- Policy 9: Ensure that bicyclists and pedestrians have accommodation in construction zones.
  - Action 9.1: Incorporate routine accommodation for pedestrian and bicycle facilities when roadway or other construction work disrupts typical uses of sidewalks, trails, and on-street bicycle facilities.
- Policy 10: Maintain designated facilities to be comfortable and free of hazards to people walking and bicycling.
  - Action 10.2: Trim overhanging and encroaching vegetation to maintain a clear travel path along pedestrian and bicycle facilities.
  - Action 10.5: Incorporate maintenance needs into the design of separated bikeways and trails to ensure proper maintenance after construction.
- Policy 13: Increase bicycling and walking through targeted marketing and promotion.
  - Action 13.2: Encourage major employers to continue, develop, or expand bicycle promotion programs for their employees. Recognize companies designated as a Bicycle Friendly Business by the League of American Bicyclists.
  - Action 13.5: Work with major employers to set up and maintain Transportation Demand Management programs.

The City of Modesto Non-Motorized Transportation Plan includes a list of proposed non-motorized transportation improvements including the following in the vicinity of the proposed Project:

- **Dale Road** between Pelandale Avenue and Kiernan Avenue (SR 219) – Class I shared-use path.

- **Water Lateral Number Six** (between Sisk and Prescott Road) – Class I shared-use path; this facility is parallel to Bangs Avenue and connects to the Bangs Avenue/Dale Road intersection in the vicinity of the Project site.

Kiernan Business Park Specific Plan

The Kiernan Business Park Specific Plan (City of Modesto, 2022) outlines plans for the development of approximately 614 acres south of Kiernan Avenue (SR 219) between Stoddard Road and American Avenue for business park and industrial uses with some additional medical, retail, office, and residential uses. The specific plan specifies planned roadway improvements within and around the vicinity.

The Kiernan Business Park Specific Plan (City of Modesto, 2022) includes a list of proposed transportation improvements including the following in the vicinity of the proposed Project:

- **Dale Road** (Kiernan Avenue [SR 219] to Pelandale Avenue) – Widen to a six-lane principal arterial and develop a Class I off-street bike path on each side of the roadway between Kiernan Avenue and Bangs Avenue/Lateral Number Six.
- **Kiernan Avenue** (Stoddard Road to American Avenue) – Widen to a six-lane expressway with Class II bike lanes.
- **Pelandale Avenue** (Dale Road to American Avenue) – Construct a Class I off-street bike path.
- **Quinturn Lane** (Kiernan Avenue to southern terminus) – Widen to a four-lane minor arterial with Class II bicycle lanes and a signalized intersection at Kiernan Avenue (SR 219) and connection to Chapman Road and Healthcare Way.

City of Modesto Standard Specifications

The City of Modesto Standard Specifications establishes uniform requirements and guidelines for construction, materials, and workmanship in public works projects within the city. These specifications ensure consistency, quality, safety, and compliance with applicable regulations throughout the planning, design, and construction phases of municipal infrastructure and development projects. The Standard Specifications include design specifications for roadways, including bike and pedestrian facilities, and specifications for driveways and restaurant drive-through lanes.

Stanislaus County General Plan

The Stanislaus County General Plan (Stanislaus County, 2015) establishes a framework to guide the physical development and growth of the County over the next 20 years. It outlines goals, policies, and programs related to land use, housing, transportation, noise, safety, agriculture, and environmental protection. The plan plans for development that meets the needs of current and future residents while balancing economic, social, and environmental factors.

Relevant transportation policies noted in the Stanislaus County General Plan (Stanislaus County, 2015) include:

- Policy 5: Transportation requirements shall be considered during planning, design, and construction of commercial and industrial development to address safety, mobility, and accessibility needs.
    1. Roadways constructed in zoning districts that allow industrial and commercial use shall be designed and constructed to accommodate truck traffic. The minimum roadway in commercial zones shall be a Minor Collector (Urban/Rural), and a Minor Collector (Industrial) shall be the minimum required right-of-way width in industrial zones.
    2. Prior to approving new industrial and commercial development, provisions will be made to ensure that roadways providing primary access to these developments from Interstate and state highways are designed and constructed to the standards necessary to accommodate truck traffic.
    3. Industrial and commercial development shall be planned so that vehicle access on local roadways through residential areas is avoided.
    5. Off-street truck parking standards shall be developed to ensure that adequate off-street parking is provided in new or expanding industrial and commercial development. Commercial developments serving travelers on SR 99, Interstate 5 (I-5), or other roadways carrying substantial truck traffic shall be required to include sufficient truck parking in their off-street parking plans and encouraged to provide facilities to accommodate long-term truck parking. Zoning Ordinance provisions for Off-Street Parking Requirements and the Standards and Specifications Manual shall be amended, as necessary, to require truck parking as appropriate in new commercial and industrial developments.
    6. On-street truck parking shall be discouraged where such parking restricts adequate sight distances, detracts from the visual aesthetics of the area, or poses a potential hazard to motorists, bicyclists, or pedestrians.
- Policy 6: The County shall strive to reduce motor vehicle emissions and vehicle miles traveled (VMT) by encouraging the use of alternatives to single occupant vehicles.
    5. Developers will construct or pay the cost of new pedestrian pathways, bikeways, rideshare facilities, transit amenities, and other improvements necessary to serve the development and to mitigate impacts to the existing circulation system caused by the development.
- Policy 8: Promote public transit as a viable transportation choice.
    3. Ensure that provisions are made in proposed development for access to current and future public transit services. In particular, continuous segments of walls or fences should not impede pedestrian access to Expressways, Principal and Minor Arterials, and Major and Minor Collectors with transit service.

Salida Community Plan

The Salida Community Plan (Stanislaus County, 2007) outlines a framework for the development of approximately 4,600 acres Salida, CA, which is a census-designated place in unincorporated

Stanislaus County. The plan outlines a mix of land uses and transportation enhancements to support the economic vitality and growth of the Salida area.

According to the Salida Community Plan, the proposed Project site is designated for Business Park land uses. The plan also identifies the following planned improvements within the vicinity of the Project site:

- New east-west expressway connecting Hammett Road to Dale Road north of Pirrone Road, including a new intersection at Stoddard Road; the expressway could be ten lanes wide, with a right-of-way width of approximately 224 feet. The expressway would be constructed in phases and widened over time to respond to demand for increased capacity, as determined by traffic studies, and available funding.
- Pirrone Road extension between Sisk Road and Stoddard Road, Pirrone Road is planned as a four-lane facility at buildout within the study area.
- Pirrone Road between Dale Road and Sisk Road should provide a 125-foot right-of-way width that includes either an eight-foot Class I shared-use path or a six-foot Class II bike lane and a five-foot separated sidewalk on each side.
- Widen Dale Road to four lanes between Kiernan Avenue (SR 219) and the future east-west expressway north of Pirrone Road; provide 125-foot right-of-way width that includes either an eight-foot Class I shared-use path or a six-foot Class II bike lane and a five-foot separated sidewalk on each side.
- Widen Dale Road to four lanes between Kiernan Avenue (SR 219) and the future east-west expressway north of Pirrone Road; provide 125-foot right-of-way width that includes either an eight-foot Class I shared-use path or a six-foot Class II bike lane and a five-foot separated sidewalk on each side.
- Widen Stoddard Road to four lanes between Kiernan Avenue (SR 219) and Ladd Road; provide 125-foot right-of-way width that includes either an eight-foot Class I shared-use path or a six-foot Class II bike lane and a five-foot separated sidewalk on each side.
- Widen Sisk Road to four lanes between Kiernan Avenue (SR 219) and the future east-west expressway north of Pirrone Road; provide 110-foot right-of-way width.
- Right-of-way width for collector streets within land areas designated for planned industrial or business park uses should total eighty feet and consist of thirty-four feet of travel lanes and a six-foot attached sidewalk on each side of the centerline.

3.13.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed Project will have a significant impact on transportation and circulation if it would result in:

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

- Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).
- Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); and/or
- Result in inadequate emergency access.

VMT Significance Criteria

Neither the City of Modesto, nor Stanislaus County, have adopted VMT analysis guidelines or significance thresholds for evaluating development projects in their jurisdiction. In the absence of locally adopted criteria, OPR's Technical Advisory provides the most appropriate guidance for assessing transportation impacts under SB 743.

OPR's recommended methodologies and significance thresholds are intended for statewide application and are commonly used by local jurisdictions that have not adopted their own standards. In addition, OPR's *Technical Advisory* frequently serves as the foundation for locally adopted VMT thresholds. For example, nearby jurisdictions such as the Cities of Manteca and Stockton developed and adopted their VMT analysis guidelines and significance thresholds based on the framework and recommendations outlined in OPR's guidance. Accordingly, use of the State-recommended VMT thresholds represents both prevailing practice and a reasonable, defensible approach that is consistent with CEQA, SB 743, and California's transportation and climate policy objectives.

The Technical Advisory identifies recommended numeric VMT thresholds for office and retail projects:

- Office projects that would generate vehicle travel exceeding 15 percent below (i.e., greater than 85 percent of) existing regional VMT per employee may indicate a significant transportation impact.
- Retail projects (and other non-residential/non-office projects) that result in a net increase in total VMT may indicate a significant transportation impact.

Although the Technical Advisory does not explicitly provide VMT thresholds for warehouse, distribution, or other industrial uses, it notes that VMT analyses may apply thresholds from similar land use types where travel characteristics are comparable. According to OPR's guidance, land uses with similar employee commute patterns and weekday peak-period travel behavior may apply the same per-employee VMT thresholds. Because employee commute trips at industrial facilities are similar in frequency, purpose, and vehicle reliance to those associated with office uses, the VMT threshold identified for office land uses is considered applicable to workers at industrial facilities.

Regarding trucks, the Technical Advisory notes that CEQA Section 15064 refers specifically to automobiles when addressing VMT. As a result, heavy-duty trucks are excluded from the transportation VMT analysis. However, VMT associated with trucks has been calculated for the analysis of greenhouse gas emissions and is addressed in other sections of the EIR.

The Technical Advisory also provides screening thresholds to help determine when a project is likely to result in a less-than-significant transportation impact without requiring a detailed VMT analysis. Of the thresholds provided, only the local-serving retail threshold is applicable to this project. Local-serving retail developments typically shorten trip lengths and reduce overall VMT. The Technical Advisory encourages lead agencies to determine whether a project is likely to be local-serving but notes that retail developments with stores larger than 50,000 square feet may be considered regional-serving.

Other Impacts

Evaluation of potential transportation impacts related to conflict with existing and planned facilities, transportation hazards, emergency access, and construction activity are based on a review of Project changes to the transportation network and a qualitative assessment of whether those changes would conflict with applicable standards or result in detrimental conditions based on the thresholds of significance.

ANALYSIS METHODS

This section provides an overview of the proposed Project components and addresses the proposed Project trip generation, trip distribution, and trip assignment characteristics, all of which were used for the detailed evaluation of Project impacts on the surrounding roadway network. The amount of traffic associated with the Project was estimated using a three-step process.

1. Trip Generation – The amount of vehicle traffic entering/exiting the Project site was estimated.
2. Trip Distribution – The direction trips would use to approach and depart the area was projected.
3. Trip Assignment – Trips were then assigned to specific roadway segments and intersection turning movements.

Project Description

The Project site plan and land use map includes the following:

- 2,503,230 square feet (sf) of industrial land uses; specific tenants have not yet been identified, therefore, a mix of the following industrial land uses were assumed for purposes of this study based on the project description that reflects an even allocation of square footage among warehouse, manufacturing and distribution uses with less square footage devoted to cold storage:
    - 667,528 sf of warehouse uses.
    - 667,528 sf of manufacturing uses
    - 667,528 sf of distribution uses
    - 500,646 sf of cold storage uses.
- Up to 1,963 off-street parking stalls for industrial use
- Up to 788 off-street trailer parking stalls for industrial uses

- Approximately 121,450 square feet of developable land area is designated for retail development; specific tenants and uses have not yet been identified. For the purposes of this analysis, it is assumed that the following land uses could be accommodated within this area:
    - Gas station with eighteen vehicle fueling positions and a 6,000-sf convenience store.
    - Two fast-food restaurants with drive-through windows, each with 4,000 sf of building area, totaling 8,000 sf.

Site access, including heavy truck access, is proposed via the following seven driveways:

- Two driveways on Kiernan Avenue (SR 219), including a signalized full-access western driveway and one unsignalized side-street-stop-controlled right-turn in and right-turn out access only eastern driveway.
- Three driveways on Dale Road, the central driveway is proposed as a signalized full-access driveway, while the northern and southern driveways are unsignalized side-street-stop-controlled driveways limited to right-turn in and right-turn out access only.
- Two unsignalized driveways on Pirrone Road, including a full-access side-street-stop-controlled western driveway and one side-street-stop-controlled right-turn in and right-turn out access only eastern driveway.

The Project site plan proposes maintaining the existing property line boundaries and does not currently propose widening Kiernan Avenue (SR 219), Dale Road, or Pirrone Road. While the site plan does not currently depict sidewalk or bikeway frontage improvements, the Project would implement any required frontage improvements as determined by the City of Modesto, even if such improvements are not shown on the site plan. For the purposes of this analysis, it is assumed that the Project does not propose any sidewalk or bikeway frontage improvements as they are not currently specified on the Project site plan.

Trip Generation

Project trips were estimated using a combination of warehouse trip rates derived from the San Joaquin Countywide Warehousing Data Collection and Travel Behavior Study (Fehr & Peers, 2021) that collected data at 39 warehousing buildings across San Joaquin County in June 2021 and trip rates published in the Trip Generation Manual 11th Edition (Institute of Transportation Engineers, ITE, September 2021).

Because specific tenants have not yet been identified for the industrial or retail uses, the following mix of land uses were assumed for purposes of the trip generation analysis:

- 667,528 sf of warehouse uses.
- 667,528 sf of manufacturing uses
- 667,528 sf of distribution uses
- 500,646 sf of cold storage
- Gas station with eighteen vehicle fueling positions and 6,000 sf convenience store.

- 8,000 sf of fast-food restaurant(s) with drive-through

Trip rates from Trip Generation Manual 11th Edition (ITE, 2021) were used to estimate daily and peak hour trip generation for the remaining industrial and retail land uses. The following ITE land use categories are applicable to the proposed Project:

- **Manufacturing** (ITE Land Use Code 140) – This land use includes facilities where raw materials or components are transformed into finished products. These sites vary in size and complexity and often include production, assembly, and packaging operations.
- **High-Cube Parcel Hub Warehouse** (ITE Land Use Code 156) – These are short-term, automated warehouses that function as regional or local freight forwarding centers. They handle time-sensitive shipments and typically support ground parcel delivery services.
- **High-Cube Cold Storage Warehouse** (ITE Land Use Code 157) – This land use refers to temperature-controlled, automated warehouses used for the short-term storage and distribution of perishable goods.
- **Gasoline/Service Station with Convenience Market** (ITE Land Use Code 945) – This land use combines a fueling station with a convenience store ranging between 5,500 – 10,000 sf in building area. These facilities serve both local and pass-through traffic, offering fuel, snacks, beverages, and other quick-purchase items.
- **Fast-Food Restaurant with Drive-Through** (ITE Land Use Code 934) – This land use includes quick-service restaurants that offer drive-through service. These establishments are designed for high customer turnover and typically feature limited indoor seating, a focus on takeout orders, and extended operating hours.

Daily, AM, and PM peak hour total vehicle trip generation estimates for the Project are summarized in Table 3.13-1, while heavy-duty truck trip generation estimates are provided in Table 3.13-2. As shown in Table 3.13-1, the Project is expected to generate 1,384 net new trips during the AM peak hour, 1,329 net new trips during the PM peak hour, and 11,730 net new daily trips after accounting for internalized and pass-by trips (see proceeding section for more information). As shown in Table 3.13-2, the Project is also estimated to generate 124 heavy-duty truck trips during the AM peak hour, ninety-seven truck trips during the PM peak hour, and 1,480 daily truck trips.

TABLE 3.13-1: PROJECT TRIP GENERATION – ALL VEHICLES

LAND USE	QUANTITY	DAILY	AM PEAK HOUR			PM PEAK HOUR		
			IN	OUT	TOTAL	IN	OUT	TOTAL
Warehouse[1]	667.53 ksf	1,010	78	42	120	56	84	140
Manufacturing[2]	667.53 ksf	3,170	345	109	454	153	341	494
Distribution[3]	667.53 ksf	3,090	234	233	467	290	137	427
Cold-Storage[4]	500.65 ksf	1,060	28	27	55	30	30	60
Gas Station with Convenience Store[5]	18 fueling positions	6,220	284	285	569	242	242	484
Fast-Food Restaurant with Drive-Through[6]	8.00 ksf	3,740	182	175	357	137	127	264
Gross Project Trips		*18,290*	*1,151*	*871*	*2,022*	*908*	*961*	*1,869*
TRIP ADJUSTMENTS								
Internal Capture[7]		-80	-16	-16	-32	-16	-16	-32
Pass-By Trips[8]		-6,480	-303	-303	-606	-254	-254	-508
Total Trip Reductions		*-6,560*	*-319*	*-319*	*-638*	*-270*	*-270*	*-540*
Total External Trips		*18,210*	*1,135*	*855*	*1,990*	*892*	*945*	*1,837*
Net-New External Project Trips		**11,730**	**832**	**552**	**1,384**	**638**	**691**	**1,329**

NOTES:

1. *WAREHOUSE DATA BASED ON TRIP RATES FROM THE SAN JOAQUIN COUNTYWIDE WAREHOUSING DATA COLLECTION AND TRAVEL BEHAVIOR STUDY:*
   a. *DAILY: 1.52 TRIPS PER KSF*
   b. *AM PEAK HOUR: 0.18 TRIPS PER KSF (65% IN, 35% OUT)*
   c. *PM PEAK HOUR: 0.21 TRIPS PER KSF (40% IN, 60% OUT)*
2. *MANUFACTURING BUILDING TRIP RATES BASED ON ITE LAND USE CODE 140 (MANUFACTURING):*
   a. *DAILY: 4.75 TRIPS PER KSF*
   b. *AM PEAK HOUR: 0.68 TRIPS PER KSF (76% IN, 24% OUT)*
   c. *PM PEAK HOUR: 0.74 TRIPS PER KSF (31% IN, 69% OUT)*
3. *DISTRIBUTION BUILDING TRIP RATES BASED ON ITE LAND USE CODE 156 (HIGH-CUBE PARCEL HUB WAREHOUSE):*
   a. *DAILY: 4.63 TRIPS PER KSF*
   b. *AM PEAK HOUR: 0.70 TRIPS PER KSF (50% IN, 50% OUT)*
   c. *PM PEAK HOUR: 0.64 TRIPS PER KSF (68% IN, 32% OUT)*
4. *COLD-STORAGE BUILDING TRIP RATES BASED ON ITE LAND USE CODE 157 (HIGH-CUBE COLD STORAGE WAREHOUSE):*
   a. *DAILY: 2.12 TRIPS PER KSF*
   b. *AM PEAK HOUR: 0.11 TRIPS PER KSF (50% IN, 50% OUT)*
   c. *PM PEAK HOUR: 0.12 TRIPS PER KSF (50% IN, 50% OUT)*
5. *GAS STATION TRIP RATES BASED ON ITE LAND USE CODE 945 (GAS STATION W/ 5.5 – 10 KSF CONVENIENCE STORE):*
   a. *DAILY: 345.75 TRIPS PER VEHICLE FUELING POSITIONS*
   b. *AM PEAK HOUR: 31.60 TRIPS PER VEHICLE FUELING POSITIONS (50% IN, 50% OUT)*
   c. *PM PEAK HOUR: 26.90 TRIPS PER VEHICLE FUELING POSITIONS (50% IN, 50% OUT)*
6. *FAST FOOD RESTAURANT TRIP RATES BASED ON ITE LAND USE CODE 934 (FAST-FOOD RESTAURANT W/ DRIVE-THRU):*
   a. *DAILY: 467.48 TRIPS PER KSF*
   b. *AM PEAK HOUR: 44.61 TRIPS PER KSF (51% IN, 49% OUT)*
   c. *PM PEAK HOUR: 33.03 TRIPS PER KSF (52% IN, 48% OUT)*
7. *INTERNAL TRIPS ESTIMATED USING THE MXD+ TOOL.*
8. *BASED ITE TRIP GENERATION MANUAL 11TH EDITION (ITE, SEPTEMBER 2021) PASS-BY RATE: GAS STATION WITH CONVENIENCE STORE (75% DAILY AND PM, 76% AM) AND FAST-FOOD RESTAURANT WITH DRIVE-THRU (50% DAILY AND AM, 55% PM)*

SOURCE: FEHR & PEERS, 2026.

TABLE 3.13-2: PROJECT TRIP GENERATION – HEAVY-DUTY TRUCKS

LAND USE	QUANTITY	DAILY	AM PEAK HOUR			PM PEAK HOUR		
			IN	OUT	TOTAL	IN	OUT	TOTAL
Warehouse[1]	667.53 ksf	1,010	10	10	20	10	10	20
Manufacturing[2]	667.53 ksf	3,170	11	9	20	8	12	20
Distribution[3]	667.53 ksf	3,090	30	30	60	27	13	40
Cold-Storage[4]	500.65 ksf	1,060	5	10	15	8	7	15
Gas Station with Convenience Store[5]	18 fueling positions	6,220	2	4	6	1	1	2
Fast-Food Restaurant with Drive-Through[6]	8.00 ksf	20	2	1	3	0	0	0
Total Truck Trips		**1,480**	**60**	**64**	**124**	**54**	**43**	**97**

NOTES:

1. *WAREHOUSE DATA BASED ON TRIP RATES FROM THE SAN JOAQUIN COUNTYWIDE WAREHOUSING DATA COLLECTION AND TRAVEL BEHAVIOR STUDY:*
    a. *DAILY: 1.52 TRIPS PER KSF*
    b. *AM PEAK HOUR: 0.18 TRIPS PER KSF (65% IN, 35% OUT)*
    c. *PM PEAK HOUR: 0.21 TRIPS PER KSF (40% IN, 60% OUT)*
2. *MANUFACTURING BUILDING TRIP RATES BASED ON ITE LAND USE CODE 140 (MANUFACTURING):*
    a. *DAILY: 4.75 TRIPS PER KSF*
    b. *AM PEAK HOUR: 0.68 TRIPS PER KSF (76% IN, 24% OUT)*
    c. *PM PEAK HOUR: 0.74 TRIPS PER KSF (31% IN, 69% OUT)*
3. *DISTRIBUTION BUILDING TRIP RATES BASED ON ITE LAND USE CODE 156 (HIGH-CUBE PARCEL HUB WAREHOUSE):*
    a. *DAILY: 4.63 TRIPS PER KSF*
    b. *AM PEAK HOUR: 0.70 TRIPS PER KSF (50% IN, 50% OUT)*
    c. *PM PEAK HOUR: 0.64 TRIPS PER KSF (68% IN, 32% OUT)*
4. *COLD-STORAGE BUILDING TRIP RATES BASED ON ITE LAND USE CODE 157 (HIGH-CUBE COLD STORAGE WAREHOUSE):*
    a. *DAILY: 2.12 TRIPS PER KSF*
    b. *AM PEAK HOUR: 0.11 TRIPS PER KSF (50% IN, 50% OUT)*
    c. *PM PEAK HOUR: 0.12 TRIPS PER KSF (50% IN, 50% OUT)*
5. *GAS STATION TRIP RATES BASED ON ITE LAND USE CODE 945 (GAS STATION W/ 5.5 – 10 KSF CONVENIENCE STORE):*
    a. *DAILY: 345.75 TRIPS PER VEHICLE FUELING POSITIONS*
    b. *AM PEAK HOUR: 31.60 TRIPS PER VEHICLE FUELING POSITIONS (50% IN, 50% OUT)*
    c. *PM PEAK HOUR: 26.90 TRIPS PER VEHICLE FUELING POSITIONS (50% IN, 50% OUT)*
6. *FAST FOOD RESTAURANT TRIP RATES BASED ON ITE LAND USE CODE 934 (FAST-FOOD RESTAURANT W/ DRIVE-THRU):*
    a. *DAILY: 467.48 TRIPS PER KSF*
    b. *AM PEAK HOUR: 44.61 TRIPS PER KSF (51% IN, 49% OUT)*
    c. *PM PEAK HOUR: 33.03 TRIPS PER KSF (52% IN, 48% OUT)*
7. *INTERNAL TRIPS ESTIMATED USING THE MXD+ TOOL.*
8. *BASED ITE TRIP GENERATION MANUAL 11TH EDITION (ITE, SEPTEMBER 2021) PASS-BY RATE: GAS STATION WITH CONVENIENCE STORE (75% DAILY AND PM, 76% AM) AND FAST-FOOD RESTAURANT WITH DRIVE-THRU (50% DAILY AND AM, 55% PM)*

SOURCE: FEHR & PEERS, 2026.

INTERNAL & PASS-BY TRIP ADJUSTMENTS

Adjustments for internal and pass-by trips were applied to estimate the net new trips that the Project would add to the surrounding transportation network.

Internal trips are those that occur entirely within a mixed-use development or large site. For example, a person walking from their warehouse job to a fast-food restaurant within the proposed Project site or filling up their vehicle at the gas station prior to leaving home from work. Since these trips do not use the external road network, they are typically subtracted from total trip generation estimates to avoid overestimating traffic volumes at the Project driveways.

Fehr & Peers used the MXD+ tool to estimate internal trips. Originally developed in 2013, MXD+ is based on methodologies from the ITE Trip Generation Manual, the National Cooperative Highway Research Program (NCHRP) Report 684 (Transportation Research Board, 2011), and studies led by the U.S. Environmental Protection Agency (EPA). The tool was revalidated in 2020 to ensure continued accuracy. Using MXD+, Fehr & Peers estimates that the Project would generate up to 80 daily, 32 AM and PM peak hour internal trips.

Pass-by trips refer to vehicles already traveling on adjacent roadways that make an intermediate stop at a site while enroute to a primary destination. These trips are considered part of existing traffic, as they would have passed by the site regardless of the new development. Pass-by trips often represent a significant portion of trip generation for shopping centers.

In transportation impact assessments, pass-by trips are included in the analysis at Project site driveway but are not assigned to off-site intersections, since they do not represent new trips on the broader network. The ITE Trip Generation Manual, 11th Edition (ITE, September 2021) estimates the following average pass-by rates for proposed retail uses:

- Gasoline/Service Station with Convenience Market (ITE Land Use Code 945) – 76% during the AM peak hour and 75% during the PM peak hour.
- Fast-Food Restaurant with Drive-Through (ITE Land Use Code 934) – 50% during the AM peak hour and 55% during the PM peak hour.

While daily pass-by rate data is not provided in the ITE manual, Fehr & Peers assumed that 75% of daily trips are pass-by trips for gas stations with convenience stores, and 50% for fast-food restaurants with drive-through service.

As shown in Table 3.13-1, approximately 606 AM peak hour trips, 508 PM peak hour trips, and 6,480 daily trips are classified as pass-by trips, representing more than 65 percent of the total trips generated by the proposed retail land uses.

Trip Distribution

Trip distribution refers to the directional pattern of travel to and from the Project site. It identifies where Project generated trips will originate and terminate, helping to inform travel routes. To estimate trip distribution, the Stanislaus Council of Governments (StanCOG) travel demand model,

last updated for the 2022 Regional Transportation Plan and Sustainable Communities Strategy (StanCOG, 2022), was used. This model incorporates countywide land use and transportation network assumptions for both a base year (2019) and a cumulative year (2046). Compared to the more regional San Joaquin Council of Governments (SJCOG) travel demand model, the StanCOG model offers greater local detail, making it better suited for developing forecasts at the neighborhood or community level. As a result, the StanCOG base year model was applied to estimate Project trip distribution under existing conditions and the cumulative year (2046) StanCOG model was applied to estimate cumulative year (2050) trip distribution for the project.

Fehr & Peers compared the AM and PM peak hour Project trip distribution from the StanCOG base year model to trip distribution data obtained from StreetLight Data, Inc. for the Blue Diamond manufacturing and distribution facility located at 4800 Sisk Road in Modesto, California, approximately one mile west of the Project site. StreetLight Data sources are derived from location-based services (LBS) and use advanced machine learning algorithms to analyze travel behavior across the country. [1] The existing Blue Diamond industrial facility represents a comparable land use to the proposed industrial uses at the Project site and offers insight into worker trip distribution patterns during the AM and PM peak hours.

One notable difference between the StanCOG model and the StreetLight Data evaluation was the estimated share of trips to and from SR 99 north of Stanislaus County. The StanCOG model estimated fewer than 10% of trips in this direction, while the StreetLight Data evaluation indicated closer to 15%. As a result, the trip distribution assumptions for SR 99 north were adjusted to reflect a 15% distribution for the Project's industrial uses.

Trip distribution for heavy-duty trucks was based on the existing truck network surrounding the Project site. Kiernan Avenue (SR 219) and McHenry Avenue (SR 108) are designated as Terminal Access Routes under the Surface Transportation Assistance Act (STAA) classification system, while SR 99 is classified as a National Network Route. Project-related truck trips would distribute to the surrounding STAA truck network.

The 2022 RTP/SCS cumulative model and trip distribution assumptions account for the following planned future roadway improvements:

- **Pirrone Road extension** between Stoddard Road and Sisk Road (classified as a minor arterial, four-lane wide cross-section)
- **Hammett Road extension** between SR 99 and Dale Road (classified as a minor arterial, four-lane wide cross-section)

[1] StreetLight Data, Inc. processes approximately 40 billion anonymized location records per month from smart phones and navigation devices in connected cars and trucks and uses machine learning to transform these records into aggregated and normalized route-based travel patterns. Data is validated using permanent traffic counters and embedded sensors, and normalized with multiple data sources, including parcel data, digital road network data, and census information.

- **Prescott Road** extension between Pelandale Avenue and Kiernan Avenue (SR 219, classified as a minor arterial, four-lane wide cross-section)

These improvements are assumed to be constructed by others by the year 2050.

Trip Assignment

Trip assignment is the process of determining the specific routes that vehicles will take on the transportation network, based on estimated trip generation and trip distribution. Trip assignment is expected to change under cumulative conditions due to planned roadway improvements described above. These planned improvements by others are expected to alter travel routes for trips that originate from or are destined for the Salida community, neighborhoods south of Kiernan Avenue (SR 219), or areas north of Stanislaus County via SR 99. The trip assignment shown in the figures below accounts for the pass-by trip adjustments due to the pass-by trips generated by the retail uses.

The estimated Project trip assignment along roadway segments in the vicinity of the project site are summarized in Table 3.13-3 for Existing Plus Project and Cumulative Plus Project conditions.

TABLE 3.13-3: AVERAGE DAILY TRAFFIC & PROJECT TRIP ASSIGNMENT

SEGMENT	EXISTING VOLUMES[1]		EXISTING PROJECT TRIP ASSIGNMENT		CUMULATIVE PROJECT TRIP ASSIGNMENT	
	ADT	HEAVY TRUCK %[2]	NET-NEW TRIPS[3]	HEAVY TRUCK %[2]	NET-NEW TRIPS[3]	HEAVY TRUCK %[2]
Kiernan Ave (SR 219) between Quinturn Ln & Dale Rd	30,610	2.2%	6,815	16.2%	5,869	18.8%
Kiernan Ave (SR 219) between Dale Rd & American Ave	27,140	2.2%	3,362	8.8%	3,147	9.4%
Dale Rd between Kiernan Ave (SR 219) & Pirrone Rd	5,680	0.1%	6,217	8.9%	5,931	9.4%
Dale Rd between Kiernan Ave (SR 219) & Healthcare Wy	18,430	0.4%	2,857	0%	2,792	0%

NOTES:

1. *BASED ON ROADWAY COUNT DATA COLLECTED MAY 20 AND 21, 2025.*
2. *HEAVY-DUTY TRUCKS ARE DEFINED AS THREE OR MORE AXLE-VEHICLES*
3. *REPRESENTS DAILY NET-NEW EXTERNAL TRIP ASSIGNMENT GENERATED BY THE PROJECT (SEE TABLE 3.13-1).*

SOURCE: FEHR & PEERS, 2026.

It is noted that the existing AM and PM peak hour volumes for study intersections evaluated in the separate non-CEQA LTA report, are shown in Figure 4 of Appendix E. Intersection volumes shown in Figure 4 of Appendix E were collected in either May 2024 or May 2025 while local schools were in session, which most intersection data gathered in May 2025.

Trip assignment is expected to change under cumulative conditions due to planned roadway improvements. Specifically, the StanCOG model, Salida Community Plan (Stanislaus County, 2007), and City of Modesto General Plan (City of Modesto, 2019) assume the following roadway improvements to support future development in the study area:

- Pirrone Road extension between Stoddard Road and Sisk Road (classified as a minor arterial, four-lane wide cross-section)
- Hammett Road extension between SR 99 and Dale Road (classified as a minor arterial, four-lane wide cross-section)

Design plans and timing for these improvements are not yet available. These planned improvements by others are expected to alter travel routes for trips that originate from or are destined for the Salida community or areas north of Stanislaus County via SR 99. The Project trip assignment under cumulative conditions is summarized in Table 3.13-3.

IMPACTS AND MITIGATION MEASURES

Impact 3.13-1: Project implementation would conflict with or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b) (Significant and Unavoidable)

Table 3.13-4 shows the citywide average home-based work (HBW) auto VMT per employee, estimated using the 2019 StanCOG base year model, the 2016 SJCOG base year model, and the VMT+ tool. VMT+ is a data platform that provides VMT metrics at the Census Block Group level across California, including HBW VMT per resident and per employee, to support SB 743 compliance and planning efforts. [2] It uses 2019 StreetLight Data and allows users to compare local VMT levels to city, county, metropolitan planning organization, and statewide averages through an interactive dashboard.

TABLE 3.13-4: BASELINE DAILY AUTO VMT PER EMPLOYEE COMPARISON AGAINST SIGNIFICANCE THRESHOLD – INDUSTRIAL LAND USES

SCENARIO	*HBW AUTO VMT PER EMPLOYEE*		
	2019 STANCOG MODEL	*2016 SJCOG MODEL*	*2019 VMT+ DATABASE*
City of Modesto Average – Baseline	8.3	10.2	13.6
85% of City of Modesto Average – Baseline	7.1	8.7	11.6
Project Industrial Uses[1]	58.6	58.6	58.6

NOTE:

1. *BASELINE VMT PER EMPLOYEE WAS ESTIMATED USING STREETLIGHT DATA FROM 39 WAREHOUSING SITES COLLECTED AS PART OF THE SAN JOAQUIN COUNTYWIDE WAREHOUSING TRAVEL BEHAVIOR STUDY. WITH AN AVERAGE ROUND-TRIP LENGTH OF 58.6 MILES (29.3 MILES EACH WAY), DAILY HBW AUTO VMT PER EMPLOYEE WAS CALCULATED.*

SOURCE: FEHR & PEERS, 2026.

As shown in Table 3.13-4, the City of Modesto's average daily HBW auto VMT per employee is highest using the VMT+ tool and lowest using the StanCOG model. The significance threshold is

[2] More information available on the following website: https://storymaps.arcgis.com/stories/e9fb17d33a2c4d60a6747071be3d5b4a

defined as 85% of the citywide average daily VMT per employee, and it varies depending on the data source. Regardless of the source used to establish the threshold, the project's estimated 58.6 daily VMT per employee for industrial uses exceeds all the thresholds using all three baseline VMT data sources. Therefore, the impact is considered ***potentially significant***.

Although truck generated VMT is not being evaluated for potentially significant VMT impacts, it is worth noting that the Project site is in an efficient location as it relates to truck VMT. First, it is situated along a STAA route. Second, it is served by Kiernan Avenue (SR 219), which provides direct connectivity to SR 99, which is a major north-south goods movement corridor in California.

Each of the retail pads and the gas station is considered local-serving retail given their small size (i.e., less than 50,000 square feet). No further VMT analysis of the retail land uses is conducted as their VMT impacts are ***less than significant*** and no mitigation is required.

CONCLUSION

For the proposed retail uses, no further VMT analysis of the retail land uses is conducted as their VMT impacts are ***less than significant*** and no mitigation is required.

For the proposed industrial uses, the Project's estimated 58.6 daily VMT per employee for industrial uses exceeds all the thresholds using all three baseline VMT data sources. Therefore, the impact is considered ***potentially significant***. Mitigation Measures 3.13-1 and 3.13-2 are included below. While these measures would reduce VMT, as discussed below, these measures would not reduce the impact below the threshold. As such, this is considered a ***significant and unavoidable*** impact.

TDM Program Monitoring: regarding Mitigation Measure 3.13-1 (which requires compliance with SJVAPCD Rule 9410), employers must complete and submit an Employer Registration form to the Air Pollution Control Officer (APCO) of the SJVAPCD within 180 days of becoming subject to the trip reduction requirements of Rule 9410. According to Rule 9410, ETRIP strategies are phased in over a period of three years. An employer may submit a single ETRIP that covers multiple worksites when those worksites are using the same ETRIP measures. If worksites are using differing ETRIP measures, then each worksite shall have its own ETRIP.

Rule 9410 also requires employers to collect information on the modes of transportation used for each employee's commute each day of the Commute Verification Period, which is a period of at least one week (selected by the employer) that is representative of typical work week conditions. The employer is required to submit its sampling methodology to the SJVAP**C**D 120 days prior to the start of the calendar year in which the employer intends to use the method. The APCO shall notify employers of its approval or disapproval of this method within 60 days of receipt.

No later than March 31st of each year, the employer shall submit a report to the APCO containing the results of the Commute Verification for the previous calendar year (including number of forms distributed, the number completed and returned, total number of trips to and from work, and the total number of each commute mode for the employees during the Commute Verification period).

Voluntary Commute Trip Reduction (CTR) Program: Mitigation Measure 3.13-2 requires the applicant to implement transportation demand strategies, including but not limited to the CTR Program. The California Air Pollution Control Officers Association (CAPCOA) GHG Reduction Handbook suggests that the voluntary CTR program could achieve up to a 4% reduction in employee generated VMT. For analysis purposes, a 4% reduction is assumed to be based primarily on the program achieving an increase in carpooling and usage of the vanpool program.

Employee Parking Cash-Out Program: Mitigation Measure 3.13-2 requires the applicant to implement transportation demand strategies, including but not limited to the Employee Parking Cash-Out Program. The CAPCOA GHG Reduction Handbook suggests that this program could achieve up to a 12% reduction in VMT (based on six case studies in California in 1992). This program will only be effective if combined with the other strategies that improve access via biking and transit. For analysis purposes, a 6% reduction is assumed based on the premise that other modes of travel are also upgraded to become viable. As described in the Existing Setting, StanRTA currently operates transit service adjacent to the project site, with transit stops located within a five-minute walk. Implementation of Mitigation Measure 3.13-3, described later in this report, would further improve pedestrian and bicycle infrastructure along the project frontages on Kiernan Avenue (SR 219), Dale Road, and Pirrone Road. These improvements would also connect to existing and planned active transportation facilities identified in the City of Modesto Non-Motorized Transportation Plan and the 2021 Stanislaus County Non-Motorized Transportation Master Plan. Collectively, the existing and recommended infrastructure improvements support the assumed 6% reduction in VMT.

Table 3.13-5 displays the expected effectiveness of the measures included in Mitigation Measure 3.13-2 at reducing the VMT per employee of industrial employees. While the net effect of these measures was a 10% reduction in VMT, the resulting VMT per employee estimates would remain well above the significance threshold for determination of a VMT impact. While Mitigation Measure 3.13-1 would also provide some VMT savings, the potential VMT reductions that could be achieved cannot be quantified given the uncertainty of what strategies would be selected and to how many employers that program would apply.

TABLE 3.13-5 MITIGATION MEASURE EFFECTIVENESS AT REDUCING INDUSTRIAL AUTO VMT GENERATED FOR BASELINE CONDITIONS

MITIGATION MEASURES (TDM STRATEGIES)[1]	*PERCENT AUTO VMT REDUCED PER EMPLOYEE*[1]
Voluntary Commute Trip Reduction (CTR) Program	4%
Employee Parking Cash-Out Program	6%
MITIGATION MEASURES (TDM STRATEGIES) OVERALL EFFECTIVENESS	*HBW AUTO VMT PER EMPLOYEE*[1]
Without Mitigation Measures	58.6
With Mitigation Measures	52.8
Significance Threshold	11.6
VMT Reduced to Below Threshold?	No

NOTES:

1. *SEE DISCUSSION AND CALCULATIONS OF TDM STRATEGY EFFECTIVENESS ON PREVIOUS PAGES.*
2. *SIGNIFICANCE THRESHOLD BASED ON THE CITY OF MODESTO DAILY HBW AUTO VMT PER EMPLOYEE ESTIMATED USING THE 2019 VMT+ TOOL.*

SOURCE: FEHR & PEERS, 2026.

MITIGATION MEASURE(S)

Mitigation Measure 3.13-1: *The Project applicant shall comply with SJVAPCD Rule 9410 (Employer Based Trip Reduction). SJVAPCD Rule 9410 (found at: https://ww2.valleyair.org/media/tlbogtid/rule-9410.pdf) requires major employers in the region to implement an Employer Trip Reduction Implementation Plan (ETRIP). Two types of worksites are identified: Tier 1 worksites consist of 100 to 249 eligible employees, while Tier 2 worksites have at least 250 eligible employees (who worked at least sixteen consecutive weeks during the previous fiscal year). Eligible employees are any employees excluding the following: emergency health and safety employees, employment agency personnel, farm workers; field personnel, field construction workers, home garage employees, on-call employees, part-time employees, seasonal employees, volunteers, and employees who do not report to work during the peak period, which is defined as 6:00 AM to 10:00 AM. The number of eligible employees that work for a major employer would determine whether that employer falls into a Tier 1 or 2 worksite.*

Table 1 of Rule 9410 indicates that Tier 1 and 2 worksites shall implement an ETRIP that achieves at least 44 and 66 points, respectively, based on selecting various TDM strategies, which fall into the following four groups:

1. *Marketing Strategies.*
2. *Program Support Strategies.*
3. *Service and Facilities Strategies.*
4. *and Transportation, Alternative Schedule, and Incentives Strategies.*

Table 2 of Rule 9410 contains fifty-nine different strategies, which are split into the above four groups, which could be considered to reduce vehicle trips. Strategies are applicable only to eligible employees.

It is not known how many of the individual warehouse tenants will qualify as a Tier 1 or 2 worksite because of uncertainties around specific tenants, start time, shift hours and amount of square feet per employee. Additionally, it is not possible to identify which specific strategies that tenants of individual buildings would select since they have not been identified, signed leases, etc. Accordingly, it is not possible to quantify the VMT reductions achieved by the strategies that would be selected.

Mitigation Measure 3.13-2: *The Project applicant shall implement the following transportation demand management (TDM) strategies, some of which may overlap with strategies selected under Rule 9410, that are considered feasible and will have a material effect on reducing VMT:*

1. *Implement a Voluntary Commute Trip Reduction (CTR) program. Required elements of the program include:*
    - *Commute Trip Reduction Marketing - implements a marketing strategy to promote the Project site employer's CTR program (which includes a guaranteed ride home program).*
    - *Ridesharing Program - implements a ridesharing program and establishes a permanent transportation management association with funding requirements for employers.*
    - *Subsidized or Discounted Transit Program - provides subsidized or discounted, or free transit passes for employees.*
    - *End-of-Trip Bicycle Facilities - installs and maintains end-of-trip facilities (including bike parking, bike lockers, showers, and personal lockers) for employee use.*
    - *Employer-Sponsored Vanpool - implements an employer-sponsored vanpool service for employee groups of 5 to 15 people.*
2. *Implement Employee Parking Cash-Out program – requires Project employers to offer employees the choice of foregoing their current subsidized/free parking for a cash payment (in exchange for not driving).*

The above strategies are ongoing measures that would begin in the first phase of industrial development and continue through Project buildout. Most of the above TDM strategies are included in the Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity (CAPCOA, 2021). In late 2021, the CAPCOA Board of Directors adopted this report (henceforth known as the CAPCOA GHG Reduction Handbook). In addition to listing a variety of TDM strategies, the CAPCOA GHG Reduction Handbook presents the maximum effectiveness that a given strategy or set of strategies can have. However, that effectiveness can vary depending on geographic context (urban, suburban, versus rural), tenant type, and availability of non-auto modes).

Impact 3.13-2: Project implementation would conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities (Significant and Unavoidable)

TRANSIT

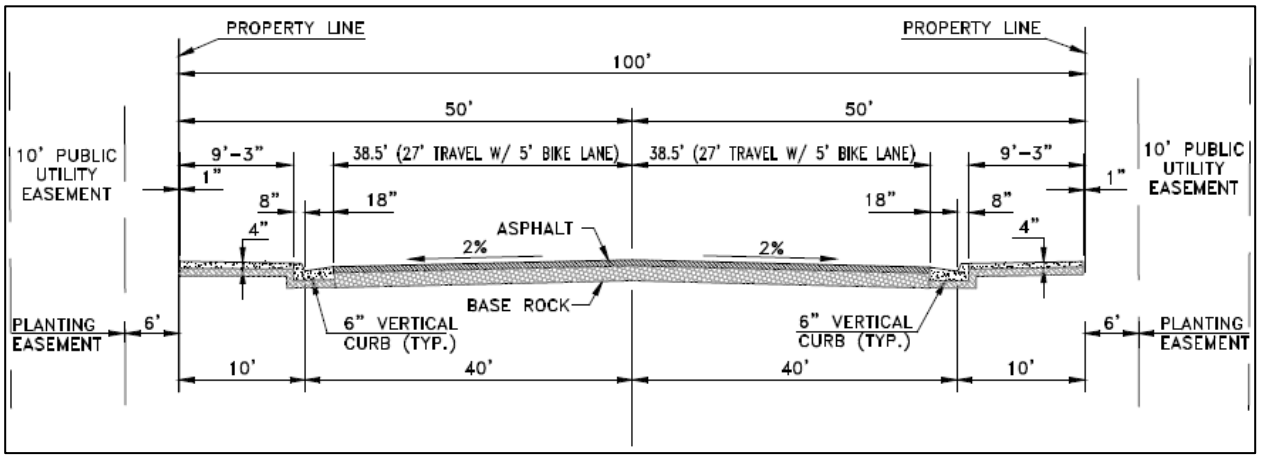
The Project would not eliminate or adversely affect existing transit access. StanRTA currently operates Route 48, with bus stops located in both directions along Pirrone Road adjacent to Joseph A. Gregori High School, less than eight hundred feet from the Project site. Additional stops are provided in both directions along Dale Road near the Kaiser Medical Center, less than 2,200 feet from the site. These existing bus stops are within 10-minute walking distance of the Project site. Overall, this impact is considered ***less than significant***.

BICYCLE OR PEDESTRIAN FACILITIES

The Project would not eliminate or adversely affect an existing bikeway or pedestrian facility in a way that would discourage its use. While the site plan does not currently depict sidewalk or bikeway frontage improvements, the Project would implement any required frontage improvements as determined by the City of Modesto, even if such improvements are not shown on the site plan. The Project would construct the frontage improvements along the following roadway segments:

- 2,500 feet of Kiernan Avenue (SR 219)
- 2,400 feet of Dale Road
- 2,600 feet of Pirrone Road

The Project site plan and the Project description do not specify whether paved sidewalks are proposed along the Project frontages. The existing 10-foot-wide Class II bicycle lane along the Kiernan Avenue (SR 219) frontage will remain; however, the Project does not propose any bikeway improvements along the Dale Road or Pirrone Road frontages. Both Dale Road and Pirrone Road are classified as "Minor Arterials" according to the *City of Modesto General Plan* (City of Modesto, 2019). As shown in the image below, the City's *Standard Specifications* (City of Modesto, 2014) require a minimum 10-foot sidewalk and five-foot Class II bicycle lanes on both sides of a standard "Minor Arterial" section. The *Salida Community Plan* (Stanislaus County, 2007) also identifies planned sidewalk and bikeway improvements along the Dale and Pirrone Road frontages. Furthermore, public comments on the NOP raised concerns about Project impacts to bicycle and pedestrian circulation to/from Joseph A. Gregori High School, which is located near the Project site. The proposed Project site plan does not specify the extent of paved sidewalk frontage improvements, nor does it propose any bikeway improvements along Kiernan Avenue (SR 219), Dale, or Pirrone Road.



The Project would not eliminate or adversely affect a planned pedestrian or bikeway facility in a way that would preclude its construction. However, it would cause an inconsistency with several City of Modesto General Plan policies (V.A.1, V.A.2, V.A.5, V.D.1, V.D.5, V.D.7, V.E.3, V.E.8, V.H.5, and V.H.9) pertaining to providing multimodal transportation options, reducing auto dependency, and eliminating gaps in the pedestrian and bikeway system. Under existing conditions, there would continue to be no dedicated bicycle facilities along the Project site frontages on Dale and Pirrone Road. Given the project's large number of employees and the lack of any planned pedestrian and bicycle facilities to connect the Project site with surrounding neighborhood. This impact is considered significant.

The Project's proposed retail uses are expected to generate pedestrian trips to the site from Dale Road south of Kiernan Avenue (SR 219) and from Joseph A. Gregori High School on Pirrone Road. The existing Kiernan Avenue (SR 219)/Dale Road intersection lacks a pedestrian crosswalk on the west leg, requiring pedestrians to potentially navigate crosswalks on the south, east, and north legs to access the Project site from the southwest corner of the intersection. The Project does not propose any pedestrian crossing improvements at this intersection. The Project also does not propose any pedestrian crossing improvements on Pirrone Road, which currently lacks marked crosswalks near the Project site. This impact is considered significant.

Implementation of Mitigation Measures 3.13-3a, 3.13-3b and 3.13-3c would enhance bicycle and pedestrian access to these bus stops. Although Mitigation Measures 3.13-3a and 3.13-3c include improvements within the jurisdiction of City of Modesto, Mitigation Measure 3.13-3b improvements fall under Caltrans jurisdiction. The City of Modesto, as lead agency, does not have jurisdiction to implement Mitigation Measure 3.13-3b and the mitigation would need to be approved by Caltrans. Therefore, the impact is conservatively considered ***significant and unavoidable*** because the City cannot ensure its implementation.

MITIGATION MEASURE(S)

Mitigation Measure 3.13-3a*: The Project applicant shall construct sidewalk improvements along Kiernan Avenue (SR 219), Dale Road, and Pirrone Road Project frontages as well as Class II bicycle*

lane improvements along Dale Road and Pirrone Road Project frontages in accordance with City of Modesto design standards.

The City of Modesto Standard Specifications (City of Modesto, 2014) require a minimum 10-foot sidewalk and five-foot Class II bicycle lanes on both sides of a standard "Minor Arterial" section. Although Kiernan Avenue (SR 219) is under Caltrans jurisdiction, the Project applicant shall provide minimum 10-foot-wide sidewalk and maintain the existing 10-foot-wide Class II bicycle lane along the Kiernan Avenue (SR 219) frontage.

The City of Modesto is currently in the process of updating its Standard Specifications, which may modify the dimensions and types of sidewalk and bikeway improvements required under Mitigation Measure 3.13-3a. Because these updated design standards have not yet been adopted, Mitigation Measure 3.13-3a references only the City's currently adopted standards.

Although all project frontages are currently under Caltrans jurisdiction (Kiernan Avenue) or Stanislaus County jurisdiction (Dale Road and Pirrone Road), the City of Modesto standards are applied based on the assumption that the Project site would be annexed into the City of Modesto if the Project were approved. Notwithstanding this assumption, the Kiernan Avenue frontage will remain under Caltrans jurisdiction, and all the public right-of-way portions of the Dale Road and Pirrone Road frontages will be annexed into the City of Modesto. Therefore, encroachment permits for frontage improvements would be required from Caltrans and City of Modesto prior to construction.

These requirements shall be noted in the Project improvement plans.

***Mitigation Measure 3.13-3b**: The Project applicant shall construct a crosswalk with corresponding directional curb ramps and pedestrian signal heads without countdown timers across the western leg of the Kiernan Avenue (SR 219)/Dale Road intersection in accordance with Caltrans design standards.*

The Kiernan Avenue (SR 219)/Dale Road intersection currently lacks a crosswalk on the east leg, requiring pedestrians to navigate crosswalks on the south, west, and north legs to access the Project site from the southwest corner of the intersection. Constructing a new crosswalk at this existing signalized intersection would provide direct access from the south, enhance pedestrian safety, and connect the frontage sidewalk improvements described in Mitigation Measure 3.13-3a to the existing sidewalk network on the west side of Dale Road, south of Kiernan Avenue (SR 219).

The Kiernan Avenue (SR 219)/Dale Road intersection is under Caltrans jurisdiction and will therefore require an encroachment permit from Caltrans prior to construction.

These requirements shall be noted in the Project improvement plans.

***Mitigation Measure 3.13-3c**: The Project applicant shall coordinate with City of Modesto Engineering Services Department, Public Works Department, and administrators at Joseph A. Gregori High School to identify and construct high-visibility crosswalk connecting the northwest corner of the*

Project site and southeast corner of the high school. Potential improvements to be considered include (but are not limited to):

- *Installation of high-visibility crosswalk striping*
- *Installation of rectangular rapid flashing beacon (RRFB) or pedestrian hybrid beacon (PHB) crossing controls*
- *Installation of ADA compliant curb ramps with adequate connections to existing sidewalk on high school frontage and future sidewalk on Project site frontage*

A new pedestrian crossing on Pirrone Road connecting the Project site to Joseph A. Gregori High School would enhance pedestrian and bicycle connectivity to and from the school. A new crossing will also improve transit connectivity for Project site employees to the existing StanRTA Route 48 bus stop on WB Pirrone Road at high school frontage. The installation of traffic controls, such as a RRFB or PHB, would alert drivers to yield to pedestrians and bicyclists in the crosswalk.

The type of pedestrian control, RRFB or PHB, shall be determined by Stanislaus County and/or City of Modesto staff. The recommended pedestrian crossing location on Pirrone Road is under Stanislaus County jurisdiction and therefore implementation of improvements requires an encroachment permit from Stanislaus County prior to construction. A portion of the crossing location will also be annexed into the City of Modesto; therefore, coordination between both agencies is required for implementation of the recommended mitigation measure.

The Project applicant shall coordinate with Caltrans District 10 to prepare the Intersection Safety and Operational Assessment Process (ISOAP) for approval of frontage and site access intersection improvements along Kiernan Avenue (SR 219) prior to submitting an encroachment permit application for these improvements.

These requirements shall be noted in the Project improvement plans.

Impact 3.13-3: Project implementation would substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment) (Significant and Unavoidable)

INCREASED HAZARDS DUE TO GEOMETRIC DESIGN FEATURES

The Project would generate 1,480 new daily truck trips across seven driveways, which have greater turning radius requirements, pavement deterioration effects, and vehicle storage requirements than passenger vehicles. Trucks over seven tons are currently prohibited on Dale Road and Stoddard Road from Kiernan Avenue (SR 219) to Ladd Road; in addition to Pirrone Road between Dale and Stoddard Road. Mitigation Measure 3.13-4 requires the Project applicant to construct physical improvements at Project access intersections along Kiernan Avenue (SR 219) in accordance with Caltrans standards and along Dale Road in accordance with City of Modesto design standards. This

measure requires additional improvements to the roadway design to accommodate the special travel needs of trucks.

Although Mitigation Measure 3.13-4 includes improvements within the jurisdiction of City of Modesto, some improvements also fall under Caltrans jurisdiction. The City of Modesto, as lead agency, does not have jurisdiction to implement improvements on Kiernan Avenue (SR 219) and the mitigation would need to be approved by Caltrans. Therefore, the impact is conservatively considered ***significant and unavoidable*** because the City cannot ensure its implementation.

INCREASED HAZARDS DUE TO INCOMPATIBLE VEHICLE FLEET MIX

The following roadway segments are currently used by agricultural equipment on occasion and prohibit trucks over seven tons:

- Dale Road between Kiernan Avenue (SR 219) and Pirrone Road
- Stoddard Road between Kiernan Avenue (SR 219) and Pirrone Road
- Pirrone Road between Dale and Stoddard Road

Project buildout would add an estimated 590 trucks per day on Dale Road and 180 trucks per day on Pirrone Road and Stoddard Road, which currently prohibit trucks over seven tons.

Trucks over seven tons are currently prohibited on Dale Road and Stoddard Road north of Kiernan Avenue (SR 219), and on Pirrone Road between Dale and Stoddard Road. Implementation of Mitigation Measure 3.13-4 would upgrade Dale Road, Pirrone Road and Stoddard Road to accommodate heavy trucks between the project site driveways and Kiernan Avenue (SR 219).

The roadway design review process, overseen by the City of Modesto Engineering Services and/or Public Works Departments, will ensure that these performance standards are met. Design coordination with, and approval from, Stanislaus County is also required, given that off-site segments of Pirrone and Stoddard Road fall within Stanislaus County jurisdiction.

Alternatively, if truck routes cannot be adopted along the Dale Road, Stoddard Road, and Pirrone Road segments identified above, the project applicant shall limit heavy-truck access to the project site driveways on Kiernan Avenue (SR 219), which is currently designated as a Terminal Access STAA Route. With implementation of this mitigation measure, this impact would be ***less than significant***.

INCREASED HAZARDS DUE TO INCOMPATIBLE LAND USES ON DALE ROAD, PIRRONE ROAD, AND STODDARD ROAD

Trucks over seven tons are currently prohibited on Dale and Stoddard Road north of Kiernan Avenue (SR 219), and on Pirrone Road between Dale and Stoddard Road. Several rural homes front segments of Dale and Stoddard Road; while Joseph A. Gregori High School fronts on Pirrone Road between Stoddard Road and the project site western boundary. The Project will generate 80 to 590 daily truck trips on these segments of Dale Road, Pirrone Road, and Stoddard Road which would create an incompatibility with the adjacent rural residences and high school.

Implementing Mitigation Measure 3.13-4 would upgrade Dale Road, Pirrone Road and Stoddard Road to accommodate heavy trucks between the project site driveways and Kiernan Avenue (SR 219). The roadway design review process, overseen by the City of Modesto Engineering Services and/or Public Works Departments, will ensure that these performance standards are met. Design coordination with, and approval from, Stanislaus County is also required, given that off-site segments of Pirrone and Stoddard Road fall within Stanislaus County jurisdiction.

Alternatively, if truck routes cannot be adopted along the Dale Road, Stoddard Road, and Pirrone Road segments identified above, the project applicant shall limit heavy-truck access to the project site driveways on Kiernan Avenue (SR 219), which is currently designated as a Terminal Access STAA Route.

Mitigation Measure 3.13-5 requires the applicant to coordinate with the City of Modesto Public Works Department to post "Local Trucks Only" signs along Dale Road between Kiernan Avenue (SR 219) and the northernmost Project site driveway, as well as "No Trucks Allowed" signs north of the northernmost driveway. These signs would be posted within the roadway shoulder and/or right-away. The roadway design review process, overseen by the City of Modesto Engineering Services and/or Public Works Departments, will ensure that these performance standards are met. Design coordination with, and approval from, Stanislaus County is also required, given that off-site segments of Pirrone and Stoddard Road fall within Stanislaus County jurisdiction.

With implementation of these mitigation measures, this impact would be ***less than significant***.

INCREASED HAZARDS DUE TO STATE HIGHWAY SYSTEM INTERSECTION QUEUES EXCEEDING AVAILABLE STORAGE

Table 3.13-6 displays the AM and PM peak hour 95th percentile queues at queuing study locations (located on the SHS) under existing plus project conditions. As shown, three out of fourteen locations shown in this table would experience queueing that exceeds available storage.

The effectiveness of the improvements shown in Table 3.13-8 were analyzed under existing plus project conditions using the SimTraffic microsimulation models. The results are shown in Table 3.13-7 and indicate that the proposed improvements would reduce the extent of queuing such that all 95th percentile queues would be less than the available storage. Refer to Appendix E for the queuing analysis worksheets. Therefore, no excess queueing would occur.

TABLE 3.13-6: 95TH PERCENTILE QUEUE LENGTH SUMMARY – EXISTING PLUS PROJECT CONDITIONS

ID	INTERSECTION	LEAD AGENCY	MOVEMENT	STORAGE LENGTH (FT)	EXISTING 95TH PERCENTILE QUEUE LENGTH (FT)		EXISTING PLUS PROJECT 95TH PERCENTILE QUEUE LENGTH (FT)		SIGNIF-ICANT IMPACT?
					AM	PM	AM	PM	
6.	Patterson Rd/SR 108	Caltrans	WBL	525	124	99	137	112	No
7.	McHenry Ave/SR 108	Caltrans	NBR	460	--	--	--	--	No
9.	SR 99 SB Ramps/Kiernan Ave (SR 219)	Caltrans	Off-Ramp	1,120	363	235	428	260	No
10.	SR 99 NB Ramps/Kiernan Ave (SR 219)	Caltrans	Off-Ramp	1,260	114	172	121	168	No
11.	Sisk Rd/Kiernan Ave (SR 219)	Caltrans	WBR	525	170	102	150	110	No
			WBL	735	105	99	103	105	No
12.	Stoddard Rd/Kiernan Ave (SR 219)	Caltrans	EBL	1,000	339	90	380	115	No
			WBL	620	150	65	134	82	No
			WBR	640	60	32	51	34	No
13.	Dale Rd/Kiernan Ave (SR 219)	Caltrans	EBL	555	54	55	**841**	**790**	**Yes**
			EBR	700	302	153	181	130	No
14.	Carver Rd/Kiernan Ave (SR 219)	Caltrans	EBR	580	69	52	70	62	No
15.	Tully Rd/Kiernan Ave (SR 219)	Caltrans	EBR	355	74	53	92	70	No
16.	McHenry Ave (SR 108)/Kiernan Ave (SR 219)	Caltrans	EBL	765	120	132	124	140	No
			EBR	650	92	74	112	87	No
			SBR	535	95	80	105	87	No
			NBL	140	**160**	**244**	**229**	**263**	**Yes**
21.	Sisk Rd/SR 99 NB Ramps	Caltrans	Off-Ramp	1,475	422	111	547	117	No
26.	Pelandale Ave/ McHenry Ave (SR 108)	Caltrans	SBL	175	137	**346**	137	**348**	No

ID	INTERSECTION	LEAD AGENCY	MOVEMENT	STORAGE LENGTH (FT)	EXISTING 95TH PERCENTILE QUEUE LENGTH (FT)		EXISTING PLUS PROJECT 95TH PERCENTILE QUEUE LENGTH (FT)		SIGNIF-ICANT IMPACT?
					AM	PM	AM	PM	
28.	Southwest Dwy/Kiernan Ave (SR 219)	Caltrans	EBL	300	--	--	**430**	**327**	**Yes**
			WBR	500	--	--	46	43	No
--	SR 99 NB Ramps/Beckwith Rd/ Standiford Ave	Caltrans	Off-Ramp	1,025	146	319	302	766	No

*NOTES: **BOLD** FONT DENOTES MOVEMENTS WHERE STORAGE LENGTH IS EXCEEDED.*
EB = EASTBOUND; WB = WESTBOUND; NB = NORTHBOUND; SB = SOUTHBOUND; L = LEFT-TURN; T = THROUGH; R = RIGHT-TURN.
SOURCE: FEHR & PEERS, 2026.

TABLE 3.13-7: 95TH PERCENTILE QUEUE LENGTH SUMMARY – EXISTING PLUS PROJECT CONDITIONS WITH IMPROVEMENTS

ID	INTERSECTION	LEAD AGENCY	MOVEMENT[1]	STORAGE LENGTH (FT)	EXISTING 95TH % QUEUE LENGTH (FT)		EXISTING + PROJECT 95TH % QUEUE LENGTH (FT)		EXISTING + PROJECT WITH IMPROVEMENTS[2] 95TH % QUEUE LENGTH (FT)		95TH % QUEUE REQUIREMENT MET?
					AM	PM	AM	PM	AM	PM	
13.	Dale Rd/ Kiernan Ave (SR 219)	Caltrans	EBL	555	54	55	**841**	**790**	180	190	Yes
16.	McHenry Ave (SR 108) /Kiernan Ave (SR 219)	Caltrans	NBL	140/ 350[3]	**160**	**244**	**229**	**263**	232	331	Yes
28.	Southwest Dwy/ Kiernan Ave (SR 219)	Caltrans	EBL	300	--	--	**430**	**327**	232	178	Yes

*NOTES: **BOLD** FONT DENOTES MOVEMENTS WHERE STORAGE LENGTH IS EXCEEDED.*

1. *EB = EASTBOUND; WB = WESTBOUND; NB = NORTHBOUND; SB = SOUTHBOUND; L= LEFT-TURN; T = THROUGH; R = RIGHT-TURN*
2. *REFER TO TABLE 3.13-8 FOR DESCRIPTION OF IMPROVEMENTS.*
3. *NB LEFT-TURN LANE EXTENSION TO 350 FT RECOMMENDED UNDER EXISTING PLUS PROJECT CONDITIONS.*

SOURCE: FEHR & PEERS, 2026.

The improvements described above are on the SHS, which is owned and operated by Caltrans. There is no guarantee they will support the identified improvements. As such, the project applicant and/or the City of Modesto Engineering Services and/or Public Works Departments shall coordinate with Caltrans District 10 to prepare the *Intersection Safety and Operational Assessment Process* (ISOAP) for approval of intersection improvements within the SHS prior to submitting an encroachment permit application for these improvements.

The City of Modesto, as lead agency, does not have jurisdiction to implement improvements at intersections on the SHS. Therefore, the impact is conservatively considered ***significant and unavoidable*** because the City cannot ensure its implementation.

INCREASED HAZARDS DUE TO CONSTRUCTION

Project development would entail extensive construction to install backbone site roadway infrastructure, erect industrial and retail buildings, and implement other Project features. Improvements would be required to Kiernan Avenue (SR 219), Dale Road, and Pirrone Road. Off-site improvements are required at two intersections as discussed previously. Construction of these access points would not likely require any sustained closures of Kiernan Avenue (SR 219), Dale Road, or Pirrone Road. Temporary lane shifts and manual traffic control during workdays may be required.

As the Project develops, additional on-site and off-site construction will be necessary. Due to the uncertainty of exact location and timing of subsequent phases, it is not possible to conclusively describe and evaluate what types of construction effects could occur. Supplemental studies,

development of traffic control plans, etc. would be needed at that time. Mitigation Measure 3.13-7 requires the applicant to implement a Construction Traffic Management Plan.

The City of Modesto, as lead agency, does not have jurisdiction to implement a Construction Traffic Management Plan on the SHS. Therefore, the impact is conservatively considered ***significant and unavoidable*** because the City cannot ensure its implementation.

MITIGATION MEASURE(S)

Mitigation Measure 3.13-4*: The Project applicant shall construct physical improvements at project access intersections along Kiernan Avenue (SR 219) in accordance with Caltrans standards. The project shall construct physical improvements in accordance with City of Modesto and/or Stanislaus design standards for the following segments proposed for heavy truck access between the project site and Kiernan Avenue (SR 219):*

- *Dale Road between Kiernan Avenue (SR 219) and Pirrone Road (City of Modesto)*
- *Stoddard Road between Kiernan Avenue (SR 219) and Pirrone Road (Stanislaus County)*
- *Pirrone Road between Dale and western project site boundary (City of Modesto)*
- *Pirrone Road between western project site boundary and Stoddard Road (Stanislaus County)*

Additional considerations should be made for the need to accommodate STAA trucks, enhanced pavement structural sections, increased truck turn lane storage, and new street signage such as "Local Trucks Only" signs along adopted truck routes and "No Trucks Allowed" signs on Dale and Stoddard Road north of Pirrone Road. Adoption of the roadway segments listed above into the City of Modesto and/or Stanislaus County local truck route network is required to allow heavy-truck access to the project site via Dale Road or via Pirrone Road and Stoddard Road.

Alternatively, if truck routes cannot be adopted along the Dale, Pirrone, and Stoddard Road segments identified above, the project applicant shall limit heavy-truck access to the project site driveways on Kiernan Avenue (SR 219), which is currently designated as a Terminal Access STAA Route.

It would be premature at this juncture to identify every specific design detail required at each Project access and on-site intersection. Instead, to ensure that the Project roadway designs provide the necessary infrastructure improvements to accommodate the special travel needs of trucks, the following performance standards are established for this mitigation measure:

- *All frontage street sections that would be improved by the Project are designed with the appropriate Traffic Index (TI) to ensure that the structural section can accommodate the added weight of trucks for that street section.*
- *All left and right turn lanes constructed at intersections along Kiernan Avenue (SR 219) and Dale Road provide adequate vehicle storage to accommodate the 95th percentile vehicle queues (considering cumulative travel demands and the effects of trucks on storage requirements).*

- *Intersection designs consider curb return radii requirements, width of receiving travel lanes, placement of traffic control equipment, and other design parameters to ensure that trucks can perform left and right-turns without encroaching onto oncoming travel lanes, driving over curbs, or colliding with signal equipment or signs.*

The roadway design review process, overseen by the City of Modesto Engineering Services and/or Public Works Departments, will ensure that these performance standards are met. Design coordination with, and approval from, Caltrans and Stanislaus County is also required, given that the existing Kiernan Avenue (SR 219) frontage falls within Caltrans jurisdiction and truck route improvements on off-site segments of Pirrone and Stoddard Road fall under Stanislaus County jurisdiction.

The Project applicant shall coordinate with Caltrans District 10 to prepare the Intersection Safety and Operational Assessment Process (ISOAP) for approval of frontage and site access intersection improvements along Kiernan Avenue (SR 219) prior to submitting an encroachment permit application for these improvements.

These requirements shall be noted in the Project improvement plans.

***Mitigation Measure 3.13-5**: The Project applicant shall coordinate with the City of Modesto Public Works Department to post "Local Trucks Only" signs along Dale Road between Kiernan Avenue (SR 219) and the northernmost Project site driveway, as well as "No Trucks Allowed" signs north of the northernmost driveway.*

The addition of these signs would discourage trucks from using the segment of Dale Road north of the northernmost Project site driveway. Depending on the level of compliance, enforcement activities may also be necessary.

These requirements shall be noted in the Project improvement plans.

***Mitigation Measure 3.13-6**: The Project applicant shall prepare transportation phasing analyses, to the satisfaction of the City of Modesto Engineering Services and/or Public Works Departments, which describes when subsequent phases of Project development trigger construction of the geometric improvements described in Table 3.13-8.*

TABLE 3.13-8: RECOMMENDED IMPROVEMENTS TO ADDRESS QUEUING IMPACTS – EXISTING PLUS PROJECT CONDITIONS

ID	*INTERSECTION*	*LEAD AGENCY*	*DESCRIPTION OF IMPROVEMENTS*
13.	*Dale Rd/ Kiernan Ave (SR 219)*	*Caltrans*	• *Additional SB left-turn lane 300 ft in length (total two left turn lanes)* • *Additional SB through lane (total two through lanes) with a shared through/right-turn lane* • *Additional EB left-turn lane 555 ft in length (total two left turn lanes)*

ID	INTERSECTION	LEAD AGENCY	DESCRIPTION OF IMPROVEMENTS
			• *Additional NB through lane (total two through lanes) with a shared through/right-turn lane* • *Additional WB through lane (total three through lanes)* • *Additional WB right-turn lane 500 ft in length (total one right-turn lane)*
16.	*McHenry Ave (SR 108) /Kiernan Ave (SR 219)*	*Caltrans*	*Increase the dedicated NB left-turn lane storage length to 500 ft*
28.	*Southwest Dwy/ Kiernan Ave (SR 219)*	*Caltrans*	*Implement recommended improvements at the Dale Rd / Kiernan Ave (SR 219) intersection*

SOURCE: FEHR & PEERS, 2026.

Mitigation Measure 3.13-7*: The Project applicant shall develop a Construction Traffic Management Plan. An important part of that plan shall relate to construction staging and the need for travel lanes to remain open. That plan shall include performance standards that should be met throughout Project construction. Specific performance standards that could be considered include:*

- *Construction-related trucks operate only on designated truck routes and do not idle or stage on any public streets.*
- *Construction-related employees do not park along public streets.*
- *Public streets are regularly maintained to be free of rocks and dirt.*
- *Construction hours and days of the week adhere to applicable policies.*

The Construction Traffic Management Plan and any detour or construction traffic handling plans would be subject to review and approval by the City of Modesto and Stanislaus County Departments of Public Works, and Caltrans.

These requirements shall be noted in the Project improvement plans.

Impact 3.13-4: Project implementation, with mitigation, would not result in inadequate emergency access (Less than Significant with Mitigation)

The nearest fire station is City of Modesto Fire Station 11, located at 4225 Carver Road, approximately 2.3 miles from the Project site. The nearest hospital, the Kaiser Medical Center, is less than a half mile from the Project site. The Project currently proposes three site access driveways (with ingress and egress) on Dale Road, two on Kiernan Avenue (SR 219), and two on Pirrone Road, all of which will also serve as emergency vehicle access points.

All project driveways provide a minimum clear width of forty feet, except for the northern Dale Road driveway, which provides 26-foot clear width.

The proposed industrial buildings would have a maximum height of forty-five feet. In accordance with Sections D104 and D105 of the 2025 California Fire Code, as adopted by the City of Modesto, the Project must provide the following accommodations:

- Buildings or facilities exceeding thirty feet or three stories in height shall have not fewer than two means of fire apparatus access for each structure.
- Where the vertical distance between the grade plan and the highest roof surface exceeds thirty feet, approved aerial fire apparatus access roads shall be provided.
- Aerial fire apparatus access roads shall have a minimum unobstructed width of twenty-six feet, exclusive of shoulders, in the immediate vicinity of the building or portion thereof.
- One or more of the required access routes for buildings 30-foot or taller shall be located not less than 15 feet and not greater than thirty feet from the building and shall be positioned parallel to one entire side of the building. The side of the building on which the aerial fire apparatus access road is positioned shall be approved by the fire code official.
- Buildings or facilities having a gross building area of more than 62,000 sf shall be provided with two separate and approved fire apparatus access roads. An exception is allowed for buildings having a gross building area up to 124,000 sf that have a single approved fire apparatus access road where all buildings are equipped throughout with approved automatic sprinkler systems.

All proposed site driveways and on-site drive aisles provide a minimum unobstructed width of twenty-six feet. Although the Project includes a continuous and connected internal roadway network for fire access, the site plan does not currently identify designated fire apparatus access roads or the locations of aerial fire apparatus access points for any proposed industrial buildings exceeding thirty feet in height. Mitigation Measure 3.13-8 requires the Project applicant to construct the on-site fire apparatus access road network in accordance with the City of Modesto Fire Code, subject to approval by the City of Modesto Fire Department. With implementation of this mitigation measure, this impact would be ***less than significant***.

MITIGATION MEASURE(S)

Mitigation Measure 3.13-8*: The Project applicant shall construct the on-site fire apparatus access road network in accordance with the City of Modesto Fire Code, subject to approval by the City of Modesto Fire Department. These requirements shall be noted in the Project improvement plans.*

CUMULATIVE IMPACTS

The cumulative setting for this analysis includes the City of Modesto Sphere of Influence (SOI) and nearby areas of the County. The analysis models the overall change in VMT in Modesto because of forecast development, with the addition of the proposed Project. The intent is to understand how the proposed Project will influence travel behavior considering future conditions, and to identify possible significant future impacts.

Impact 3.13-5: Cumulative Impacts Related to VMT (Significant and Unavoidable and Cumulatively Considerable)

Table 3.13-9 shows the citywide average HBW auto VMT per employee under cumulative conditions, estimated using both the 2046 StanCOG and SJCOG travel demand models. As shown in Table 3.13-9, the City of Modesto's average daily HBW auto VMT per employee is similar using both travel demand models. The Project's estimated 49.0 daily VMT per employee for industrial uses substantially exceeds the cumulative thresholds estimated by both travel demand models. Therefore, the impact is considered significant.

TABLE 3.13-9: CUMULATIVE DAILY AUTO VMT PER EMPLOYEE COMPARISON AGAINST SIGNIFICANCE THRESHOLD – INDUSTRIAL LAND USES

SCENARIO	*HBW AUTO VMT PER EMPLOYEE*	
	2046 STANCOG MODEL	*2046 SJCOG MODEL*
City of Modesto Average – Cumulative	8.2	8.3
85% of City of Modesto Average – Cumulative	7.0	7.1
Project Industrial Uses[1]	49.0	49.0

NOTES:

1. *BASELINE VMT PER EMPLOYEE WAS ESTIMATED USING STREETLIGHT DATA FROM 39 WAREHOUSING SITES COLLECTED AS PART OF THE SAN JOAQUIN COUNTYWIDE WAREHOUSING TRAVEL BEHAVIOR STUDY. WITH AN AVERAGE ROUND-TRIP LENGTH OF 58.6 MILES (29.3 MILES EACH WAY), DAILY HBW AUTO VMT PER EMPLOYEE WAS CALCULATED. CUMULATIVE VMT PER EMPLOYEE (49.0 MILES) WAS THEN DERIVED BY APPLYING THE PROPORTIONAL REDUCTION (16%) FROM BASELINE TO CUMULATIVE CONDITIONS AS ESTIMATED BY THE SJCOG MODEL.*

SOURCE: FEHR & PEERS, 2026.

Mitigation Measures 3.13-1 and 3.13-2 are included previously in Impact 3.13-1. The effectiveness of Mitigation Measures 3.13-1 and 3.13-2 would be similar under both existing and cumulative conditions. The main difference is that there is likely to be more robust transit service in the region under cumulative conditions. This may enable TDM strategies to become more effective. While these measures would reduce VMT, these measures would not reduce the impact below the threshold. As such, the impact is considered ***significant and unavoidable*** and ***cumulatively considerable.***

Each of the retail pads and the gas station is considered local-serving retail given their small size (i.e., less than 50,000 square feet). No further VMT analysis of the retail land uses is conducted as their VMT impacts are ***less than significant*** and ***less than cumulatively considerable***.

MITIGATION MEASURE(S)

*Implement **Mitigation Measures 3.13-1 and 3.13-2**.*

Impact 3.13-6: Cumulative Impacts Related to Conflicts with Adopted Policies, Plans, or Programs Regarding Bicycle or Pedestrian Facilities under Cumulative Conditions (Significant and Unavoidable and Cumulatively Considerable)

As noted previously, the Project would not eliminate or adversely affect planned transit access in the immediate Project vicinity. StanRTA currently operates Route 48, with bus stops located in both directions along Pirrone Road adjacent to Joseph A. Gregori High School, less than eight hundred feet from the Project site. Additional stops are provided in both directions along Dale Road near the Kaiser Medical Center, less than 2,200 feet from the site. These existing bus stops are within 10 minutes' walking distance of the Project site and are expected to remain in cumulative conditions. Transit service is expected to continue operating within the vicinity of the project site under cumulative conditions. Furthermore, implementation of Mitigation Measures 3.13-3a, 3.13-3b, and 3.13-3c would enhance bicycle and pedestrian access to these bus stops. Therefore, this impact is considered ***less than significant*** **and** ***less than cumulatively considerable.***

The Project site plan and the Project description do not specify whether paved sidewalks are proposed along the Project frontages. The existing 10-foot-wide Class II bicycle lane along the Kiernan Avenue (SR 219) frontage will remain; however, the Project does not propose any bikeway improvements along the Dale Road or Pirrone Road frontages. Both Dale Road and Pirrone Road are classified as "Minor Arterials" according to the *City of Modesto General Plan* (City of Modesto, 2019). The City's *Standard Specifications* (City of Modesto, 2014) require a minimum 10-foot sidewalk and five-foot Class II bicycle lanes on both sides of a standard "Minor Arterial" section.

The project would not eliminate or adversely affect a planned cumulative pedestrian or bikeway facility in a way that would preclude its construction. However, it would cause an inconsistency with several City of Modesto General Plan policies (V.A.1, V.A.2, V.A.5, V.D.1, V.D.5, V.D.7, V.E.3, V.E.8, V.H.5, and V.H.9) pertaining to providing multimodal transportation options, reducing auto dependency, and eliminating gaps in the pedestrian and bikeway system. Under cumulative conditions, there would continue to be no dedicated bicycle facilities along the project site frontages on Dale and Pirrone Road. However, additional business park and industrial development in the vicinity of the project site is expected to occur as part of the Salida Community Plan (Stanislaus County, 2007), which will further increase the need for bicycle and pedestrian facilities. Given the project's large number of employees and the lack of any planned pedestrian and bicycle facilities to connect the project site with surrounding future commercial and industrial development sites. This impact is considered cumulatively significant.

The Project's proposed retail uses are expected to generate pedestrian trips to the site from Dale Road south of Kiernan Avenue (SR 219) and from Joseph A. Gregori High School on Pirrone Road. The existing Kiernan Avenue (SR 219)/Dale Road intersection lacks a pedestrian crosswalk on the west leg, requiring pedestrians to potentially navigate crosswalks on the south, east, and north legs to access the Project site from the southwest corner of the intersection. The Project does not propose any crossing improvements at this intersection. The Project also does not propose any

pedestrian crossing improvements on Pirrone Road under cumulative conditions, which currently lacks marked crosswalks near the Project site.

The City of Modesto, as lead agency, does not have jurisdiction to implement Mitigation Measure 3.13-3b and the mitigation would need to be approved by Caltrans. Therefore, the impact is conservatively considered ***significant and unavoidable*** and ***cumulatively considerable.***

MITIGATION MEASURE(S)

I*mplement* ***Mitigation Measures 3.13-3a, 3.13-3b, and 3.13-3c****.*

Impact 3.13-7: Cumulative Impacts Related to Increased Hazards due to a Geometric Design Feature (e.g., sharp curves or dangerous intersections) or Incompatible Uses (e.g., farm equipment) (Significant and Unavoidable and Cumulatively Considerable)

INCREASED HAZARDS DUE TO GEOMETRIC DESIGN FEATURES

The Project would generate 1,480 new daily truck trips, which have greater turning radius requirements, pavement deterioration effects, and vehicle storage requirements than passenger vehicles. Trucks over seven tons are assumed to remain prohibited on Dale and Stoddard Road from Kiernan Avenue (SR 219) to Ladd Road; in addition to Pirrone Road between Dale and Stoddard Road under cumulative conditions.

As noted previously, although Mitigation Measure 3.13-4 includes improvements within the jurisdiction of City of Modesto, some improvements also fall under Caltrans jurisdiction. The City of Modesto, as lead agency, does not have jurisdiction to implement improvements on Kiernan Avenue (SR 219) and the mitigation would need to be approved by Caltrans. Therefore, the impact is conservatively considered ***significant and unavoidable*** and ***cumulatively considerable*** because the City cannot ensure its implementation.

INCREASED HAZARDS DUE TO INCOMPATIBLE VEHICLE FLEET MIX

Additional business park and industrial development is expected to occur in the Project vicinity under cumulative conditions as part of the *Salida Community Plan* (Stanislaus County, 2007). However, some agricultural uses generating roadway trips via agricultural equipment are assumed to remain under cumulative conditions on the following roadway segments that are currently used by agricultural equipment on occasion and prohibit trucks over seven tons:

- Dale Road between Kiernan Avenue (SR 219) and Pirrone Road
- Stoddard Road between Kiernan Avenue (SR 219) and Pirrone Road
- Pirrone Road between Dale and Stoddard Road

Project buildout would add an estimated 590 trucks per day on Dale Road, 180 trucks per day on Pirrone Road and Stoddard Road, which currently prohibit trucks over seven tons.

Future development would cause the daily traffic volume to increase on Dale Road, Pirrone Road and Stoddard Road. The addition of Project trips, when considered in combination with trips from other planned future developments, would introduce more frequent conflicts with agricultural equipment on the Dale Road, Pirrone Road, and Stoddard Road segments listed above.

As noted previously, implementation of Mitigation Measure 3.13-4 would upgrade Dale Road to accommodate the vehicle fleet mix along the Dale Road frontage. With implementation of this mitigation measure, this impact would be ***less than significant*** and ***less than cumulatively considerable***.

INCREASED HAZARDS DUE TO INCOMPATIBLE LAND USES ON DALE ROAD, PIRONE ROAD AND STODDARD ROAD

Trucks over seven tons are expected to remain prohibited on Dale and Stoddard Road north of Kiernan Avenue (SR 219), and on Pirrone Road between Dale and Stoddard Road under cumulative conditions. Several rural homes front segments of Dale and Stoddard Road; while Joseph A. Gregori High School fronts on Pirrone Road between Stoddard Road and the project site western boundary. Joseph A. Gregori High School and some rural homes are expected to remain in cumulative conditions along these segments of Dale Road, Pirrone Road and Stoddard Road.

The project will generate 180 to 590 daily truck trips on the segments of Dale Road, Pirrone Road, and Stoddard Road, which would create incompatibility with the adjacent rural residences and high school. As noted previously, Mitigation Measure 3.13-5 requires the applicant to coordinate with the City of Modesto Public Works Department to post "Local Trucks Only" signs along Dale Road between Kiernan Avenue (SR 219) and the northernmost Project site driveway, as well as "No Trucks Allowed" signs north of the northernmost driveway. Implementation of Mitigation Measure 3.13-4 would upgrade Dale Road to accommodate the vehicle fleet mix along the Dale Road frontage. With implementation of this mitigation measure, this impact would be ***less than significant***.

INCREASED HAZARDS DUE TO STATE HIGHWAY SYSTEM INTERSECTION QUEUES EXCEEDING AVAILABLE STORAGE

Table 3.13-10 displays the AM and PM peak hour 95th percentile queues at queuing study locations (located on the SHS) under cumulative plus project conditions. As shown, two out of fourteen locations shown in this table would experience queueing that exceeds available storage. This impact is cumulatively significant.

TABLE 3.13-10: RECOMMENDED IMPROVEMENTS TO ADDRESS QUEUING IMPACTS – CUMULATIVE PLUS PROJECT CONDITIONS

ID	INTERSECTION	LEAD AGENCY	DESCRIPTION OF IMPROVEMENTS
13.	Dale Rd/ Kiernan Ave (SR 219)	Caltrans	• Additional SB left-turn lane 300 ft in length (total two left turn lanes) • Additional SB through lane (total two through lanes) with a shared through/right-turn lane • Additional EB left-turn lane 555 ft in length (total two left turn lanes) • Additional NB through lane (total two through lanes) with a shared through/right-turn lane
--	SR 99 NB Ramps/ Beckwith Rd/ Standiford Ave	Caltrans	Implement Beckwith/Standiford Multimodal Safety and Complete Streets Improvement Project

SOURCE: FEHR & PEERS, 2026.

The effectiveness of the improvements recommended at the Dale Road/Kiernan Avenue (SR 219) intersection were analyzed under cumulative plus project conditions using the SimTraffic microsimulation models. The results are shown in Table 3.13-11 and indicate that the proposed improvements would reduce the extent of queueing such that all 95th percentile queues would be less than the available storage. Refer to Appendix F of Appendix E for the queuing analysis worksheets.

TABLE 3.13-11: 95TH PERCENTILE QUEUE LENGTH SUMMARY – CUMULATIVE PLUS PROJECT CONDITIONS WITH IMPROVEMENTS

ID	INTERSECTION	LEAD AGENCY	MOVE-MENT[1]	STORAGE LENGTH (FT)	EXISTING 95TH % QUEUE LENGTH (FT)		EXISTING + PROJECT 95TH % QUEUE LENGTH (FT)		EXISTING + PROJECT WITH IMPROVEMENTS[2] 95TH % QUEUE LENGTH (FT)		95TH % QUEUE REQUIRE-MENT MET?
					AM	PM	AM	PM	AM	PM	
13.	Dale Rd/ Kiernan Ave (SR 219)	Caltrans	EBL	555	396	183	**822**	**570**	231	169	Yes
--	SR 99 NB Ramps/ Beckwith Rd/ Standiford Ave	Caltrans	Off-Ramp	1,025	715	**1,368**	**1,287**	**1,365**	<1,000	<1,000	Yes[3]

*NOTES: **BOLD** FONT DENOTES MOVEMENTS WHERE STORAGE LENGTH IS EXCEEDED.*

1. *EB = EASTBOUND; WB = WESTBOUND; NB = NORTHBOUND; SB = SOUTHBOUND; L= LEFT-TURN; T = THROUGH; R = RIGHT-TURN*
2. *REFER TO TABLE 3.13-7 FOR DESCRIPTION OF IMPROVEMENTS.*
3. *REFER TO YEAR 2050 QUEUING RESULTS SUMMARIZED IN THE TRAFFIC ENGINEERING PERFORMANCE ASSESSMENT FOR THE BECKWITH/STANDIFORD MULTIMODAL SAFETY AND COMPLETE STREETS IMPROVEMENT PROJECT PSR/PDS (TEPA, FEHR & PEERS, MAY 2024), WHICH IS ALSO PROVIDED IN APPENDIX F. ALL SIX INTERCHANGE BUILD ALTERNATIVES STUDIED AS PART OF THE TEPA RESULT IN 95TH PERCENTILE QUEUES LESS THAN 400 FEET ALONG THE SR 99 OFF-RAMP AT BECKWITH ROAD/STANDIFORD AVENUE.*

SOURCE: FEHR & PEERS, 2026.

The City of Modesto is currently underway with development of the preferred improvements planned at the SR 99/Beckwith Road/Standiford Avenue interchange as part of the Beckwith/Standiford Multimodal Safety and Complete Streets Improvement Project. The interchange project proposes modification to SR 99/Beckwith Road/Standiford Avenue interchange and the local street system, including roundabouts at local street intersections, including the Dale Road/Standiford Avenue intersection. Some of the recommended modifications to the interchange design include the following:

- New ramps to provide direct access between SR 99 and the areas north of Beckwith Road/Standiford Avenue. These new ramps are intended to reduce vehicular volume along the Beckwith Road-Standiford Avenue corridor and reduce conflicts between vehicles, bicyclists, and pedestrians.
- Widening ramps to increase vehicle storage and minimize the potential for vehicle queue spillback to SR 99 and local streets.
- High occupancy vehicle (HOV) bypass lanes at on ramps to encourage mode shift from single occupancy vehicles (SOV) to HOV.
- A two-lane exit and auxiliary lane at each off ramp (one exit-only lane plus one optional exit lane).

Build alternatives under consideration by the City of Modesto include roundabout controlled ramp terminal intersections at the SR 99/Beckwith Road/Standiford Avenue interchange, as well as a diverging diamond interchange (DDI) configuration with signal-controlled ramp terminal intersections. The final geometric configuration will be determined through the project development process. The interchange project is currently the Project Approval/Environmental Document (PA/ED) phase; however, the traffic operations analysis for that effort is not yet available.

Interchange build alternative analysis results for year 2050 conditions are documented in the Traffic Engineering Performance Assessment for the Beckwith/Standiford Multimodal Safety and Complete Streets Improvement Project PSR/PDS (Fehr & Peers, May 2024), prepared for the Project Study Report (PSR). This memorandum is included in Appendix F of Appendix E. As shown in the memorandum, six different interchange build alternatives were evaluated under year 2050 conditions, all of which were estimated to have 95th percentile queues less than four hundred feet in length.

The improvements described above are located on the SHS, which is owned and operated by Caltrans. There is no guarantee that Caltrans will support or approve the identified improvements.

The City of Modesto, as lead agency, does not have jurisdiction to implement improvements at intersections on the SHS. Therefore, the impact is conservatively considered ***significant and unavoidable*** and ***cumulatively considerable*** because the City cannot ensure its implementation.

MITIGATION MEASURE(S)

Mitigation Measure 3.13-9: *The project applicant shall construct the geometric improvements at the Dale Road/Kiernan Avenue (SR 219) described in Table 3.13-11 (or an equivalent or more effective set of alternative improvements), and shall also contribute its fair share toward the improvements planned at the SR 99/Beckwith Road/Standiford Avenue interchange as part of the City of Modesto's Beckwith/Standiford Multimodal Safety and Complete Streets Improvement Project.*

Implement ***Mitigation Measures 3.13-4, 3.13-5 and 3.13-6.***

Impact 3.13-8: Cumulative Impacts Related to Inadequate Emergency Access (Less than Significant and Less than Cumulatively Considerable)

The nearest fire station is City of Modesto Fire Station 11, located at 4225 Carver Road, approximately 2.3 miles from the Project site. The nearest hospital, the Kaiser Medical Center, is less than a half mile from the project site. The project currently proposes three site access driveways (with ingress and egress) on Dale Road, two on Kiernan Avenue (SR 219), and two on Pirrone Road, all of which will also serve as emergency vehicle access points. All project driveways provide a minimum clear width of forty feet, except for the northern Dale Road driveway, which provides 26-foot clear width. The proposed industrial buildings would have a maximum height of forty-five feet. In accordance with Sections D104 and D105 of the 2025 California Fire Code, as adopted by the City of Modesto, the project must provide the following accommodation:

- Buildings or facilities exceeding thirty feet or three stories in height shall have not fewer than two means of fire apparatus access for each structure.
- Where the vertical distance between the grade plan and the highest roof surface exceeds thirty feet, approved aerial fire apparatus access roads shall be provided.
- Aerial fire apparatus access roads shall have a minimum unobstructed width of twenty-six feet, exclusive of shoulders, in the immediate vicinity of the building or portion thereof.
- One or more of the required access routes for buildings, 30-foot or taller, should be located not less than 15 feet and not greater than thirty feet from the building, and should be positioned parallel to one entire side of the building. The side of the building on which the aerial fire apparatus access road is positioned shall be approved by the fire code official.
- Buildings or facilities having a gross building area of more than 62,000 sf shall be provided with two separate and approved fire apparatus access roads. An exception is allowed for buildings having a gross building area up to 124,000 sf that have a single approved fire apparatus access road where all buildings are equipped throughout with approved automatic sprinkler systems.

All proposed site driveways and on-site drive aisles provide a minimum unobstructed width of twenty-six feet. Although the project includes a continuous and connected internal roadway network for fire access, the site plan does not currently identify designated fire apparatus access

roads or the locations of aerial fire apparatus access points for any proposed industrial buildings exceeding thirty feet in height.

The *Salida Community Plan* (Stanislaus County, 2007) buildout assumes the construction of a new fire station on Stoddard Road north of Pirrone Road about one mile from the project site. When constructed, the future fire station within the Salida community would improve emergency vehicle response times to the project site.

The separate non-CEQA LTA report prepared for the project demonstrates that improvements are available to maintain acceptable LOS, consistent with the City of Modesto and Stanislaus County General Plans, or to achieve LOS equal to or better than cumulative no project conditions at roadways and intersections throughout the study area under cumulative plus project conditions. Therefore, emergency vehicles are not expected to experience undue delays resulting from increased project-generated trips in the study area.

The final site plan must be approved by the City of Modesto Fire Department to ensure the emergency access routes meet requirements to facilitate the safe movement of emergency vehicles. With implementation of Mitigation Measure 3.13-8, the proposed Project would have a ***less than significant*** and ***less than cumulatively considerable*** impact relative to this topic.

MITIGATION MEASURE(S)

Implement ***Mitigation Measure 3.13-8.***

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This section describes the regulatory setting, impacts associated with wastewater services, water services, storm drainage, solid waste disposal, natural gas, and telecommunications that are likely to result from Project implementation, and measures to reduce potential impacts to these utilities and service systems. This section is based in part on the following documents, reports and studies:

- CalRecycle *Solid Waste Information System (CalRecycle, 2025);*
- CalRecycle *Jurisdiction Diversion/Disposal Rate Summary (CalRecycle, 2025);*
- *City of Modesto 2020 Municipal Service Review (Stanislaus LAFCO, 2020);*
- *City of Modesto Utilities Department, 2020 Urban Water Management Plan (June 2021);*
- *City of Modesto Wastewater Master Plan (2016);*
- *City of Modesto Storm Drainage Master Plan (City of Modesto Public Works, 2007); and*
- *Scannell Industrial Project Water Supply Assessment (West Yost, 2025).*

Comments were received during the public review period or scoping meeting for the Notice of Preparation regarding this topic from the following: Central Valley Regional Water Quality Control Board (CVRWQCB), Pacific Gas and Electric Company (PG&E), and the Stanislaus Local Agency Formation Commission (LAFCO). Each of the comments related to this topic are addressed within this section. Full comments received are included in Appendix A.

3.14.1 WASTEWATER SERVICES

ENVIRONMENTAL SETTING

The City's sanitary sewer system comprises more than 600 miles of wastewater collection system pipelines, ranging from six to 66 inches in diameter; 69 miles of trunk lines greater than 15 inches in diameter; an additional 15 miles of trunk lines connecting cannery food processors directly to land disposal (application) areas; and approximately 40 lift stations (also referred to as pump stations) used to pump wastewater against gravity, where necessary.

The City of Modesto owns and operates two wastewater treatment facilities – the Sutter Primary Treatment Facility (Sutter PTF) and Jennings Treatment Facility (Jennings TF). Modesto's wastewater is treated to meet the stringent federal and State regulatory requirements. An average of 20 million gallons per day (gpd) of Modesto's wastewater is treated at Sutter PTF, and nearly 15 million of those gallons are further treated at Jennings TF to tertiary (recycled water) levels.

The wastewater is screened and clarified at the Sutter PTF, which removes inorganic and settleable organic waste. The inorganic solids are sent to the landfill, while organic solids are digested and converted to nutrient-rich biosolids. The wastewater is then pumped seven miles to Jennings TF.

At the Jennings Treatment Facility (TF), approximately 15 million gallons per day of wastewater undergo tertiary treatment. A portion of this tertiary-treated water is discharged into the Delta-Mendota Canal (DMC) for reuse in agricultural irrigation by the Del Puerto Water District. The remaining wastewater is treated to secondary levels using a system of fixed film reactors and facultative treatment ponds. This secondary-treated effluent is then stored in the City's approximately 600-acre wastewater storage pond system until it can be used for land application or

discharge. Treated wastewater, along with seasonal cannery process water and anaerobically digested biosolids trucked from the Sutter Primary Treatment Facility (PTF), is applied to the City's 2,526-acre agricultural reuse site—including a 2,450-acre fodder ranch—located adjacent to Jennings TF. The site is used to grow non-food crops under strict agronomic management. The secondary treatment system includes three 140-foot-diameter fixed film reactors, a 100-acre aerated recirculating channel, and three treatment ponds totaling approximately 1,000 acres. Most of the treated effluent is used for irrigation, while any water discharged to the San Joaquin River (typically between October and May) is first disinfected with chlorine and subsequently dechlorinated using sulfur dioxide to meet discharge requirements.

The tertiary treatment facilities at the Jennings TF consist of two plants: Phase 1 and Phase 2 Biological Nutrient Removal (BNR) / Tertiary Facilities. The Phase 1 facilities were completed in 2010, and the Phase 2 facilities were completed in 2015. Each plant has secondary biological reactors for biological oxygen demand (BOD) removal and nitrification / denitrification, membrane filtration, and ultraviolet (UV) disinfection. These facilities increase the level of treatment and will enable year-round surface water discharge or reuse. Effluent from both the Phase 1 and Phase 2 facilities are used to supply tertiary-treated recycled water demands off-site. As described previously, Jennings TF combined BNR/tertiary facilities have a production capacity of 14.9 million gpd (or mgd).

The current capacity of the City's wastewater treatment system is 81 mgd (including capacity for 40.2 mgd for cannery wastewater). In 2014, the average non-canning season domestic wastewater flows (exclusive of cannery segregated flow) were 18.5 mgd. During the 2014 dry season, the sewer system received an average of approximately 20 mgd of wastewater, with a peak of 36.3 mgd. The peak wet weather wastewater flow was approximately 72.8 mgd.

During the non-canning season (October through mid-July), the Sutter PTF receives flows and loads from domestic sources, minor industrial facilities, major industrial facilities, and smaller volumes from the canning segregated industries. During the non-canning season, year-round flows from major food processing industries (Frito-Lay and Gallo Winery) are combined with domestic wastewater and treated at Sutter PTF and Jennings TF. Conversely, as discussed above, during the canning season (July through September or early October), canning segregated flows received at the Sutter PTF are sent directly to the Jennings TF and get applied directly to the City's ranch land. During the canning season, the City is able to augment treatment capacity at the Sutter PTF by sending cannery wastewater directly to the Jennings TF after it has been screened at the primary plant. Cannery waste is disposed of by irrigation at agricultural ranch lands owned by the City. Cannery waste consists of wash water containing organic vegetable material. The process of segregating cannery wastewater flows began in July 1999. In 2014, an average of 14.8 mgd of cannery segregated wastewater was received at the Sutter PTF during the canning season. The peak 30-day flow during the canning season was 20.3 mgd.

REGULATORY SETTING

Clean Water Act (CWA) / National Pollutant Discharge Elimination System (NPDES) Permits

The CWA is the cornerstone of water quality protection in the United States. The statute employs a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. These tools are employed to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters so that they can support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water."

The CWA regulates discharges from "non-point source" and traditional "point source" facilities, such as municipal sewage plants and industrial facilities. CWA Section 402 creates the NPDES regulatory program which makes it illegal to discharge pollutants from a point source to the waters of the United States without a permit. Point sources must obtain a discharge permit from the proper authority (usually a state, sometimes EPA, a tribe, or a territory). NPDES permits cover industrial and municipal discharges, discharges from storm sewer systems in larger cities, storm water associated with numerous kinds of industrial activity, runoff from construction sites disturbing more than one acre, mining operations, and animal feedlots and aquaculture facilities above certain thresholds.

Permit requirements for treatment are expressed as end-of-pipe conditions. This set of numbers reflects levels of three key parameters: (1) BOD, (2) total suspended solids, and (3) pH acid/base balance. These levels can be achieved by well-operated sewage plants employing "secondary" treatment. Primary treatment involves screening and settling, while secondary treatment uses biological treatment in the form of "activated sludge."

All so-called "indirect" dischargers are not required to obtain NPDES permits. An indirect discharger is one that sends its wastewater into a city sewer system, so it eventually goes to a sewage treatment plant. Although not regulated under NPDES, "indirect" discharges are covered by another CWA program called pretreatment. "Indirect" dischargers send their wastewater into a city sewer system, which carries it to the municipal sewage treatment plant, through which it passes before entering surface water.

The City's NPDES permit allows treated effluent to be used for irrigation during proper soil and weather conditions and to be discharged into the San Joaquin River from October 1 through May 31 when river flows meet prescribed standards. The NPDES permit requirements of the CVRWQCB ensure that discharges from the sewage treatment plants do not adversely affect water quality. The City's NPDES Permit is on a five-year renewal cycle and was recently renewed in August 2022.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act is California's statutory authority for the protection of water quality. Under the Porter-Cologne Water Quality Act, the State is required to adopt policies, plans, and objectives that will protect the State's waters for the use by and enjoyment of

Californians. In California, the State Water Resources Control Board (SWRCB) has the authority and responsibility for establishing policy related to the State's water quality. Regional authority is delegated by the SWRCB to a Regional Water Quality Control Board (RWQCB). The Porter-Cologne Act authorizes the SWRCB and RWQCB to issue NPDES permits.

Under the CVRWQCB NPDES permit system, all existing and future municipal and industrial discharges to surface water within the city would be subject to regulation. NPDES permits are required for operators of municipal separate storm sewer systems, construction projects, and industrial facilities. These permits contain limits on the amount of pollutants that can be contained in each facility's discharge.

Under its NPDES permit, the City is required to develop, administer, implement, and enforce a comprehensive stormwater management program to reduce pollutants carried in urban runoff to the maximum extent practicable. The City's adopted guidance manual specifically controls post-construction urban runoff pollutants from newly developed and redeveloped areas. The Erosion and Sediment Control for Construction Activities manual describes the best management practices (BMPs) that will be required as source control and treatment control measures for commercial / industrial and multi-family residential sources.

Modesto Urban Area General Plan

The Urban Area General Plan (UAGP) provides the following policies related to sanitary sewer (SS).

POLICIES

- SS-5: Consider reclaiming wastewater as a means to optimize the region's water resources, reduce discharge from the treatment plant, reduce the risk of fines and reduce costs associated with producing water from new / additional sources. (UAGP Policy VI.D.1)

- SS-6: Comply with the Central Valley Regional Water Quality Control Board requirement to cease all discharge of wastewater that is treated at less than tertiary levels by May 1, 2018. (UAGP Policy VI.D.2)

- SS-7: Consider reuse of wastewater treatment byproducts, such as biosolids and digester gas, which can reduce costs associated with treatment plant operations. (UAGP Policy VI.D.3)

- SS-8: Pursue the near-term expansion of the wastewater treatment and disposal capacity of the Jennings Road Treatment Plant. (UAGP Policy VI.D.4)

- SS-9: Pursue the long-term relocation of the Sutter Avenue Primary Treatment Plant, to the Jennings Road site, in order to consolidate operations and reduce treatment plant flooding risks. (UAGP Policy VI.D.5)

- SS-10: Construct, operate, maintain, and replace wastewater facilities in a manner that will provide the best possible service to the public. In developing implementation plans, consideration should be given to rehabilitation of essential existing facilities, expansion to

meet current excess demand, and the timely expansion for future demand. (UAGP Policy VI.D.6)

- SS-11: Allocate the City's wastewater system capacity to existing and future residential, commercial, and industrial customers. Discharges from environmental cleanup sites may be issued conditional discharge permits subject to the availability of excess treatment capacity. In accordance with federal and state regulations, discharges to the wastewater system may not, or may not threaten to, upset or interfere with, the wastewater system. (UAGP Policy VI.E.1)

- SS-12: Require wastewater infrastructure master plans for the specific public infrastructure or when otherwise pertinent to provision of service at adopted service levels for the specific plan areas or other projects depending on site issues and location. (UAGP Policy VI.E.2)

- SS-13: Individual development projects are subject to review by the City for adequate wastewater collection service and treatment. (UAGP Policy VI.E.3)

- SS-14: Subject to the approval of the Stanislaus Local Agency Formation Commission, the City of Modesto will be the sole provider of wastewater services to the area within the City's Sphere of Influence and sewer service area. (UAGP Policy VI.E.4)

- SS-15: Prior to annexation, determine that adequate wastewater treatment and disposal capacity can be provided for the proposed annexation area. (UAGP Policy VI.E.5)

- SS-16: Within the city limits and the sewer service area, all existing developed properties should connect to the sewer system within five (5) years of the extension of service. (UAGP Policy VI.E.6)

- SS-17: Encourage the regional beneficial reuse of reclaimed water, and commit to development of a full reclamation program in the long term. Comply with Title 22 standards for use of reclaimed water and criteria contained in the California Department of Public Health "Purple Book." (UAGP Policy VI.E.7)

- SS-18: Participate in the North Valley Recycled Water Program, which involves routing of tertiary treated wastewater to the Delta Mendota Canal. (UAGP Policy VI.E.8)

- SS-19: Strive to use land application of biosolids as the most environmentally beneficial reuse of this resource, rather than the disposal options of landfilling or incineration. (UAGP Policy VI.E.9)

- SS-20: Develop methods to discontinue use of the sanitary system to temporarily drain stormwater runoff, and strive to eliminate cross-connections between the wastewater and stormwater infrastructure systems. (UAGP Policy VI.E.10)

- SS-21: Strive to establish odor buffer zones around primary and secondary wastewater plants, thereby minimizing the likelihood of odors impacting new residential or commercial development. (UAGP Policy VI.E.11)

- SS-22: Utilize source control and demand management among its tools for accomplishing the most cost-effective wastewater management that protects public health and the environment. (UAGP Policy VI.E.12)

- SS-23: Require each new development project to be served with public sanitary sewers. Utilities located in private streets shall be part of the public sewerage system and shall be connected to a sewer lateral. (UAGP Policy VI.E.14)

- SS-24: For properties outside the City limits and sewer district boundaries, the extension of sewer service may be approved by the City Manager per City Council Policy 5.002, as amended. (UAGP Policy VI.E.15)

- SS-25: Prepare and implement an update to the City's Wastewater Master Plan (WWMP), and complete an EIR for the updated WWMP. The updated WWMP should account for the UAGP, zoning revisions, updated growth projections, updated sewer demand information, regulatory requirements, and identify new capital improvement projects. The WWMP should involve several improvements to the City's collection system and upgrades to the Sutter and Jennings plants. The objectives of the updated WWMP may include the following:

    - To implement the City's economic goals and Urban Area General Plan by planning for, and providing, sewer infrastructure in a timely and cost-effective manner to serve new and existing development.
    - To repair and replace aging wastewater infrastructure.
    - To ensure adequate wastewater infrastructure and services are available to serve new growth within the General Plan and City's Sphere of Influence.
    - To plan for state-of-the-art facilities that reliably and economically meet the changing regulatory requirements.

    For collection system improvements, the objectives of the updated WWMP may include:

    - To increase sewer capacity to convey peak wet weather flows for a 10-year storm event, and where required, to serve future customers.
    - To reduce wet weather flow volumes by removing cross connections with stormwater sewers.
    - To extend service to new customers.
    - To replace, repair, or rehabilitate existing trunk sewers, and to reduce infiltration and inflow of stormwater into the sanitary sewers.
    - To improve sewer collection reliability by providing new and redundant infrastructure improvements, including sewer trunk lines and lift stations, in known deficient areas at critical areas within the existing system.

For treatment plant improvements, the objectives may include the following:

- To reduce flooding impacts at the Sutter Plant site and increase treatment process operational flexibility and efficiencies.
- To increase the capacity of the outfall connecting the primary and secondary treatment plants, and to provide increased reliability for the existing outfall.
- To increase treatment systems efficiency, reliability, and functionality for both domestic and cannery process stream flows.
- To increase or modify treatment systems to remain in compliance with existing Central Valley RWQCB's NPDES requirements and plan for potential future permitting regulations. (UAGP Policy VI.E.16).

City of Modesto Municipal Code

The City of Modesto Municipal Code, Chapter 6 (Wastewater Collection and Disposal) regulates sewer management. The purpose of this chapter is to set forth uniform requirements for direct and indirect discharges of pollutants into the wastewater collection and treatment system for the City of Modesto which will enable the City to comply with all applicable State and federal laws, including the CWA (33 U.S.C. 1251 et seq.) and the General Pretreatment Regulations (40 CFR Part 403).

Utility Master Plans

The City of Modesto adopted a variety of Master Plan documents that guide the design, development, and maintenance of the utilities within the City limits. These include the City of Modesto's Wastewater Treatment Master Plan Supplement (2008) and Wastewater Collection System Master Plan (2007). These documents provide long-range planning guidance for the expansion, upgrade, and operation of the City's wastewater treatment and collection systems. They identify infrastructure needs, capacity limitations, and projected service demands based on anticipated growth and land use changes.

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed Project will have a significant impact on the environment associated with utilities if it will:

1. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.
2. Require or result in the construction of new wastewater treatment and/or collection facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
3. Result in a determination by the wastewater treatment and/or collection provider which serves or may serve the Project that does not have adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments.

IMPACTS AND MITIGATION MEASURES

Impact 3.14-1: The proposed Project would not require or result in the construction of new wastewater treatment or collection facilities or expansion of existing facilities, the construction of which could cause significant environmental effects (Less than Significant)

The wastewater collection and conveyance system that will serve the proposed Project will consist of engineered infrastructure consistent with the City's existing infrastructure requirements. As mentioned above, the Project site is located within the City of Modesto's future sewer service area. According to the City of Modesto Urban Area General Plan (Chapter III, Infrastructure, Section C.1 – Wastewater Collection), areas within the City's Sphere of Influence—including the Project site corridor—are identified as part of the City's planned wastewater service area. The nearest sewer point of connection is located on Dale Road, south of Kiernan Avenue, consisting of a 12-inch line , as shown in the future service area which connects to a 27-inch sewer line at the intersection of Dale Road and Healthcare Way. The City of Modesto will require the Project to install the extension of the sewer line along the frontage of the property as a condition of approval. Accordingly, this EIR evaluates the sewer-line extension and its potential secondary impacts—including construction-related ground disturbance, temporary traffic control, short-term noise, air quality and greenhouse gas emissions, and potential effects on biological and cultural resources—in the applicable environmental topic sections. This requirement is consistent with City policies that ensure new development or rezoning proposals provide necessary infrastructure to serve the site. The extension is necessary to connect the site to the existing 27-inch sewer trunk line at Dale Road/Healthcare Way, in accordance with the City's *Wastewater Collection System Master Plan* and Modesto Municipal Code Section 11-3.302, which requires that developments provide adequate sewer connections to the public system.

New wastewater collection and conveyance infrastructure needed for the proposed Project will require trenching/excavation of earth, and placement of pipe within the trenches at specific locations, elevations, and gradients. Prior to approval of the final map, the applicant will refine the wastewater collection/conveyance infrastructure design in its improvement plans which would be required to undergo review by the City Public Works Department to ensure consistency with the City's engineering standards. This improvement plan process will include full engineering design (i.e. location, depth, slope, etc.) of all conveyance infrastructure, as well as a review of new sewer pump stations and new force mains if needed. Ultimately, the sanitary sewer collection system will be an underground collection system installed per the City of Modesto standards and specifications. Sanitary sewer disposal and treatment will be to Sutter PTF and Jennings TF.

As mentioned above, the City's wastewater treatment capacity is sufficient to accommodate the proposed Project without requiring upgrades or improvements. According to the City of Modesto's 2020 Urban Water Management Plan and the City of Modesto Wastewater Master Plan (2021), the Jennings Road Secondary Wastewater Treatment Plant has an existing treatment capacity of approximately 40 million gallons per day (MGD), with an average daily flow of approximately 20

MGD, leaving ample capacity (approximately 50%) to accommodate the proposed Project. While the Project would require construction of new wastewater collection and distribution facilities, the construction of these facilities would not result in significant environmental effects. The facilities are located on the Project site and the environmental impacts of the new facilities are analyzed as part of the Project throughout this EIR. Implementation of the proposed Project would result in ***less than significant*** impacts relative to this topic.

Impact 3.14-2: The proposed Project would not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board (Less than Significant)

Currently, the City holds a NPDES permit from the CVRWQCB that authorizes tertiary effluent discharges from the Jennings TF to the San Joaquin River. The discharge is regulated through NPDES Permit No. CA0079103, Order R5-2017-0064. The NPDES permit allows tertiary treated wastewater discharge (up to 14.9 mgd currently and up to 19.1 mgd, once the City completes upgrades to the Jennings TF) to the San Joaquin River (CVRWQCB 2017). The City is also participating in the North Valley Regional Recycled Water Program (NVRRWP), which will provide recycled water to the DMC. The City's permit number R5-2017-0010 allows for discharge of up to 14.9 mgd of disinfected tertiary recycled water to the DMC under the NVRRWP. The treated water is conveyed from the Jennings TF via pipeline to the DMC. In addition, the City holds Waste Discharge Requirements (WDRs) (Order No. R5-99-112) that authorize discharges to agricultural lands surrounding the Jennings TF. The WDRs allow irrigation of land using undisinfected secondary effluent and/or cannery process water. Additionally, the City holds a biosolids discharge permit (Order No. R5-94-030), which allows for land application of Class B biosolids as a soil amendment at the City-owned Modesto Ranch. The Modesto Ranch is a separate agricultural property from the lands receiving discharges from the Jennings TF; it is located in eastern Stanislaus County and is specifically managed for biosolids application.

To account for the additional wastewater flows in the Project area after the construction of the proposed Project, additions to the existing wastewater infrastructure will be needed. Sanitary sewer service for the Project site will be provided by an underground gravity-fed collection system designed and installed in accordance with the City of Modesto Standard Specifications and Drawings, as well as the requirements of the City of Modesto Municipal Code Chapter 11, Sanitary Sewer Use Ordinance. The nearest sewer point of connection is located on Dale Road, south of Kiernan Avenue. That line is a 12" line that is identified to serve this area as shown in the future service area which connects to a 27" sewer line at the intersection of Dale Road and Healthcare Way. The system will connect to the existing municipal sewer infrastructure and be reviewed and approved by the City's Utilities Department during the permitting process to ensure compliance with all applicable engineering, capacity, and environmental standards. Sanitary sewer disposal will flow to the City of Modesto sanitary sewer infrastructure and treated at the City's Jennings TF, which is Modesto's primary regional wastewater treatment plant. The current capacity of the City's wastewater treatment system is 81 mgd (including capacity for 40.2 mgd for cannery wastewater). As mentioned earlier, the peak wet weather wastewater flow was approximately 72.8 mgd. Based on Modesto's Wastewater Collection System Master Plan generation factors, a commercial/industrial Project is expected to generate approximately 1000 gpd/gross acre for

commercial and industrial projects. This translates to approximately 45,900 gpd to 57,400 gpd in total for the industrial component of the proposed Project and 2,000 to 3,000 gpd for the retail component of the proposed Project or approximately 0.075 percent of current wastewater treatment system capacity of 81 mgd.

The City of Modesto's wastewater treatment system is currently in compliance with the waste discharge requirements of Order Number R5-2017-0064, NPDES CA0079103. The development of the proposed Project under this permitted option would not exceed the wastewater discharge requirements in this Order. The proposed Project is anticipated to have a ***less than significant*** impact relative to this topic. The allocation of wastewater service capacity is discussed in the following impact topic.

CUMULATIVE IMPACTS

The cumulative setting includes all areas covered in the service areas of the City's wastewater system.

Impact 3.14-3: Cumulative Impacts Related to Wastewater. (Less than Significant)

As cumulative projects come online within the wastewater service area, the wastewater collection, conveyance, and treatments systems would continue to grow, consistent with the City's existing infrastructure requirements. New sanitary sewer mains could be added as projects are proposed.

The City's sanitary sewer system comprises more than 600 miles of wastewater collection system pipelines, ranging from six to 66 inches in diameter; 69 miles of trunk lines greater than 15 inches in diameter; an additional 15 miles of trunk lines connecting cannery food processors directly to land disposal (application) areas; and approximately 40 lift stations (also referred to as pump stations) used to pump wastewater against gravity, where necessary.

Sanitary sewer disposal will flow to the City of Modesto sanitary sewer infrastructure and treated at the City's Jennings TF, which is Modesto's primary regional wastewater treatment plant. The current capacity of the City's wastewater treatment system is 81 mgd (including capacity for 40.2 mgd for cannery wastewater). As mentioned earlier, the peak wet weather wastewater flow was approximately 72.8 mgd. The Project would include development of an internal sewer collection system.

Because the wastewater treatment plant can be expanded to accommodate treatment and disposal of the projected cumulative flows in the city, this cumulative impact is considered ***less-than-significant*** regarding wastewater treatment capacity.

3.14.2 WATER SUPPLIES

ENVIRONMENTAL SETTING

The Project site is currently located outside of the Modesto City limits but is proposed for annexation into the City. Upon annexation, the City of Modesto would serve as the water purveyor for the Project. The City's water system service area encompasses all areas within the City limits.

The following information is contained in the Joint 2020 Urban Water Management Plan for the City of Modesto and the Modesto Irrigation District (Joint 2020 UWMP) (City of Modesto, 2020). The Joint 2020 UWMP included existing and projected water demands for land uses within the City's Sphere of Influence (SOI) through 2045. Because the Project site is not located within the City's current SOI, it was not included in the demand projections of the Joint 2020 UWMP.

Potable Water System

The City has been providing potable water service to its urban area since 1895 through the purchase and acquisition of several private water companies. Until 1995, the sole source of water supply to the City was groundwater pumped from the San Joaquin Valley Groundwater Basin. In the early 1990s, the City, Modesto Irrigation District (MID), and the former Del Este Water Company formed a partnership to use a portion of MID's surface water supplies for municipal water use. This shift to surface water supply has allowed the City to stabilize groundwater pumping rates to allow for groundwater aquifer recovery.

MID was formed as the second irrigation district in California, in 1887. Since that time, MID has developed numerous water rights and facilities to provide agricultural irrigation water from the Tuolumne River. MID has also developed groundwater supplies for agricultural uses. For the current and projected planning timeframe in the Joint 2020 UWMP, it is assumed that MID would only provide wholesale treated surface water to the City for municipal use within the City's contiguous service area located north of the Tuolumne River.

The City's contiguous service area consists of approximately 900 miles of transmission and distribution pipelines. MID owns and operates a portion of the transmission mains traversing the City, and these transmission mains provide treated surface water through a series of turnouts that can control water supply into the City's water distribution system. The contiguous system is served by the City's groundwater wells and ten at-grade storage tanks, with a combined total storage capacity of 32.1 million gallons (MG). Each storage tank has a booster pump station to pump water from the tank into the distribution system. There are also two 5-MG Modesto Regional Water Treatment Plant (MRWTP) reservoirs (10 MG total), owned and operated by MID, which deliver treated water from MID to downstream transmission mains.

The City's outlying service areas are served by groundwater wells located in each of the outlying service areas. The Grayson service area has an at-grade storage tank (0.16 MG of available storage) and booster pump station. Within the Del Rio service area, the City has nearly completed construction of a new 0.25-MG tank and associated booster pump station, as well as new groundwater Wells 68 and 70. The other outlying service areas are served from existing groundwater

wells or connections to neighboring agencies. As noted above, the City also serves potable groundwater to the Jennings TF.

The City's actual potable water demands for the 2020 calendar year are reported in Table 3.14-1. Losses are estimated at approximately ten percent of total potable water production, consistent with findings in the City of Modesto's 2015 UWMP and reaffirmed in the 2020 UWMP (City of Modesto, 2021). These losses, referred to as "real losses" in water management terminology, are primarily attributed to system leakage, aging infrastructure, unauthorized consumption, and meter inaccuracies. The City actively monitors and manages these losses through its water conservation and system maintenance programs. There are no existing water uses for saline barriers, groundwater recharge or agriculture within the City's water service area.

MID has never delivered potable, raw, or recycled water directly to urban customers and does not plan to do so. The actual volume of water MID sold to the City for the 2020 calendar year is reported in Table 3.14-2.

TABLE 3.14-1: DEMANDS FOR POTABLE AND NON-POTABLE WATER – ACTUAL (RETAIL)

LAND USE	*ADDITIONAL DESCRIPTION*	*LEVEL OF TREATMENT WHEN DELIVERED*	*VOLUME, AFY*
Single Family	--	Drinking Water	27,081
Multi-family	--	Drinking Water	5,420
Commercial	--	Drinking Water	8,110
Industrial	--	Drinking Water	2,115
Institutional/Governmental	--	Drinking Water	1,933
Landscape	--	Drinking Water	2,520
Other Potable	Unmetered water uses	Drinking Water	615
Losses	--	Drinking Water	5,310
Total			**53,104**

SOURCE: CITY OF MODESTO JOINT UWMP, 2020

TABLE 3.14-2: DEMANDS FOR POTABLE AND NON-POTABLE WATER – ACTUAL (WHOLESALE)

LAND USE	*ADDITIONAL DESCRIPTION*	*LEVEL OF TREATMENT WHEN DELIVERED*	*VOLUME, AFY*
Sales to other agencies	City of Modesto	Drinking Water	26,053
Losses	--	Drinking Water	52
Total			**26,105**

SOURCE: CITY OF MODESTO JOINT UWMP, 2020.

Projected Water Use

This section presents water demand projections for the City's water service area in five-year increments through 2045 (i.e., a 25-year planning horizon) and annually from 2021 through 2025. Table 3.14-3 reports the City's projected potable water demands through the year 2045, while Table 3.14-4 summarizes the City's actual demands and projected water use, along with recycled water demands. As noted previously, no recycled water demands are projected for the City's water service area. There are also no projected water uses for saline barriers, groundwater recharge or agriculture within the City's water service area.

TABLE 3.14-3: USE FOR POTABLE AND NON-POTABLE WATER – PROJECTED

LAND USE	PROJECTED WATER USE[A]				
	2025	2030	2035	2040	2045
Single Family	33,204	35,614	38,025	40,436	42,846
Multi-Family	6,498	6,970	7,442	7,913	8,385
Commercial	9,723	10,429	11,135	11,841	12,546
Industrial	2,536	2,720	2,904	3,088	3,273
Institutional/Governmental	2,318	2,486	2,654	2,822	2,991
Landscape	3,021	3,241	3,460	3,679	3,899
Losses	6,367	6,829	7,291	7,753	8,216
Total	**63,666**	**68,289**	**72,911**	**77,533**	**82,156**

SOURCE: CITY OF MODESTO JOINT UWMP, 2020.

(A) VOLUMES ARE IN AF. DEMAND PROJECTIONS ARE FROM THE CITY'S 2017 WATER MASTER PLAN BUT HAVE BEEN REDUCED 15 PERCENT TO BETTER ALIGN WITH RECENT ACTUAL DEMANDS AS EXPLAINED ON PAGE 4 IN THE WSA.

TABLE 3.14-4: TOTAL GROSS WATER USE (POTABLE AND NON-POTABLE)

	2020	2025	2030	2035	2040	2045
Potable Water, Raw, Other Non-potable	53,104	63,666	68,289	72,911	77,533	82,156
Recycled Water Demand	0	0	0	0	0	0
Optional Deduction of Recycled Water Put Into Long-Term Storage	0	0	0	0	0	0
Total Water Use	**63,666**	**68,289**	**72,911**	**77,533**	**82,156**	**82,156**

SOURCE: CITY OF MODESTO JOINT UWMP, 2020.

NOTES: VOLUMES ARE IN AF.

MID's projected urban water demands (i.e., sales to the City) through the year 2045 are reported in Table 3.14-5. Table 3.14-6 summarizes the actual demands and projected water use. As noted previously, MID has never delivered recycled water directly to urban customers and does not plan to do so.

TABLE 3.14-5: USE FOR POTABLE AND RAW WATER – PROJECTED (WHOLESALE)

	ADDITIONAL DESCRIPTION	2025	2030	2035	2040	2045
Sales to other agencies	City of Modesto	39,200	44,800	50,400	56,000	61,600
Total Water Use	**63,666**	**39,200**	**44,800**	**50,400**	**56,000**	**61,600**

SOURCE: CITY OF MODESTO JOINT UWMP, 2020.

NOTES: VOLUMES ARE IN AF. ASSUMES SUPPLY FROM MRWTP PHASE TWO EXPANSION WILL INCREASE LINEARLY BETWEEN 2020 AND 2050. TREATED SURFACE WATER SUPPLIES SHOWN ABOVE ARE APPROXIMATIONS BASED ON DEMAND. ANY AND ALL TREATED SURFACE WATER TO BE PROVIDED SHALL BE IN ACCORDANCE WITH THE AMENDED AND RESTATED TREATMENT AND DELIVERY AGREEMENT (OCTOBER 2025).

TABLE 3.14-6: TOTAL WATER USE (POTABLE AND NON-POTABLE)

	2020	*2025*	*2030*	*2035*	*2040*	*2045*
Potable Water, Raw, Other Non-potable	26,105	39,200	44,800	50,400	56,000	61,600
Recycled Water Demand	0	0	0	0	0	0
Optional Deduction of Recycled Water Put Into Long-Term Storage	0	0	0	0	0	0
Total Water Use	**26,105**	**39,200**	**44,800**	**50,400**	**56,000**	**61,600**

SOURCE: CITY OF MODESTO JOINT UWMP, 2020.

NOTES: VOLUMES ARE IN AF.

CWC Section 10635(b) requires urban suppliers to include a five-year Drought Risk Assessment (DRA) in their 2020 UWMP. A key component of the DRA is estimating demand for the next five years (2021-2025) without drought conditions (i.e., unconstrained demand).

TABLE 3.14-7: PROJECTED WATER DEMANDS FOR DROUGHT RISK ASSESSMENT

LAND USE	*WATER DEMANDS, AFY(A)*				
	2021	*2022*	*2023*	*2024*	*2025*
Single Family	28,797	29,899	31,000	32,102	33,204
Multi-Family	5,636	5,851	6,067	6,282	6,498
Commercial	8,432	8,755	9,078	9,400	9,723
Industrial	2,200	2,284	2,368	2,452	2,536
Institutional/Governmental	2,010	2,087	2,164	2,241	2,318
Landscape	2,620	2,721	2,821	2,921	3,021
Losses	5,522	5,733	5,944	6,155	6,367
Total	**55,216**	**57,329**	**59,441**	**61,554**	**63,666**

SOURCE: CITY OF MODESTO JOINT UWMP, 2020.

(A) DEMAND PROJECTIONS FOR 2021-2024 ARE BASED ON LINEAR INTERPOLATION OF ACTUAL 2020 DEMANDS PRESENTED IN TABLE 3.14-1 AND 2025 DEMAND PROJECTIONS PRESENTED IN TABLE 3.14-3.

DISTRIBUTION SYSTEM WATER LOSSES

System losses represent the difference between the actual volume of water treated and delivered into the distribution system and the actual metered consumption. Such apparent losses are always present in a water system due to pipe leaks, unauthorized connections or use, faulty meters, unmetered services (e.g., fire protection and training), and system and street flushing.

New regulations require retail water suppliers to include potable distribution system water losses for the preceding five years (to the extent records are available) in the total system losses. The City estimates its water losses on a fiscal year basis, with the fiscal year beginning July 1st and ending June 30th of the following year. For the City's water service area, the estimated system losses (i.e., the difference between production and sales) for the preceding five fiscal years (2015/2016 through 2019/2020) are summarized in Table 3.14-8. Water loss reporting accuracy will be improved when the City finishes implementing metering citywide.

At the time of preparation of the City's UWMP, California Department of Water Resources (DWR) and the SWRCB were in the process of adopting water loss standards.

TABLE 3.14-8: LAST FIVE YEARS OF WATER LOSS AUDIT REPORTING

REPORTING PERIOD START DATE (MM/YYYY)	*VOLUME OF WATER LOSS*
07/2015	8,779
07/2016	7,519
07/2017	9,532
07/2018	8,313
07/2019	9,024

SOURCE: CITY OF MODESTO JOINT UWMP, 2020.

NOTES: VOLUMES ARE IN AF.

Water System Supplies

This section describes water facilities that supply and deliver urban water to the City's service area. As described above, MID is primarily an agricultural water supplier and operates extensive facilities to deliver agricultural water supplies. These facilities include a complex network of canals, pipelines, pumps, drainage features, and control structures.

SURFACE WATER SUPPLY

In the early 1990s, the City, MID, and the former Del Este Water Company (acquired by the City in 1995) formed the Modesto Domestic Water Partnership to use a portion of MID's surface water rights for municipal uses. This partnership entered into a Treatment and Delivery Agreement (TDA) to cover the design, construction, operation (i.e., governing delivery of treated surface water from MID to the City), and financing for the Initial Phase (Phase One) of the MRWTP). The Initial Phase One of the MRWTP included construction of the treatment plant, storage reservoirs, and major transmission pipelines. The plant became operational in 1995, and since then, the City has purchased wholesale treated surface water from MID to serve its potable water system. A subsequent expansion (Phase 2) was completed in 2016 to increase the plant's capacity and reliability. These phases are separate and unrelated to any wastewater treatment plant upgrades or expansions.

The MRWTP is owned and operated by MID and, per the original TDA, delivers a total annual supply of up to 33,600 AFY of water to the City. This treated surface water supply from MID, coupled with the available groundwater supply (together termed a "conjunctive supply"), is used to meet the City's water supply needs for municipal customers in the contiguous service area located north of the Tuolumne River, which is the southern boundary of the MID service area.

The MRWTP Phase Two Expansion project was completed in 2016 and provides the City with the ability to receive a total annual supply of up to 67,200 AFY. It should be noted that the total supply (67,200 AFY) is based on normal and wet year annual averages. The delivery of Phase One and Phase Two treated surface water is governed by the October 2005 Amended and Restated TDA (ARTDA), which includes formulas to determine supply reductions during dry years.

MID is primarily an agricultural water supplier that provides irrigation water to approximately 3,400 irrigation accounts. MID serves a gross irrigation service area of approximately 103,733 acres; however, MID's irrigated acreage may vary in any given year. In 2020, approximately 62,223 acres

(66,421 acres, less 4,198 idle acres) were irrigated with surface water, MID groundwater, and private groundwater. In addition to its irrigation accounts, MID also provides treated surface water to the City's contiguous service area north of the Tuolumne River (North Modesto, Salida, and Empire).

Together with the Turlock Irrigation District (TID), MID holds senior rights to water from the Tuolumne River. The 1,880-square mile (sq mi) Tuolumne River watershed extends to the high Sierra Nevada Mountains, and the river flows to its confluence with the San Joaquin River, approximately ten miles west of Modesto. Most of the water in the Tuolumne River comes from snowmelt, with peak runoff flows occurring from April through July, during which time over 60 percent of the annual flow takes place. Within the lower Tuolumne River watershed, MID and TID operate the Don Pedro Reservoir with a maximum storage capacity of 2,030,000 AF. MID's annual diversion from the Tuolumne River was approximately 258,000 AF of water (average from 2011 to 2020). An average of approximately 26,780 AF was delivered to the MRWTP for treatment and delivery to the City during this same period.

Snowmelt from the central Sierra Nevada is of excellent quality. Surface water diverted from the Tuolumne River at La Grange has a Total Dissolved Solids (TDS) concentration of approximately 36 milligrams per liter (mg/L), which is considered very low. For context, the U.S. Environmental Protection Agency (EPA) recommends a secondary maximum contaminant level of 500 mg/L for TDS in drinking water, primarily based on aesthetic considerations such as taste and clarity (EPA, 2018). TDS concentrations below 100 mg/L are generally considered excellent, while levels above 500 mg/L may result in noticeable taste and potential scaling in pipes. The low TDS level in Tuolumne River water indicates high quality and minimal presence of salts, minerals, and other dissolved substances. Other water quality constituents that impact agricultural and domestic water use are also very low or negligible. Also, the quality of the river water is fairly consistent from year to year. As runoff from agricultural and developed land is introduced into the lower part of the river, the overall water quality degrades somewhat but remains good.

GROUNDWATER SUPPLY

The City's groundwater supply wells are located throughout the contiguous and outlying service areas, but all are within the San Joaquin Valley Groundwater Basin (Modesto, Turlock, and Delta-Mendota subbasins). Residents within the contiguous service area north of the Tuolumne River (North Modesto, Salida, and Empire) generally rely on treated surface water supply from MID year-round and are supplemented with groundwater to meet increased water demands (primarily in the summer months). Water demand from the contiguous service area located south of the Tuolumne River (South Modesto) and the outlying service areas are met exclusively with groundwater supply year-round. The City currently has 89 active groundwater wells (including six wells for non-potable uses and two wells on standby) to serve both the contiguous and outlying service areas.

The City has historically relied on groundwater pumped from the San Joaquin Valley Groundwater Basin as a major source of supply. The City's service area spans three subbasins: the Modesto Subbasin north of the Tuolumne River, the Turlock Subbasin south of the Tuolumne River, and the Delta-Mendota Subbasin west of the San Joaquin River that provides groundwater to the Grayson service area.

The City's service area relies on groundwater pumped from three of the nine subbasins within the San Joaquin Valley Groundwater Basin. On average, groundwater levels in the Modesto Subbasin declined nearly 15 feet between 1970 and 2000. However, since augmenting the City's groundwater supply with treated surface water from the MRWTP beginning in 1995, the City has observed that groundwater levels have started to rise, particularly in the Modesto Subbasin, as a result of reduced groundwater pumping. From 1996 to 2000, groundwater levels in the Modesto Subbasin rose approximately five feet. Water levels in the Turlock Subbasin, similarly, rebounded about eight feet from 1994 to 2000, bringing them to approximately seven feet below the 1970 level. Water levels in the Delta-Mendota Subbasin increased by an average of 2.2 feet from 1970 through 2000. The observed rise in groundwater levels in each subbasin indicates that current pumping volumes are below the calculated sustainable or "safe yield" thresholds established in local groundwater management plans. For example, the ESJGSP defines sustainable yield as the maximum quantity of water that can be withdrawn annually without causing undesirable results. The increase in groundwater elevations suggests that current extractions are operating within those sustainable limits, and may be allowing for some degree of aquifer recovery.

MODESTO REGIONAL WATER TREATMENT PLANT

The original Phase One MRWTP is a 30 mgd conventional treatment facility owned and operated by MID, which provides flocculation, sedimentation, and filtration, along with ozonation for primary disinfection. Treated surface water from the MRWTP is delivered to the City via MID's terminal reservoir facilities (a booster pump station and two fiveMG storage tanks located on the east side of the City) through a series of turnouts that have the ability to control water supply from the MID transmission mains at various points within the City's water distribution system. Phase One of the MRWTP has a maximum functional capacity of 42.5 mgd that helps meet the maximum day and peak hour demands and has been permitted by the State to produce up to 45 mgd.

In October 2005, MID and the City approved the ARTDA, which set forth the MRWTP Phase Two Expansion project that would allow MID to deliver up to 67,200 AFY of treated water to the City for municipal use. The MRWTP Phase Two Expansion project included the construction of a new parallel treatment process consisting of low-pressure membranes, ozone disinfection system, a dissolved air flotation thickener and a new Supervisory Control and Data Acquisition (SCADA) system. Substantial completion of the MRWTP Phase Two Expansion project was reached in October 2015, and the project was accepted as complete by the MID Board of Directors in May 2016. The supply available from the MRWTP Phase Two Expansion project is projected to increase along with demand within both the City's contiguous service area and MID's treated water "place of use." Any and all treated surface water to be provided shall be in accordance with the ARTDA. The total treatment capacity of the MRWTP Phase Two Expansion project is 30 mgd.

The total capacity available at the MRWTP with the completion of the MRWTP Phase Two Expansion project is 60 mgd with a maximum annual supply of up to 67,200 AFY.

PURCHASED OR IMPORTED WATER

The treated surface water supply that the City purchases from MID is described below. MID does not purchase wholesale water supplies, and a discussion of MID's water supply is provided above. Historically, annual treated surface water deliveries to the City have been relatively consistent, with groundwater pumping varying as needed to meet water demands. However, during the most recent drought, MID reduced surface water deliveries to both its agricultural customers and to the City.

RECYCLED WATER

The City does not currently operate a recycled water system. Secondary treated effluent is either used to irrigate City-owned ranch lands or stored in on-site ponds. The City delivers tertiary treated recycled water to DPWD as part of the NVRRWP. MID also does not operate a recycled water system. In the future, the City and MID do not have plans to develop recycled water systems within their respective water service boundaries. The program provides water to CVPIA wildlife refuges south of the Sacramento-San Joaquin River Delta.

Water Reliability

This section evaluates the City and MID's water supply reliability for normal, single dry, and five consecutive dry years during a 20-year projection. The City's normal water year supplies include:

- MRWTP Phase One supply of 33,600 AFY;
- MRWTP Phase Two Expansion supply, assumed to be 5,600 AFY in 2025 and increasing linearly, as additional development occurs within the City's contiguous water service area up to an additional total supply of 33,600 AFY in 2050; and
- Groundwater pumping from City's local groundwater basins (up to 51,500 AFY) is assumed to provide 100 percent of the City's remaining water demand.

The City's normal water year demands have been projected based on remaining vacant land assumed to be developed by buildout in the City's water service area. Table 3.14-9 shows that in normal water years, the City's supplies are adequate to meet projected demands.

TABLE 3.14-9: NORMAL YEAR SUPPLY AND DEMAND COMPARISON, AFY (RETAIL)

	2025	*2030*	*2035*	*2040*	*2045*
Supply totals	63,666	68,289	72,911	77,533	82,156
Demand totals	63,666	68,289	72,911	77,533	82,156
Difference	0	0	0	0	0

SOURCE: CITY OF MODESTO JOINT UWMP, 2020.

MID's total urban supply to meet expected City demands is assumed to be approximately 39,200 AFY in 2025 and is planned to increase (up to 67,200 AFY in 2050) along with growth in the City's contiguous water service area. Any increase in supply will need to conform to requirements of the ARTDA. The City's water demand to be met by MID supplies is projected to match MID's available supply, because the City plans to maximize the use of treated surface water supply. Table 3.14-10 shows that in normal water years, MID's supply is adequate to meet projected demands.

TABLE 3.14-10: NORMAL YEAR SUPPLY AND DEMAND COMPARISON, AFY (WHOLESALE)

	2025	*2030*	*2035*	*2040*	*2045*
Supply totals	39,200	44,800	50,400	56,000	61,600
Demand totals	39,200	44,800	50,400	56,000	61,600
Difference	0	0	0	0	0

SOURCE: CITY OF MODESTO JOINT UWMP, 2020.

The City's multiple dry year supplies include:

- Projected base purchased surface water supplies from MRWTP Phase One and the MRWTP Phase Two Expansion (with a 12.4 percent reduction from normal year MID supplies during the first dry year and an additional 12.4 percent reduction in each successive dry year); and
- Groundwater pumping from City's local groundwater basins (up to 51,500 AFY).

As shown in Table 3.14-11, during multiple dry years the City's supplies are adequate to meet projected demands with water conservation. It is assumed that water conservation efforts can reduce the City's "multiple dry year" demands as needed to match available supplies. As discussed above, the City significantly reduced water demand during 2014 and 2015 and can implement similar water conservation measures to respond to future water supply shortages.

TABLE 3.14-11: MULTIPLE DRY YEARS SUPPLY AND DEMAND COMPARISON, AFY (RETAIL)

		2025	*2030*	*2035*	*2040*	*2045*
First year	Supply totals	63,666	68,289	72,911	77,533	82,156
	Demand totals	63,666	68,289	72,911	77,533	82,156
	Difference	0	0	0	0	0
Second year	Supply totals	64,591	69,213	73,836	78,458	83,080
	Demand totals	64,591	69,213	73,836	78,458	83,080
	Difference	0	0	0	0	0
Third year	Supply totals	65,515	70,138	74,760	79,382	84,005
	Demand totals	65,515	70,138	74,760	79,382	84,005
	Difference	0	0	0	0	0
Fourth year	Supply totals	66,440	71,062	75,685	80,307	84,310
	Demand totals	66,440	71,062	75,685	80,307	84,310
	Difference	0	0	0	0	0
Fifth year	Supply totals	67,364	70,281	72,414	74,548	76,681
	Demand totals	67,364	70,281	72,414	74,548	76,681
	Difference	0	0	0	0	0

SOURCE: CITY OF MODESTO JOINT UWMP, 2020.

NOTES: VOLUMES ARE IN AF. PROJECTED DEMAND BASED ON THE 2017 WATER MASTER PLAN (REDUCED BY 15 PERCENT TO BETTER ALIGN WITH RECENT ACTUAL DEMANDS). FOR PLANNING PURPOSES, A CONSERVATIVE SUPPLY CONDITION ASSUMING A 12.4, 24.8, 37.1, 49.5, AND 61.9 PERCENT REDUCTION IN MID TREATED WATER SUPPLY DURING CONSECUTIVE DRY YEARS IS USED HERE. AVAILABLE GROUNDWATER SUPPLY ASSUMED TO BE 51,500 AFY. DEMAND REDUCTIONS BETWEEN ONE AND 11 PERCENT WERE REQUIRED TO MATCH AVAILABLE SUPPLIES DURING THE FOURTH AND FIFTH YEARS.

During multiple dry years, the MID base urban supply is projected to be reduced by approximately 12.4 percent during the first year, with an additional 12.4 percent reduction in successive years (up to a total reduction of 61.9 percent in the fifth consecutive dry year). If available, the difference between dry year base supply and normal year supply will be available as an allocation, on an

optional basis, at additional cost to the retail supplier (i.e., the City). For planning purposes, it is conservatively assumed that this supplemental allocation is unavailable.

As shown in Table 3.14-12, during multiple dry years, MID's maximum available supply will be used to meet projected demands. The City's water demand to be met by MID supplies is projected to match MID's available supply, because the City plans to maximize the use of treated surface water supply.

TABLE 3.14-12: MULTIPLE DRY YEARS SUPPLY AND DEMAND COMPARISON, AFY (WHOLESALE)

		2025	*2030*	*2035*	*2040*	*2045*
First year	Supply totals	34,347	39,253	44,160	49,067	53,973
	Demand totals	34,347	39,253	44,160	49,067	53,973
	Difference	0	0	0	0	0
Second year	Supply totals	30,321	34,534	38,748	42,961	47,174
	Demand totals	30,321	34,534	38,748	42,961	47,174
	Difference	0	0	0	0	0
Third year	Supply totals	26,023	29,543	33,063	36,583	40,103
	Demand totals	26,023	29,543	33,063	36,583	40,103
	Difference	0	0	0	0	0
Fourth year	Supply totals	21,503	24,330	27,156	29,983	32,810
	Demand totals	21,503	24,330	27,156	29,983	32,810
	Difference	0	0	0	0	0
Fifth year	Supply totals	16,648	18,781	20,914	23,048	25,181
	Demand totals	16,648	18,781	20,914	23,048	25,181
	Difference	0	0	0	0	0

SOURCE: CITY OF MODESTO JOINT UWMP, 2020.

NOTES: VOLUMES ARE IN AF. DURING DRY YEARS, THE CITY MAY HAVE THE OPPORTUNITY TO PURCHASE ADDITIONAL WATER FROM MID (AT A HIGHER RATE) OR TO EXCHANGE GROUNDWATER FOR AGRICULTURAL USE FOR TREATED SURFACE WATER FROM MID. FOR PLANNING PURPOSES, IT IS CONSERVATIVELY ASSUMED THAT SUPPLEMENTAL PURCHASE AND EXCHANGE OPTIONS ARE UNAVAILABLE AND THAT MULTIPLE DRY YEAR REDUCTIONS ARE USED (YEAR 1 = 12.4%, YEAR 2 = 24.8%, YEAR 3 = 37.1%, YEAR 4 = 49.5%, AND YEAR 5 = 61.9%).

It is anticipated that the City can reduce water demand during multiple dry years by up to 11 percent compared to normal year levels beginning in 2030, aligning demand with available supply. As demonstrated in 2014 and 2015, the City has a proven ability to significantly reduce water use through conservation measures. Similar strategies would be implemented in the future to effectively respond to water supply shortages.

REGULATORY SETTING

Safe Drinking Water Act

The federal Safe Drinking Water Act, as passed in 1947 and amended in 1986 and 1996, is the primary law regulating drinking water quality and is implemented by the United States Environmental Protection Agency (US EPA). The Safe Drinking Water Act authorizes the US EPA to set national health-based standards for drinking water and requires actions to protect drinking water and its sources. Additionally, it provides for treatment, monitoring, sampling, analytical methods, reporting, and public information requirements. Implementation of the Safe Drinking

Water Act, in California, is under the jurisdiction of the California Department of Public Health (CDPH), Division of Drinking Water and Environmental Management. Drinking water regulations are set forth in the California Code of Regulations (CCR), Titles 7 and 22.

Water Conservation Projects Act

California's requirements for water conservation are codified in the Water Conservation Projects Act of 1985 (Water Code Sections 11950 – 11954). Consistent with California Water Code Sections 11950 – 11954, the City has implemented various water conservation efforts, as well as a Water Shortage Contingency Plan that identifies six water shortage stages, corresponding demand reduction actions, and response measures to address both drought-related and catastrophic interruptions of water supply. The WSCP also describes the City's monitoring and enforcement mechanisms, public communication strategies, and procedures for annual assessment of water supply and demand. The 2020 UWMP was adopted by the Modesto City Council on June 22, 2021, and submitted to the California Department of Water Resources in compliance with the Urban Water Management Planning Act. The City continues to implement conservation programs, water use efficiency measures, and emergency preparedness efforts in alignment with the adopted WSCP.

California Water Code

Water Code section 10910 states:

> *10910(c)(2) If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f) and (g).*
>
> *10910(d)(1) The assessment required by this section shall include an identification of any existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and a description of the quantities of water received in prior years by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts.*
>
> *10910(d)(2) An identification of existing water supply entitlements, water rights, or water service contracts held by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall be demonstrated by providing information related to all of the following:*
>
> *(A) Written contracts or other proof of entitlement to an identified water supply.*
>
> *(B) Copies of a capital outlay program for financing the delivery of a water supply that has been adopted by the public water system.*

(C) Federal, state, and local permits for construction of necessary infrastructure associated with delivering the water supply.

(D) Any necessary regulatory approvals that are required in order to be able to convey or deliver the water supply.

10910(e) If no water has been received in prior years by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts, the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall also include in its water supply assessment pursuant to subdivision (c), an identification of the other public water systems or water service contract-holders that receive a water supply or have existing water supply entitlements, water rights, or water service contracts, to the same source of water as the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has identified as a source of water supply within its water supply assessments.

Additionally, Water Code section 10910 states:

10910(f) If a water supply for a proposed project includes groundwater, the following additional information shall be included in the water supply assessment.

10910(f)(1) A review of any information contained in the urban water management plan relevant to the identified water supply for the proposed project.

10910(f)(2) A description of any groundwater basin or basins from which the proposed project will be supplied. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current bulletin of the department that characterizes the condition of the groundwater basin, and a detailed description by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), of the efforts being undertaken in the basin or basins to eliminate the long term overdraft condition.

10910(f)(3) A detailed description and analysis of the amount and location of groundwater pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), for the past five years from any groundwater basin from which the proposed project will be supplied.

The description and analysis shall be based on information that is reasonably available, including, but not limited to, historical use records.

A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), from any basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historical use records.

10910(f)(4) An analysis of the sufficiency of the groundwater from the basin or basins from which the proposed project will be supplied to meet the projected water demand associated with the proposed project.

A water assessment shall not be required to include the information required by this paragraph if the public water system determines, as part of the review required by paragraph (1), that the sufficiency of groundwater necessary to meet the initial and projected water demand associated with the project was addressed in the description and analysis required by paragraph (4) of subdivision (b) of Section 10631.

Senate Bill (SB) 610 (Stats. 2001, ch. 643)

Senate Bill (SB) 610 was adopted in 2001 and reflects the growing awareness of the need to incorporate water supply and demand analysis at the earliest possible stage in the land use planning process. SB 610 amended the statutes of the Urban Water Management Planning Act, as well as the California Water Code Section 10910 et seq. The foundation document for compliance with SB 610 is the UWMP, which provides an important source of information for cities and counties as they update their general plans. Likewise, planning documents, such as general plans and specific plans, form the basis for the demand information contained in an UWMP, as well as a Water Supply Assessment (WSA) required under SB 610.

Water Code Section 10910 (c)(4) states "If the city or county is required to comply with this part pursuant to subdivision (b), the water assessment for the project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the project during normal, single dry and multiple dry water years during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses, including agricultural and manufacturing uses."

Water supply planning under SB 610 requires reviewing and identifying adequate available water supplies necessary to meet the demand generated by a project, as well as the cumulative demand for the general region over the next 20 years, under a broad range of water conditions. This information is typically found in the current UWMP for a project area. SB 610 requires the identification of the public water supplier for a project.

In addition, SB 610 requires the preparation of a WSA if a project meets the definition of a "Project" under Water Code Section 10912 (a). The code defines a "Project" as meeting any of the following criteria:

- A proposed residential development of more than 500 dwelling units;
- A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space;
- A commercial building employing more than 1,000 persons or having more than 250,000 square feet of floor space;
- A hotel or motel with more than 500 rooms;
- A proposed industrial, manufacturing, or processing plant, or industrial park, planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area;
- A mixed-use project that includes one or more of these elements; or
- A project creating the equivalent demand of 500 residential units.

Alternately, if a public water system has less than 5,000 service connections, the definition of a "Project" includes any proposed residential, business, commercial, hotel or motel, or industrial development that would account for an increase of 10 percent or more in the number of service connections for the public water system.

Based on the following assumptions, SB 610 applies to the proposed Project:

1. The proposed Project is subject to CEQA and an EIR is required.
2. The proposed Project, having more than 650,000 square feet of floor area, meets the definition of a "Project" as specified in Water Code section 10912(a) paragraph (5) as defined for industrial development.

The proposed Project has not been the subject of a previously adopted WSA and has not been included in an adopted WSA for a larger project. Thus, a WSA, as required by these criteria under SB 610, has been prepared for the Project. The WSA is included in Appendix F of this EIR.

Modesto Urban Area General Plan

The UAGP provides the following policies related to water supplies:

POLICIES

- **WS-11**: Each Specific Plan should be accompanied by a long-range financing strategy that provides reasonable estimates of the costs of on- and off-site infrastructure to support the proposed development pattern. The strategy should generally address public facility funding, including schools, for any development project that serves to implement the subject Specific Plan. If new public facilities are required that will also serve the broader community, the Specific Plan should include options for broad-based funding mechanisms. Each Specific Plan should address the need to provide water, wastewater and storm

drainage infrastructure, in the context of the required Facilities Master Plan and Infrastructure Master Plan (prepared at developer's expense). (UAGP Policy III.I.4)

- **WS-12**: Implement the demand management and conservation measures identified in the City's adopted Urban Water Management Plan (UWMP). During review of development proposals, it requires that all developments reduce their potable water demand. Refer to the UWMP for potential techniques to reduce potable water demand. (UAGP Policy VI.A.1)

- **WS-13**: Require water infrastructure master plans for public infrastructure and/or when otherwise pertinent to provision of water service at adopted service levels for the specific plan areas or other projects depending on site issues and location. (UAGP Policy VI.A.2)

- **WS-14:** All new connections to the public water system are to have meters installed. In addition, on or before January 1, 2025, all existing municipal and industrial service connections are to have water meters installed. (UAGP Policy VI.A.3)

- **WS-15**: Any local public or private entity that produces recycled water, and determines that within ten (10) years it will provide recycled water within the boundaries of the City of Modesto, must notify the City of that fact. Within 180 days of receipt of the notice, the City of Modesto should adopt and enforce a specified recycled water ordinance, which is to comply with the City of Modesto's UWMP. (UAGP Policy VI.A.4)

- **WS-16:** For properties outside the City limits and sewer district boundaries, and for properties outside the City limits, but inside of, contiguous to, and/or near the former service area of Del Este Water Company, the extension of water service may be approved by the City Manager per City Council Policy 5.001, as amended. (UAGP Policy VI.A.5) WS-17: Prepare and adopt an Urban Water Management Plan every five (5) years in accordance with State law (Water Code). (UAGP Policy VI.B.1).

- **WS-18:** Prepare and maintain a Water Master Plan. Update the Water master plan, as needed, to incorporate changes in growth projections, water supplies, and demands. (UAGP Policy VI.B.2)

- **WS-19**: Encourage the optimum beneficial use of water resources within the City. The City shall strive to maintain an adequate supply of high-quality water for urban uses. At a minimum, potable water supplies delivered to water customers shall conform to the primary maximum contaminant levels as defined in State law. (UAGP Policy VI.B.3)

- **WS-20:** Strive to stabilize groundwater levels and minimize groundwater overdraft, as part of a conjunctive groundwater / surface water management program. View regional water resources, such as groundwater, surface water, and recycled wastewater, as an integrated hydrologic system when developing water management programs. (UAGP Policy VI.B.4)

- **WS-21:** Construct, operate, maintain, and replace water infrastructure facilities in a manner that will provide the best possible service to the public. Ensure that infrastructure is installed before or concurrently with development. Take a comprehensive approach to financing,

using a blend of special taxes, benefit assessments, and other methods to ensure that infrastructure installation occurs in a timely manner. (UAGP Policy VI.B.5)

- **WS-22:** Continue to establish guidelines, policies, and programs to implement water conservation to the maximum extent feasible. Funding for large conservation rebate or exchange programs should be maintained and enhanced. Strive to maximize the utilization of water resources when developing and implementing the City's Economic Development Strategy. (UAGP Policy VI.B.6)

- **WS-23**: Implement Local Basin Management Objectives discussed in the Integrated Regional Groundwater Management Plan, or the management objectives in the most recent groundwater sustainability plan, which relate to the specific approaches to water management goals including groundwater supply, groundwater quality, and protection against inelastic land surface subsidence. (UAGP Policy VI.C.1) WS-24: Develop and implement a water recycling program to reduce the demands for new water supplies in the City and subbasins. (UAGP Policy VI.C.2).

City Of Modesto Water Master Plan

The objective of the Water Master Plan is to clearly define the City's long-term water supply and infrastructure needs, and to develop a WMP that will provide the flexibility and system reliability that the City needs to accommodate changing future conditions. The development of this WMP included working closely with City staff to lay out the likely future scenarios for expansion and upgrading of the City's water system, and to develop tools that will allow City staff to analyze future options.

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed Project may have a significant impact on the environment associated with Utilities if it would:

1. Require or result in the construction of new water treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; or
2. Have insufficient water supplies available to serve the Project from existing entitlements and resources, or if new or expanded entitlements are needed.

IMPACTS AND MITIGATION MEASURES

Impact 3.14-4: The proposed Project would not require construction of new water treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects (Less than Significant)

The provision of public services and the construction of onsite infrastructure improvements will be required to accommodate the development of the proposed Project. Water distribution will be by

an underground distribution system to be installed as per the City of Modesto standards and specifications.

The proposed Project would require extension of offsite water conveyance infrastructure to the Project site for potable water and irrigation water. All offsite water utility improvements will be in or adjacent to existing roadways along the perimeter of the Project site, thereby limiting any potential impact to areas that were not already disturbed. Water supply will be provided by the City of Modesto, which includes surface and ground water supplies. Water distribution will be by an underground distribution system installed per the City of Modesto standards and specifications. Underground potable water pipelines would be extended to the Project site.

The project site is located adjacent to and outside of the contiguous service area for domestic water; however, the City of Modesto's Water Master Plan identifies a 12-inch waterline to extend from Kiernan Avenue to Pirrone Road via Dale Road. The existing water line and anticipated point of connection is located in Dale Road, just south of Kiernan Avenue. Based on standard City of Modesto infrastructure requirements and guidance in the City's Urban Area General Plan, it is expected that the City of Modesto will condition the project to install the extension of the 12 inch water line along the frontage of the property, consistent with General Plan Policy VI.F.1, which requires that development projects provide or fund improvements necessary to serve the project site. Because this improvement is expected to be required prior to approval of the final map, the water line extension and associated utility work are considered part of the proposed Project and are evaluated in this EIR. The City will determine the final utility improvement requirements during the development review and permitting process. Additionally, the project is expected to be conditioned to loop the water system, although there are not public access ways (roads/easements) to comply with the condition. As such, the Project may be required to dedicate a public utility easement to facilitate the construction and maintenance of a looped water system, consistent with City of Modesto Design Standards and Improvement Requirements. Construction of the water-line extension, looped connection, and any new utility easement has the potential to result in secondary impacts, including temporary construction-related traffic control, ground disturbance, increased construction emissions, short-term noise, biological resource disturbance within rights-of-way, and the potential to encounter subsurface cultural resources. These secondary impacts are addressed in the applicable topical sections of this EIR. The need for and location of any such easement would be subject to review and approval by the City during the improvement plan or building permit process. Potential alternative locations for the looped connection are limited to areas within or directly adjacent to existing public rights-of-way or areas that can feasibly be dedicated as public utility easements. Any alternative alignment must meet City performance standards for hydraulic capacity, system redundancy, pressure requirements, and separation from other utilities. If a new easement cannot be secured, alternative design solutions—such as re-routing utilities within existing public rights-of-way or modifying water infrastructure plans—may be required. Although the potential need for a utility easement is considered an indirect impact, it is not anticipated to result in significant physical environmental effects because any required improvements would occur within or adjacent to previously disturbed urban areas and would remain subject to standard City review, design standards, and mitigation procedures. While the potential need for a utility easement is considered an indirect impact, it is not anticipated to result in significant physical environmental

effects, as any required improvements would occur within or adjacent to previously disturbed urban areas and be subject to standard City review and mitigation procedures.

The proposed Project would not require the construction of new water treatment facilities or expansion of existing water treatment facilities for water service. While the Project would require construction of new water collection and distribution facilities, these improvements are not anticipated to result in significant environmental effects. Information regarding existing public utility easements within or adjacent will be reviewed during project-level design to ensure compliance. Prior to any ground disturbance, a review of utility maps and coordination with the City of Modesto Public Works Department and applicable utility providers will be conducted to identify and avoid conflicts with existing easements or infrastructure. The environmental impacts of the new facilities are analyzed as part of the Project throughout this EIR. Implementation of the proposed Project would have a ***less than significant*** impact relative to this topic.

Impact 3.14-5: The proposed Project would not have insufficient water supplies available to serve the Project from existing entitlements and resources (Less than Significant)

PROJECT WATER DEMAND

The Proposed Project will result in the construction of up to 2,503,230 square feet (maximum development scenario) of warehouse, distribution, and manufacturing space. In addition, a small two- to three-acre retail site is proposed at the corner of Dale Road and Kiernan Avenue (State Route 219) to provide retail service to the Project.

To determine the projected water demand for the proposed Project, the water use factors from the City's 2017 Water Master Plan[1] were used with a 15 percent reduction to account for more recent water use trends in the City, consistent with the water demands included in the Joint 2020 UWMP. The total projected water demand for the proposed Project is 377 AFY as shown in Table 3.14-13. All the water demands from the proposed Project are anticipated to be served by the City's potable water distribution system. No recycled water demand is anticipated for the proposed Project.

TABLE 3.14-13: TOTAL PROJECTED WATER DEMAND

LAND USE TYPE	*GROSS AREA*	*WATER USE FACTOR (TONS/DAY)*	*NON-REVENUE WATER*	*PROJECTED WATER DEMAND*
Salida Community Plan	145 acres	2.34 AFY/acre	10%	377 AFY

SOURCE: WEST YOST, 2025.

The proposed Project's water demands were not included in the future water demand projections presented in the Joint 2020 UWMP because the Project site is located outside of the City's current SOI. However, upon annexation into the City, the Project would be served by the City's water system and subject to the same water supply reliability considerations identified in the UWMP. As mentioned prior, the City's projected water demands in single dry years and multiple dry years assume a modest reduction in water demands as needed to match available water supplies in

[1] City of Modesto, 2017. Water Master Plan, dated September 2017.

accordance with the City's Water Shortage Contingency Plan. Specifically, in normal years, water supplies are projected to meet demands through 2045 without the need for additional conservation or demand reduction measures. In single dry years, demand reductions of up to nine percent may be necessary beginning in 2035. In multiple dry years, demand reductions of up to 11 percent may be required starting in 2030. Consistent with the Joint 2020 UWMP, the potential supply deficit and percent shortfall of demand are shown as zero based on the City's demonstrated ability to achieve the required demand reductions. If approved, the proposed Project would be subject to the same conservation measures and water use restrictions in dry years as all other City water customers. Pursuant to Water Code Section 10910(c)(4), and based on the technical analyses described in this WSA, the total projected water supplies determined to be available for the proposed Project during normal, single dry, and multiple dry years during a 20-year projection will meet the projected water demand associated with the proposed Project, in addition to existing and planned future uses.

The proposed Project, if approved by the City, is capable of being served by the City from the City's existing and future portfolio of water supplies. The water supply for the proposed Project will have the same water supply reliability and water quality as the water supply available to each of the City's other existing and future water customers.

CONCLUSION

The WSA completed for the proposed Project demonstrates that the City's existing and additional potable water supplies are sufficient to meet the City's existing and projected future potable water demands to the year 2045 under all hydrologic conditions.

As identified above, the proposed Project would not result in insufficient water supplies available to serve the project from existing entitlements and resources. Therefore, the proposed Project would result in a ***less than significant*** impact to water supplies.

CUMULATIVE IMPACTS

The cumulative setting includes all areas covered in the service areas of the City's water supply services.

Impact 3.14-6: Cumulative Impacts Related to Water Service. (Less than Significant)

Cumulative impacts related to construction of new water treatment facilities or expansion of existing facilities at the MRWTP could occur if MID's water demands are higher than what was projected in the UWMP and trigger the need for additional water treatment facilities. This would have a significant cumulative impact.

However, the expanded MRWTP, which has capacity to treat 60 mgd, would be able to accommodate the City's projected water supply demands through 2040. The City also has a Water Shortage Contingency Plan that identifies necessary steps and conservation measures to take in the event of a water shortage. As such, the proposed Project's contribution to cumulative impacts regarding construction of new water treatment facilities would not be considerable.

As described in the UWMP, the City has sufficient water supply to meet demand in normal, single dry, and multiple dry water years through 2045 with water conservation. Because the Project site is not located within the City's current Sphere of Influence, the Project was not included in the UWMP demand projections; however, upon annexation, the Project would be served by the City's water system and subject to the same supply reliability and conservation measures identified in the UWMP. In addition, the City has a long-term water agreement with MID, which has sufficient entitlements to serve the estimated growth considered in the UAGP. Therefore, adequate water supplies are available to meet the demands of the proposed Project in combination with the cumulative growth anticipated under the UAGP. As a result, the Project would not make a considerable contribution to a cumulative water supply impact, and this impact would be less than significant.

Additionally, future development in the City of Modesto would be required to connect to existing water distribution infrastructure in the vicinity of each site, pay the applicable water system connection fees, and pay the applicable water usage rates. Future projects may be required to implement site specific and limited off-site improvements to the water distribution system to connect new project sites to the City's existing water infrastructure network.

Given that projected water demands associated with the buildout of the City of Modesto would not exceed the projected water supplies, and that the proposed General Plan includes a comprehensive set of goals, policies, and actions to ensure an adequate and reliable source of clean potable water, this cumulative impact is considered ***less than significant***.

3.14.3 STORM WATER

ENVIRONMENTAL SETTING

This section describes how development associated with the City of Modesto UAGP would affect demand for storm drainage. Section 3.9 (Hydrology and Water Quality) includes an expanded analysis of water quality, flooding, and other stormwater related issues.

Existing City Facilities

Storm water drainage systems are designed primarily to convey runoff that occurs during storm events. Impervious surfaces collect and concentrate stormwater discharges to various drainage systems. To a lesser extent, the drainage systems also help to dispose of excess water generated from urban uses such as street sweeping, residential watering, and other activities that generate runoff during drier months of the year. Proper control of stormwater runoff is important to reduce adverse effects from increased flooding, erosion, and transport of pollutants. The City is currently requiring developers to implement the concepts of Low Impact Development (LID) for all new development and redevelopment projects, as established in the City's Guidance Manual for New Development Stormwater Quality Control Measures. LID uses a variety of mechanisms to retain as much stormwater runoff on each individual site as possible. Runoff is infiltrated through the use of swales, vegetation, pervious pavement, french drains, rockwells, and other methods.

The City's storm drainage system includes approximately 77 miles of storm drain lines and 25 storm pump stations. Stormwater discharges from the City drain to 24 drainage basins and approximately 12 major outfalls (greater than 24 inches in diameter) to receiving waters (Tuolumne River or Dry Creek), MID laterals/drains, or rockwells. According to the City's Storm Drainage Master Plan (2008), surface water discharges generally occur in the older parts of Modesto or those areas immediately adjacent to the Tuolumne River, Dry Creek, or irrigation canals. Approximately 40 percent of stormwater gets discharged to detention/retention basins, 20 percent of stormwater gets directed to receiving waters, 10 percent is directed to MID laterals/drains, and 30 percent goes to rockwells.

Rockwells are designed to collect surface stormwater runoff and allow it to infiltrate to the groundwater. Rockwells are rock-lined holes that are typically six feet in diameter and up to 50 feet deep. There are approximately 10,500 rockwells in Modesto. The rockwells are generally unable to accommodate the amount of drainage generated in the existing developed areas. In addition, the cost of maintenance for rockwells is high and the US EPA regulations for rockwells are becoming more stringent. Consequently, the City is generally requiring gravity stormwater systems to be installed in the existing urban areas. The City of Modesto's Guidance Manual for Development Stormwater Quality Control Measures includes guidance for how development projects can implement infiltration wells for the purpose of stormwater runoff treatment and retention. These areas must be served by positive gravity stormwater drainage systems.

Many of the City's storm drainage pipelines are interconnected with sanitary sewer lines. After storm events, these cross-connections typically increase substantially with peak flows. As part of the City's Wastewater Master Plan, the City plans to decrease these peak flows in the sanitary sewer

system by disconnecting up to 60 of these interconnections. Some improvements may include installing new storm drainage pipes, detention basins, and various underground storage and percolation methods.

The City monitoring and reporting program for the NPDES Municipal Separate Storm Sewer Systems (MS4) permit is issued pursuant to Water Code Section 13267. To comply with the City's MS4 permit (NPDES No. CAS083526, Order No. R5-2015-0025) and monitoring and reporting program, the City is responsible for assessing the point-source runoff from Modesto. The City's drainage facilities are unique since only one-third of the City drains into surface water while the remaining drainage goes to rock wells. The MS4 permit and monitoring and reporting program apply to both water quality and drainage for the City. As part of the monitoring program, the City is required to collect water quality data from representative outfalls and estimates of annual pollutant loads of cumulative discharges to waters of the U.S. from identified municipal outfalls. Besides including a comprehensive assessment of water quality data, the Comprehensive Monitoring Report also identifies BMPs contained in the drainage facilities that help reduce pollutant loading.

The City has been required to do a Peak Discharge Impact Study (PDIS) by the MS4 Permit. The purpose of the PDIS is to determine the extent of erosion of the natural streams from the City stormwater runoff. The City has developed a work plan to conduct a PDIS to determine the extent of erosion of natural stream channels and banks caused by urban runoff on both the Dry Creek and Tuolumne Rivers. In previous studies, the City has determined erosion was minimal based on aerial photos of Dry Creek. This work plan also evaluates peak flow control and determines numeric criteria to prevent or minimize erosion of natural stream channels and banks caused by urban runoff.

Section V-10, *Flooding and Water Quality*, of the City of Modesto Urban Area General Plan Master EIR provides a discussion of US EPA policies and the CVRWQCB administration of the NPDES permitting program which governs the City's pollution control and management programs for stormwater discharges throughout the urban area. Section V-10 also describes the US EPA's Underground Injection Control (UIC) program, which governs stormwater quality management policies for the numerous rockwells located throughout the City of Modesto. In 2012, the City prepared a Rock Well Assessment Plan, which was designed to evaluate the effectiveness of the rockwells in removing pollutants and protecting groundwater quality.

Plans and specifications for new stormwater facilities within Modesto are reviewed and approved by the City's Community and Economic Development Department. Development of storm drainage facilities are required to be installed in compliance with BMPs outlined in the City's Comprehensive Stormwater Management Program (CSMP), Guidance Manual for New Development Stormwater Quality Control Measures and as outlined in the City's Design Standards for Dual Use Flood Control/Recreation Facilities.

REGULATORY SETTING

Clean Water Act

The CWA regulates the water quality of all discharges into waters of the United States, including wetlands, perennial and intermittent stream channels. Section 401, CWA Title 33, Section 1341 sets forth water quality certification requirements for "any applicant applying for a federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters." Section 404, Title 33, Section 1344 of the CWA in part authorizes the U.S. Army Corps of Engineers to:

- Set requirements and standards pertaining to such discharges: subparagraph (e); Issue permits "for the discharge of dredged or fill material into the navigable waters at specified disposal sites": subparagraph (a);
- Specify the disposal sites for such permits: subparagraph (b);
- Deny or restrict the use of specified disposal sites if "the discharge of such materials into such area will have an unacceptable adverse effect on municipal water supplies and fishery areas": subparagraph (c);
- Specify type of and conditions for non-prohibited discharges: subparagraph (f);
- Provide for individual State or interstate compact administration of general permit programs: subparagraphs (g), (h), and (j);
- Withdraw approval of such State or interstate permit programs: subparagraph (i);
- Ensure public availability of permits and permit applications: subparagraph (o);
- Exempt certain Federal or State projects from regulation under this Section: subparagraph (r); and,
- Determine conditions and penalties for violation of permit conditions or limitations: subparagraph (s).
- Section 401 certification is required prior to final issuance of Section 404 permits from the U.S. Army Corps of Engineers.

The SWRCB and RWQCBs enforce California water quality regulations, which are equivalent to or more stringent than federal standards. In the Modesto area, the CVRWQCB is responsible for establishing and enforcing water quality standards and objectives that protect the beneficial uses of surface water and groundwater resources, including the Tuolumne River, San Joaquin River, and other water bodies within the region. The CVRWQCB oversees both point and non-point source pollution control in the Modesto Planning Area. Water quality objectives for these water bodies are detailed in the Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan), which serves as the regional regulatory framework for maintaining and improving water quality.

National Pollutant Discharge Elimination System (NPDES)

NPDES permits are required for discharges of pollutants to navigable waters of the United States, which includes any discharge to surface waters, including lakes, rivers, streams, bays, the ocean, dry stream beds, wetlands, and storm sewers that are tributary to any surface water body. NPDES

permits are issued under the federal CWA, Title IV, Permits and Licenses, Section 402 (33 USC 466 et seq.)

The RWQCB issues these permits in lieu of direct issuance by the EPA, subject to review and approval by the Environmental Protection Agency Regional Administrator. The terms of these NPDES permits implement pertinent provisions of the federal CWA and its implementing regulations, including pre-treatment, sludge management, effluent limitations for specific industries, and anti- degradation. In general, the discharge of pollutants is to be eliminated or reduced as much as practicable so as to achieve the CWA's goal of "fishable and swimmable" navigable (surface) waters. Technically, all NPDES permits issued by the RWQCB are also Waste Discharge Requirements issued under the authority of the CWA.

These NPDES permits regulate discharges from publicly owned treatment works, industrial discharges, stormwater runoff, dewatering operations, and groundwater cleanup discharges. NPDES permits are issued for five years or less, and are therefore to be updated regularly. The rapid and dramatic population and urban growth in the Central Valley Region has caused a significant increase in NPDES permit applications for new waste discharges. To expedite the permit issuance process, the SWRCB has adopted several general NPDES permits, each of which regulates numerous discharges of similar types of wastes. The SWRCB has issued general permits for stormwater runoff from industrial and construction sites statewide. Stormwater discharges from industrial and construction activities in the Central Valley Region can be covered under these general permits, which are administered jointly by the SWRCB and RWQCB.

A new Phase II Small MS4 General Permit was adopted by the SWRCB on February 20, 2020, and became effective April 1, 2020. The Permit has numerous new components and the City is required to implement these components in stages over the five-year period of the MS4 Permit.

Federal Emergency Management Agency (FEMA)

Stanislaus County is a participant in the National Flood Insurance Program (NFIP), a Federal program administered by FEMA. Participants in the NFIP must satisfy certain mandated floodplain management criteria. The National Flood Insurance Act of 1968 has adopted as a desired level of protection, an expectation that developments should be protected from floodwater damage of the Intermediate Regional Flood, which is defined as a flood that has an average frequency of occurrence on the order of once in 100 years, although such a flood may occur in any given year. Communities are occasionally audited by the Department of Water Resources to insure the proper implementation of FEMA floodplain management regulations.

Department of Water Resources

DWR's major responsibilities include preparing and updating the California Water Plan to guide development and management of the State's water resources, planning, designing, constructing, operating, and maintaining the State Water Resources Development System, protecting and restoring the Sacramento-San Joaquin Delta, regulating dams, providing flood protection, assisting in emergency management to safeguard life and property, educating the public, and serving local water needs by providing technical assistance. In addition, the DWR cooperates with local agencies

on water resources investigations; supports watershed and river restoration programs; encourages water conservation; explores conjunctive use of ground and surface water; facilitates voluntary water transfers; and, when needed, operates a State drought water bank.

California Water Code

California's primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Division 7 of the California Water Code) (Porter-Cologne Act). The Porter-Cologne Act grants the SWRCB and each of the RWQCBs power to protect water quality, and is the primary vehicle for implementation of California's responsibilities under the federal CWA. The Porter-Cologne Act grants the SWRCB and the RWQCBs authority and responsibility to adopt plans and policies, to regulate discharges to surface and groundwater, to regulate waste disposal sites and to require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substance, sewage, or oil or petroleum product.

Each RWQCB must formulate and adopt a water quality control plan for its region the regional plans are to conform to the policies set forth in the Porter-Cologne Act and established by the SWRCB in its State water policy. The Porter-Cologne Act also provides that a RWQCB may include within its regional plan water discharge prohibitions applicable to particular conditions, areas, or types of waste.

California Water Code Section 13260 requires all dischargers of waste that may affect water quality in waters of the state to prepare and provide a water quality discharge report to the RWQCB. Section 13260a-c is as follows:

> (a) Each of the following persons shall file with the appropriate regional board a report of the discharge, containing the information that may be required by the regional board:
>
> > (1) A person discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the state, other than into a community sewer system.
> >
> > (2) A person who is a citizen, domiciliary, or political agency or entity of this state discharging waste, or proposing to discharge waste, outside the boundaries of the state in a manner that could affect the quality of the waters of the state within any region.
> >
> > (3) A person operating, or proposing to construct, an injection well.
>
> (b) No report of waste discharge need be filed pursuant to subdivision (a) if the requirement is waived pursuant to Section 13269.
>
> (c) Each person subject to subdivision (a) shall file with the appropriate regional board a report of waste discharge relative to any material change or proposed change in the character, location, or volume of the discharge.

Water Quality Control Plan for the Central Valley Region

The Sacramento and San Joaquin River Basin Plans includes a summary of beneficial water uses, water quality objectives needed to protect the identified beneficial uses, and implementation measures. The Basin Plan establishes water quality standards for all the ground and surface waters of the region. The term "water quality standards," as used in the federal CWA, includes both the beneficial uses of specific water bodies and the levels of quality that must be met and maintained to protect those uses. The Basin Plan includes an implementation plan describing the actions by the RWQCB and others that are necessary to achieve and maintain the water quality standards.

The RWQCB regulates waste discharges to minimize and control their effects on the quality of the region's ground and surface water. Permits are issued under a number of programs and authorities. The terms and conditions of these discharge permits are enforced through a variety of technical, administrative, and legal means. Water quality problems in the region are listed in the Basin Plan, along with the causes, where they are known. For water bodies with quality below the levels necessary to allow all the beneficial uses of the water to be met, plans for improving water quality are included. The Basin Plan reflects, incorporates, and implements applicable portions of a number of national and statewide water quality plans and policies, including the California Water Code and the CWA.

200-Year Flood Protection in Central Valley

State legislation SB 5 (Stats. 2007, ch. 364) requires 200-year (0.5 percent annual chance) flood protection to be the minimum level of protection for urban and urbanizing areas in the Central Valley. SB 5 requires that the 200-year flood protection be consistent with the urban level of flood protection criteria used or developed by the DWR. SB 5 requires all urban and urbanizing areas in the Sacramento and San Joaquin Valleys to achieve 200-year flood protection in order to approve urban development. SB 5 restricts approval of urban development after 2025 if "adequate progress" towards achieving this standard is not met. Urban and urbanizing areas protected by State-Federal project levees cannot use "adequate progress" as a condition to approve development after 2028. SB 5 prohibits a city or county within the Central Valley Flood Protection Plan area from approving a development agreement, discretionary permit or entitlement, tentative map or parcel map for any property within a flood hazard zone unless they can demonstrate any of the following:

- the project has already achieved the applicable level of flood protection;
- conditions have been imposed on the project approval that will eventually result in the applicable level of flood protection; or
- adequate progress is being made towards achievement of the applicable level of flood protection.

Adequate progress is defined as meeting all of the following:

1. The project scope, cost and schedule have been developed;
2. In any given year, at least 90 percent of the revenues scheduled for that year have been appropriated and expended consistent with the schedule;

3. Construction of critical features is progressing as indicated by the actual expenditure of budget funds;
4. The city or county has not been responsible for any significant delay in completion of the system; and
5. The above information has been provided to the DWR and the Central Valley Flood Protection Board and the local flood management agency shall annually report on the efforts to complete the project.

Modesto Urban Area General Plan

The UAGP provides the following policies related to storm drainage.

POLICIES

- **SD-2:** Prepare and adopt a Storm Drainage Master Plan to cover the entire City Sphere of Influence. (UAGP Policy VI.F.1)
- **SD-3:** Require stormwater drainage infrastructure master plans for the public infrastructure or when otherwise pertinent to provision of service at adopted service levels for projects depending on site issues and location-specific concerns. (UAGP Policy VI.F.2)
- **SD-4:** New storm drainage infrastructure may be by means of gravity storm drainage systems, as approved by the City Engineer. Such new storm drainage facilities should consider the drainage facility requirements presented in Table V-9-1 of the Final Master Environmental Impact Report, the City's current NPDES permit and the Storm Drainage Master Plan. (UAGP Policy VI.F.3)
- **SD-5:** As directed by the City Engineer, dual-use flood control / recreation facilities may be developed (dual-use facilities) as part of the storm drainage system. Dual-use facilities should be designed and constructed in accordance with the standards in the City of Modesto Design Standards for Dual Use Flood Control / Recreation Facilities manual. (UAGP Policy VI.F.4)
- **SD-6:** Minimize impervious surfaces and generally maximize infiltration of rainwater in soils, to promote groundwater recharge, where appropriate. Strive to maximize permeable areas to allow more percolation of runoff into the ground through such means as bioretention areas, green strips, planter strips, decomposed granite, porous pavers, swales, and other water permeable surfaces. Require planter strips between the street and the sidewalk within the community, wherever practical and feasible. (UAGP Policy VI.F.5)
- **SD-7:** Update the City's Standard Specifications to reflect the latest Low Impact Development strategies and encourage a reduction in storm water runoff by encouraging storm water infiltration where feasible. (UAGP Policy VI.F.6)
- **SD-8:** Meet the requirements of acceptable urban storm runoff as established by the Central Valley Regional Water Quality Control Board Basin Plan for surface discharges, and the Environmental Protection Agency for underground injection. (UAGP Policy VI.G.1)
- **SD-9:** Construct, operate, maintain, and replace storm water drainage facilities in a manner that will provide the best possible service to the public, as required by federal and state laws and regulations. In developing implementation plans, consideration shall be given to

rehabilitation of existing facilities, remediation of developed areas with inadequate levels of drainage service, and timely system expansion for future development. (UAGP Policy VI.G.2)

- **SD-10:** Construction activities shall comply with the requirements of the City's Stormwater Management Plan under its municipal NPDES stormwater permit, and the State Water Resources Control Board's General Permit for Discharges of Storm Water Associated with Construction Activity. (UAGP Policy VI.G.3)
- **SD-11:** For developments within a mapped 100-year floodplain, prepare studies that demonstrate how the development will comply with both the construction and post construction programs under the City's municipal NPDES permit. No increased erosion or release of other contaminants that would cause violations of the City's municipal NPDES permit should occur as a result of development. (UAGP Policy VI.G.4)
- **SD-12:** Ensure that new development complies with the City of Modesto's Stormwater Management Program: Guidance Manual for New Development Stormwater Quality Control Measures. (UAGP Policy VI.G.5)
- **SD-13:** Require new development to implement an appropriate selection of permanent pollution control measures in accordance with the City's implementation policies for the municipal NPDES stormwater permit. (UAGP Policy VI.G.6)
- **SD-14:** Design development projects to preserve and, where possible, create or restore areas that provide important water quality benefits, such as riparian corridors, wetlands and buffers. Minimize disturbance of natural water bodies or natural drainage systems that might result from development, including road construction. (UAGP Policy VI.G.7) SD-15: Integrate Low Impact Development principles into proposed development projects' design. Low Impact Development is a storm water management and land development strategy that promotes conservation and use of natural on-site features combined with engineered small-scale hydrologic devices. In designing development projects, minimize the amount of impervious surface in order to maximize on-site infiltration of stormwater runoff and minimize the potential for storm water runoff from the site. (UAGP Policy VI.G.8)

The following tables identify standards referenced in the UAGP that will apply to future development.

TABLE 3.14-14: REQUIREMENTS FOR DRAINAGE PLANS

ORDER	*REQUIREMENT*
A	The plan shall be based on a drainage study prepared by a qualified engineer and shall be implemented in all construction projects where the drainage study indicates a need.
B	The drainage study shall identify 100-year flood elevations before and after development, location and available capacity of any existing drainage systems, and the volume and rate of water flows created by the proposed project during a 100-year storm.
C	The study shall also provide the location and capacity of retention/detention basins and/or drainage channels to accommodate the increment in water flows and siltation created by the project.
D	The plan shall include water quality control measures to ensure that minimal contaminants get discharged to surface streams or percolated into the ground.

ORDER	*REQUIREMENT*
E	The water quality control measures shall address both construction and operation periods.
F	The plan shall be implemented as part of a proposed project prior to occupancy permit issuance and during the life of the project.
G	Fluvial erosion related to construction is controlled by a construction erosion control program that shall be filed with the City Utilities Department and kept current throughout any site development phase.
H	The erosion control program shall include BMPs as appropriate, given the specific circumstances of the site and/or project. The City shall consult Table V-9-2 in the Master EIR for examples of BMPs.
I	Sediment control basins that capture and contain eroded sediments on project sites shall incorporate design criteria listed in Table V-9-3 in the Master EIR.
J	A stormwater management program (SWMP) shall be prepared for the operation of all proposed land development projects and shall be utilized to obtain an NPDES permit and be incorporated into the Drainage Plan. The SWMP shall utilize measures selected from Table V-9-4 in the Master EIR.

NOTES: THIS TABLE DOES NOT USE THE STANDARD NOMENCLATURE FOUND ELSEWHERE IN THIS DOCUMENT IN ORDER TO BE CONSISTENT WITH THE REFERENCE CONTAINED IN THE UAGP.

The following tables identify standards referenced in the UAGP that will apply to future development.

TABLE 3.14-15: EXAMPLES OF CONSTRUCTION SITE BEST MANAGEMENT PRACTICES

ORDER	*REQUIREMENT*
A	Implement effective erosion control measures, such as minimizing long, unbroken flow paths by placing transverse gravel bag lines or installing transverse straw wattle lines across flow paths.
B	Make drainage swales broad and flat to reduce hydraulic efficiency.
C	Control offsite drainage and route it around disturbed areas, including newly graded areas.
D	Provide a system of berms along the tops of slopes, combined with properly designed swales or other conveyance measures, to prevent water from running uncontrolled down the slopes.
E	Collect the water in these berms and take it down the slopes in a non-erosive manner.
F	Provide energy dissipaters and erosion control pads at the bottom of downdrains.
G	Implement effective sediment control measures, such as directing site drainage into a sediment control basin before releasing it from the site.
H	Install permanent landscaping, as soon as practical, after the completion of grading.
I	Maintain facilities, including stormwater best management practices, in operable condition at all times.
J	Inspect facilities at the end of each workday to ensure they are ready for service.

NOTES: THIS TABLE DOES NOT USE THE STANDARD NOMENCLATURE FOUND ELSEWHERE IN THIS DOCUMENT IN ORDER TO BE CONSISTENT WITH THE REFERENCE CONTAINED IN THE UAGP.

TABLE 3.14-16: DESIGN CRITERIA FOR SEDIMENT CONTROL BASINS

ORDER	*REQUIREMENT*
A	Provide 15 cubic yards of sediment storage per acre of tributary drainage area.
B	Provide an erosion-proof spillway from the basin to a protected outlet.
C	Do not provide a drain in the basin since this would allow some sediment to escape.
D	If site conditions permit, build an oversize basin so it will not have to be cleaned out during the life of the grading project.
E	Maintain and clean out basin as necessary.
F	Inspect the basin at end of each work day to assure it is in working order.

NOTES: THIS TABLE DOES NOT USE THE STANDARD NOMENCLATURE FOUND ELSEWHERE IN THIS DOCUMENT IN ORDER TO BE CONSISTENT WITH THE REFERENCE CONTAINED IN THE UAGP.

TABLE 3.14-17: MEASURES THAT CAN BE INCORPORATED INTO A SWMP

ORDER	*REQUIREMENT*
A	Educate the public regarding the problem of contaminants in urban runoff and solutions they can utilize to reduce the number of contaminants in urban runoff.
B	Design projects to direct runoff from impervious surfaces to areas of landscaping, where feasible.
C	Promote efficient and safe housekeeping practices when handling fertilizers, pesticides, cleaning solutions, paint products, automotive products, and swimming pool chemicals. These substances should be utilized and stored according to labels and instructions and should not be disposed of in a manner that will allow them to contaminate storm flows.
D	Minimize the use of and utilize the least harmful fertilizers, pesticides, cleaning solutions, automotive and paint products where alternatives exist.
E	Hazardous materials shall be stored as follows: in the minimum amount necessary; in designated areas; utilizing secondary containment; and shall be subject to regular inspections.
F	Employees and contractors shall be trained in appropriate storage methods and procedures for spill cleanup.
G	Discourage illegal dumping by identifying elements of the drainage system with a sign prohibiting dumping and indicating the reason for the sign.
H	Coordinate with private industry to establish used oil disposal facilities for recycling of bulk used oil.
I	Project operators shall ensure that vehicle maintenance occurs in appropriate facilities and that spills are reduced, contained, and cleaned up before they contaminate urban runoff.
J	Discharge of pollutants to storm water from above ground storage tanks shall be minimized by installation of secondary containment, regular inspections, and training in spill cleanup techniques.
K	Prevent unwarranted physical connections to the storm drain system from sanitary sewer, and floor drains through regulation, inspection, testing, and education.
L	Identify and repair sewer blockages, infiltration, inflow, and wet weather overflows from sanitary sewers to the stormwater drain system.
M	Reduce the discharges of pollutants from roadway and parking lot surfaces by conducting street cleaning on a regular basis.
N	Maintain catch basins and stormwater inlets on a regular basis to remove pollutants and restore basin sediment trapping capacity.
O	Regularly remove illegally dumped items and materials from storm drainage canals and creeks.

ORDER	*REQUIREMENT*
P	Identify low impact development facilities, such as bioretention areas, as facilities to utilize in drainage systems where conditions permit.
Q	Wet ponds (i.e., permanent water pools used to treat incoming stormwater) or constructed wetlands shall be utilized where warranted and conditions permit.
R	Vegetated channels and strips shall be incorporated into drainage plans.
S	Media filtration should be utilized where sediment is a problem and there is no other adequate alternative sediment-control method available.
T	Oil/water separators shall be installed and maintained in all facilities where automotive maintenance or industrial facilities result in oil release.
U	Vehicle fueling and washing facilities, including steam cleaning, shall utilize concrete floors, protected from the rain and drained to a sump to assure contaminants are contained.
V	Outdoor container storage of liquids and outdoor equipment shall include a dike to contain spills and storm water and be covered to minimize storm water in the area.
W	Outdoor storage shall be covered, have secondary equipment and be designed to prevent stormwater runoff.

NOTES: THIS TABLE DOES NOT USE THE STANDARD NOMENCLATURE FOUND ELSEWHERE IN THIS DOCUMENT IN ORDER TO BE CONSISTENT WITH THE REFERENCE CONTAINED IN THE UAGP.

City of Modesto Municipal Code, Chapter 10 - Storm Water Management And Discharge Controls

Chapter 10 of the Modesto Municipal Code regulates stormwater management to prevent pollution, protect water quality, and maintain public health. It prohibits non-stormwater discharges into the storm drain system, requiring certain activities—like construction and industrial operations—to follow BMPs to control runoff pollution. The City conducts inspections, monitors discharges, and enforces compliance through penalties, fines, and cleanup costs as needed. Additionally, public education and outreach efforts promote awareness and community engagement in protecting water resources.

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed Project may have a significant impact on the environment associated with Utilities if it would:

1. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

IMPACTS AND MITIGATION MEASURES

Impact 3.14-7: The proposed Project would not require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects (Less than Significant)

Flooding events can result in damage to structures, injury or loss of human and animal life, exposure of waterborne diseases, and damage to infrastructure. In addition, standing floodwater can destroy agricultural crops, undermine infrastructure and structural foundations, and contaminate groundwater. The Project site is not located within a FEMA-designated 100-year flood hazard zone. The Project site is located within the FEMA flood zone X which is designated as an area of minimal flood hazard. However, the site is within a broad, relatively flat area that is subject to sheet flow-type shallow flooding.

This Project site is in an area that is not served by existing public storm drain systems and will, therefore, need to retain all storm water on site. The proposed site plan includes a retention basin of approximately 6.75 acres, located along the western edge of the site as shown on the tentative map. The final sizing could increase or decrease based a variety of engineering design factors that control storm drainage. The basin is designed to manage runoff from new impervious surfaces generated by Project development. Based on the conceptual site plan, the proposed buildings, drive aisles, loading areas, and parking lots would result in approximately 85-90 percent of the parcel being developed as impervious surface. Based on the design storm identified in the Stanislaus County Standards, the following size basins and French drain would accommodate the design storm:

- 1,940 feet by 150 feet by seven feet deep;
- 340 feet by340 feet by 10 feet deep;
- 575 feet by 575 feet by five feet deep;
- 16,500 linear feet of 96-inch French drain pipe 20-feet deep.

Stormwater runoff quality must meet the CVRWQCB's standards for acceptable urban runoff (SD-8), and new development must comply with the City's Guidance Manual for Development Stormwater Quality Measures (2011) (SD-12). Policies SD-10, SD-11, and SD 13 require construction and new development to comply with pollutant discharge requirements of the City's NPDES stormwater permit, including permanent pollution prevention measures that require appropriate selection of permanent stormwater treatment facilities based on the size of each new development. New development must also comply with EPA's LID principles (SD-14, SD-15). As a result, the Project is not expected to exceed the capacity of existing or planned storm drainage systems or provide substantial additional sources of polluted runoff.

In addition, the project would incorporate design features to comply with the City's stormwater standards for trash control. Examples of potential design features include hydrodynamic separators, trash screens, or LID measures which are capable of trapping all particles five millimeters in size or greater.

The proposed Project includes development of a new storm drainage system to serve the proposed uses as described above. The potential environmental effects resulting from construction of the storm drainage system, including impacts related to grading and excavation, air quality and greenhouse gas emissions, noise, biological resources, cultural resources, and hydrology and water quality, are evaluated throughout this EIR. Secondary impacts associated with construction of this infrastructure, such as truck trips, erosion, and soil impacts, are addressed within the applicable topical sections (e.g., Air Quality, Noise, Transportation, Geology/Soils, and Hydrology/Water Quality).Where impacts are identified for each environmental topic, mitigation measures are developed to avoid, minimize, or compensate for the impact to the extent practicable. All mitigation measures presented throughout this EIR will be implemented to reduce impacts to the extent practicable. Overall, compliance with federal, State, and local standards and regulations, as well as implementation of Mitigation Measures 3.9-1 and 3.9-2, would ensure that the proposed Project would not require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;; therefore, impacts would be ***less than significant***.

CUMULATIVE IMPACTS

The cumulative setting includes all areas covered in the service areas of the City's stormwater and drainage services.

Impact 3.14-8: Cumulative Impacts Related to Stormwater and Drainage. (Less than Significant)

Stormwater management in the City of Modesto is guided by the City's Storm Drainage Master Plan and coordinated with regional partners such as the MID and Stanislaus County. Much of the city, including the project area, lies within a managed network of regional drainage basins, pump stations, culverts, and MID conveyance systems. Stormwater from developed areas is either retained or conveyed through this system under peak flow and volume limits established in regional master plans. As the region continues to urbanize, cumulative development may increase impervious surfaces, potentially increasing surface runoff and placing greater demand on the regional drainage system. Without proper planning and infrastructure upgrades, this increase could be a potentially significant cumulative impact.

Because the Project would manage all stormwater onsite under current conditions, and because any future connection to regional facilities would be conditioned to meet flow and capacity requirements, the proposed Project would not result in the need for new or expanded offsite stormwater infrastructure that could cause a significant environmental impact. Moreover, the Project would not substantially contribute to downstream flooding or degradation of water quality. Therefore, when considered in combination with other cumulative development in the area, the Project would not have a cumulatively considerable contribution to regional stormwater impacts. The cumulative impact would be ***less than significant***.

3.14.4 SOLID WASTE

ENVIRONMENTAL SETTING

Two private firms are currently engaged in the collection and transport of solid wastes in Modesto. Gilton Solid Waste Management and Bertolotti Disposal provide hauling and interim transfer stations for Modesto's waste disposal, transformation, and diversion streams. A third hauler, Bonzi Disposal, hauls industrial waste. Solid waste generated by the City is primarily disposed of at the Stanislaus Resource Recovery Facility (SRRF), the adjoining Fink Road Landfill, located near Crows Landing, approximately 25 miles southwest of Modesto, and Forward Landfill, Inc. Other landfills, other regional landfills located outside the City and County may be used if needed, include Altamont Landfill, American Avenue Disposal Site, Vasco Road Sanitary Landfill, Avenal Regional Landfill, Azusa Land Reclamation, Recology Hay Rd., Highway 59 Disposal Site, Keller Canyon Landfill, Portero Hills Landfill, Sacramento County Landfill, Bill Wright Disposal Site, Foothill Sanitary Landfill, North County Landfill and L&D Landfill.

In 2022, the City of Modesto disposed of approximately 250,063 tons of solid waste. The per capita population waste generation rate increased from 5.0 to 5.3 pounds per person per day, and the per capita employment waste generation rate increased from 13.6 to 14.6 pounds per person per day over the four-year period from 2018 to 2022.

The landfills primarily surviving the City of Modesto are summarized in Table 3.14-17.

TABLE 3.14-18: CITY OF MODESTO LANDFILL SUMMARY

LANDFILL	*LOCATION*	*MAXIMUM DAILY THROUGHPUT (TONS/DAY)*	*REMAINING CAPACITY (CUBIC YARDS)*	*ANTICIPATED CLOSURE DATE*
Fink Road Landfill	Crows Landing	2,400	19.0 million	2050
Forward Sanitary	Manteca	8,668	22.1 million	2036

SOURCE: CAL RECYCLE. ACCESSED MARCH 2025.

As of recent data, the City of Modesto's diversion rate is aimed at meeting State mandates, such as the 50 percent diversion required by California's Assembly Bill (AB) 939, which has been in place since 2000. Modesto also participates in efforts to comply with newer regulations like SB 1383, which sets a target for reducing organic waste sent to landfills by 75 percent by 2025. In accordance with AB 939, which required municipalities to aggressively pursue municipal solid waste (MSW) source reduction and recycling, the City continues to meet and exceed all AB 939 goals. The various solid waste management actions adopted by the City include, but are not limited to, recycling and yard waste programs for residents and businesses, public education and public outreach awareness events, and school recycling and composting.

SB 1016 further builds upon AB 939 by implementing modified performance measures. To continue to meet this mandate, the City's plan calls for the following programs:

1. Promotion of source reduction;
2. Development of material recovery facilities;

3. Active curbside recycling and local buy-back programs;
4. Composting of organics;
5. Business/industrial recycling;
6. Cannery waste diversions for animal feed, land spreading, or alternative fuel production;
7. Recycling in schools and recycling education;
8. Wood waste diversion (wood is ground and sold as fuel);
9. Diversion of inert materials such as concrete for use as road base materials; and,
10. Establishment of markets for recycling/composted material.

Under AB 939, waste-to-energy facilities, such as the SRRF, are considered to be transformation facilities (as opposed to recycling facilities). Consequently, the City receives diversion credit for 10 percent of the volume of waste diverted to the SRRF.

An estimated 10,000 to 20,000 dry tons of biosolids are generated each year at the City's wastewater treatment plant and are beneficially reused as soil amendment under Waste Discharge Requirements Order 94-030.

REGULATORY SETTING

AB 939: California's Integrated Waste Management Act of 1989

The purpose of California's Integrated Waste Management Act of 1989 (AB 939 (Stats. 1989, ch. 1095), supplemented by SB 1322), is to "reduce, recycle, and re-use solid waste generated in the state to the maximum extent feasible." The term "integrated waste management" refers to the use of a variety of waste management practices to safely and effectively handle the municipal solid waste stream with the least adverse impact on human health and the environment. The California Integrated Waste Management Act has established a waste management hierarchy, as follows: Source Reduction; Recycling; Composting; Transformation; and Disposal.

AB 939 set a requirement for cities and counties to divert 50 percent of all solid waste from landfills by January 1, 2000, through source reduction, recycling and composting. In order to achieve this goal, AB 939 requires that each city and county prepare and submit a Source Reduction and Recycling Element. AB 939 also established the goal for all California counties to provide at least 15 years of ongoing landfill capacity.

AB 939 also established requirements for cities and counties to develop and implement plans for the safe management of household hazardous wastes. In order to achieve this goal, AB 939 requires that each city and county prepare and submit a Household Hazardous Waste Element.

AB 341 (75 Percent Solid Waste Diversion)

The purpose of AB 341 (Stats. 2006, ch. 488) is to reduce greenhouse gas emissions by diverting commercial solid waste to recycling efforts and to expand the opportunity for additional recycling services and recycling manufacturing facilities in California. Beginning on July 1, 2012, businesses have been required to recycle, and each jurisdiction has implemented programs that include education, outreach, and monitoring. Jurisdictions were required to start reporting on their 2012

Electronic Annual Report (due August 1, 2013) on their initial education, outreach, and monitoring efforts, and, if applicable, on any enforcement activities or exemptions implemented by the jurisdiction.

In addition to Mandatory Commercial Recycling, AB 341 sets a statewide goal for 75 percent disposal reduction by the year 2020. This is not written as a 75 percent diversion mandate for each jurisdiction. However, the existing 50 percent disposal reduction mandate established by AB 939 still applies to cities, counties, and State agencies. CalRecycle continues to evaluate program implementation through the Annual Report review process for entities subject to AB 939.

SB 1374 (Construction and Demolition Waste Materials Diversion)

SB 1374 (Stats. 2002, ch. 2002), Construction and Demolition Waste Materials Diversion Requirements, requires that jurisdictions summarize their progress realized in diverting construction and demolition waste from the waste stream in their annual AB 939 reports. SB 1374 required the California Integrated Waste Management Board to adopt a model construction and demolition ordinance for voluntary implementation by local jurisdictions.

AB 1826 (Mandatory Organics Recycling)

Beginning April 1, 2016, the State's Mandatory Organic Waste Recycling law (AB 1826 (Stats. 2014, ch. 727)) requires businesses, based on the amount and type of waste the business produces weekly. In September 2020, a business that generates two cubic yards or more per week of commercial solid waste shall arrange for the organic waste recycling services pursuant to Section 42649.81(b) of the Public Resources Code.

SB 1383 (Short-lived Climate Pollutants: Organic Waste Methane Emissions Reductions)

In September 2016, Governor Brown signed SB 1383 (Stats. 2016, ch. 395), establishing methane emissions reduction targets in a statewide effort to reduce emissions of short-lived climate pollutants in various sectors of California's economy. The bill codifies the California Air Resources Board's Short-Lived Climate Pollutant Reduction Strategy, established pursuant to SB 605, in order to achieve reductions in the statewide emissions of short-lived climate pollutants. Actions to reduce short-lived climate pollutants are essential to address the many impacts of climate change on human health, especially in California's most at-risk communities, and on the environment.

As it pertains to solid waste, SB 1383 establishes targets to achieve a 75 percent reduction in the level of disposal of organic waste by 2025. SB 1383 grants CalRecycle the regulatory authority required to achieve the organic waste disposal reduction targets and establishes an additional target that not less than 20 percent of currently disposed edible food is recovered for human consumption by 2025.

In 2024, AB 2902 (Stats. 2024, ch. 421) amended the flexibility for jurisdictions to comply with the Organic Waste Recycling laws and regulations of SB 1383 by extending, expanding, and/or modifying current waivers, exemptions, and requirements.

California Green Building Standards Code (CALGreen)

CALGreen requires the diversion of at least 50 percent of the construction waste generated during most new construction projects (CALGreen Sections 4.408 and 5.408) and some additions and alterations to nonresidential building projects.

City of Modesto Urban Area General Plan

The UAGP provides the following policies related to solid waste.

POLICIES

- **SW-6:** Continue to comply with the requirements of Assembly Bill 939 which mandates the diversion of solid waste of 50% by 2000, by way of source reduction, recycling, composting, and transformation. (UAGP Policy VI.L.1)
- **SW-7:** Continue to participate in the existing Household Hazardous Waste Programs, including support of the drop-off facility, continued public information, participation in the oil and battery collection programs, and implementation and enforcement of existing and new regulations regarding electronic and universal waste legislation. (UAGP Policy VI.L.2)
- **SW-8:** Continue to comply with Stanislaus County's Hazardous Waste Management Plan. (UAGP Policy VI.L.3)
- **SW-9:** Provide for the safe collection and disposal of all solid waste generated in the City of Modesto, at rates comparable to or less than elsewhere in the state and ensure that there is access to the appropriate disposal facilities for the City's long-term needs. Garbage service should be provided to all residences and businesses within the City of Modesto. (UAGP Policy VI.L.4)
- **SW-10:** To meet the waste-disposal demands of the growing population, continue to seek alternative waste disposal methods for solid waste, including transformation, composting, and alternative energy conversion technologies. (UAGP Policy VI.L.5)
- **SW-11:** In addition to the Solid Waste Disposal Policies in place for the Baseline Developed Area, as outlined above, the City should also consider implementing local land-use incentives and zoning / building code modifications to encourage source reduction, recycling, and composting and to provide adequate space for containers. Such measures to be considered include a Construction and Demolition Recycling Ordinance, an ordinance and incentive program for Green Building Projects, and compliance with mandatory recycling for commercial / industrial waste and organics recycling per AB 341 and AB 1826. (UAGP Policy VI.L.6)

Modesto Municipal Code, Title 5: Sanitation And Health

Title 5, Sanitation and Health, of the Modesto Municipal Code focuses on public sanitation and health regulations within the city. It encompasses various chapters dedicated to ensuring health standards, including waste management, wastewater collection, disposal, and animal control. Specific sections cover topics like solid waste collection, stormwater management, and animal-related health concerns, such as pet ownership and the control of vicious animals. Additionally, Title 5 outlines requirements for businesses like massage establishments and adult entertainment venues

to maintain proper health and sanitation conditions. Enforcement is carried out by authorized health officers, ensuring compliance with state and local health mandates.

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed Project will have a significant impact on the environment associated with Utilities if it will:

1. Be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs.
2. Comply with federal, State, and local statutes and regulations related to solid waste.

IMPACTS AND MITIGATION MEASURES

Impact 3.14-9: The proposed Project would be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs and comply with federal, State, and local statutes and regulations related to solid waste (Less than Significant)

Flink Road Landfill has a remaining capacity of 19,000,000 cubic yards and has a current maximum permitted throughput of 2,400 tons per day. This landfill has a cease operation date in the year 2050. Forward Sanitary Landfill has a remaining capacity of 22,100,000 cubic yards and has a current maximum permitted throughput of 8,668 tons per day. This landfill has a cease operation date in the year 2036.

The proposed Project will result in the construction of up to 2,503,230 square feet (maximum development scenario) of warehouse, distribution, and manufacturing space. In addition, a small two- to three-acre retail site is proposed at the corner of Dale Road and Kiernan Avenue (SR 219) to provide retail service to the Project.

The commercial portion of the Project site is estimated to generate roughly five pounds per day of solid waste per 1,000 square feet. It is estimated that the 87,120 to 130,680 square feet of commercial space would generate approximately 436 to 653 pounds per day of solid waste.

The industrial portion of the Project site is estimated to generate roughly five pounds per day of solid waste per 1,000 square feet. It is estimated that up to 2,503,230 square feet (maximum development scenario) of industrial space would generate up to approximately 12,500 pounds per day of solid waste.

The total solid waste generated by the proposed Project is estimated to be approximately 4.7 to 6.0 tons per day at full buildout. As previously described, solid waste generated within the City of Modesto is primarily disposed of at the Fink Road Landfill and may also be routed to Forward Sanitary Landfill, depending on hauler agreements and facility capacity.

The Fink Road Landfill has a permitted capacity of 2,400 tons per day and a remaining volumetric capacity of approximately 19 million cubic yards, with an estimated closure year of 2050. The

Project's maximum estimated waste generation of 6.0 tons per day would account for only 0.25% of the landfill's daily throughput capacity (6.0 ÷ 2,400 × 100 = 0.25%) and an even smaller fraction of its remaining long-term capacity. Therefore, disposal of project-generated waste at Fink Road Landfill would represent a negligible impact on its operational or permitted capacity.

The Forward Sanitary Landfill, located in San Joaquin County, has a permitted daily throughput of 8,500 tons per day and a remaining capacity of approximately 32.8 million cubic yards. If any portion of the Project's waste were directed to this facility, it would represent only 0.07% of the landfill's daily permitted capacity (6.0 ÷ 8,500 × 100 = 0.07%).

Based on these rates, the volume of solid waste generated by the proposed Project can be readily accommodated by the existing regional landfill infrastructure without exceeding any facility's permitted capacity or operational thresholds.

The addition of solid waste associated with the proposed Project, approximately 4.7 to 6.0 tons per day at total buildout, to the Flink Landfill would not exceed the landfill's remaining capacity. Therefore, impacts related to solid waste would be ***less than significant***.

CUMULATIVE IMPACTS

The cumulative setting includes all areas covered in the service areas of the City's solid waste collection and disposal services.

Impact 3.14-10: Cumulative Impacts Related to Solid Waste. (Less than Significant)

Solid waste generated in the City of Modesto is currently disposed at the Flink Road Landfill. Flink Road Landfill has a remaining capacity of 19,000,000 cubic yards and has a current maximum permitted throughput of 2,400 tons per day. This landfill has a cease operation date in the year 2050. Forward Sanitary Landfill has a remaining capacity of 22,100,000 cubic yards and has a current maximum permitted throughput of 8,668 tons per day. This landfill has a cease operation date in the year 2036.

Cumulative development in areas served by the Flink Road Landfill could continue to use the landfill's capacity. As a result, the landfill could accommodate future development, and the cumulative impact would be ***less than significant***.

3.14.5 ELECTRIC POWER, NATURAL GAS, AND TELECOMMUNICATIONS FACILITIES

ENVIRONMENTAL SETTING

Electric service within the City of Modesto is provided by the Modesto Irrigation District (MID), a publicly owned utility that serves more than 128,000 customers throughout Modesto and surrounding areas. MID operates its own power generation and transmission systems and maintains a strong track record of service reliability. The district is recognized by the American Public Power Association as a Reliable Public Power Provider (RP3). MID's infrastructure includes local substations, high-voltage transmission lines, and a mix of renewable and non-renewable generation resources.

Natural gas service in Modesto is provided by Pacific Gas and Electric Company (PG&E). PG&E maintains an extensive network of distribution pipelines throughout the region and supplies residential, commercial, and industrial customers. The company operates under the jurisdiction of the California Public Utilities Commission (CPUC) and is responsible for infrastructure maintenance, safety inspections, and service delivery. PG&E also supports state-mandated initiatives for clean energy transition, including building electrification and natural gas vehicle fueling infrastructure.

Modesto is served by multiple telecommunications providers, offering a range of internet, voice, and data services. Providers include AT&T, Comcast, and regional fiber-optic carriers. In 2024, Comcast Business announced a $15 million investment in Modesto to expand its 10-gigabit fiber network to nearly 2,000 commercial locations across the city's core, improving service speed and reliability for businesses and public facilities. The city also benefits from expanding wireless and 5G infrastructure supporting both residential and commercial connectivity.

REGULATORY SETTING

California Public Utilities Commission

Established in 1911, CPUC regulates privately owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies. The CPUC is organized into several advisory units, an enforcement division, and a strategic planning group. PG&E is regulated by the CPUC.[2]

California Electric Code

The California Code of Regulations (CCR), Title 24, Part 3, Chapter 16.16, known as the California Electrical Code (CEC) contains electrical design and construction standards. Provisions contained in the CEC provide minimum standards to safeguard life or limb, health, property, and public welfare, and to protect against hazards that may arise from the use of electricity by regulating and controlling

[2] California Public Utilities Commission, CPUC History & Organizational Structure, 2024. Available at: https://www.cpuc.ca.gov/about-cpuc/divisions. Accessed June 2025.

the design, construction, installation, quality of materials, location and operation of electrical equipment, wiring, and systems.[3]

Senate Bill 350

SB 350 (Stats. 2015, ch. 547) increases California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030. This objective will increase the use of Renewables Portfolio Standard (RPS) eligible resources, including solar, wind, biomass, geothermal and others. This legislation also requires the State to double the statewide energy efficiency savings in electricity and natural gas end uses by 2030. To help meet these goals and reduce greenhouse gas (GHG) emissions, large utilities will be required to develop and submit integrated resource plans (IRPs).[4]

Pacific Gas and Electric (PG&E)

PG&E, incorporated in California in 1905, is one of the largest utility companies in the United States. Based in Oakland, the company is part of PG&E Corporation. PG&E service area stretches from Eureka in the north to Bakersfield in the south, and from the Pacific Ocean in the west to the Sierra Nevada in the east. PG&E would provide electricity and natural gas services to the Project.[5]

Telecommunications

AT&T provides telephone services to the Project site, while Comcast provides cable services.

AT&T Communications provides over 100 million U.S. customers with communication needs across mobile and broadband.[6] Comcast is a global media and technology company. They utilize Xfinity, Comcast Business, and Sky to provide mobile, broadband, and entertainment to their customers.[7]

Modesto Municipal Code, Title 9 Chapter 3: Electrical Code

The electrical code establishes minimum design, construction, installation, and safety requirements for all electrical systems in the City to protect public health and welfare. The electrical code governs substations, distribution lines, and power connections—ensuring compliance with state and national electrical standards.

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[3] America Legal Publishing, California Electrical Code, California Code of Regulations, Title 24, Part 3, Chapter 16.16, 2023. Available at: https://codelibrary.amlegal.com/codes/paloalto/latest/paloalto_ca/0-0-0-72683. Accessed June 2025.

[4] California Energy Commission, Clean Energy and Pollution Reduction Act, Available at: https://www.energy.ca.gov/rules-and-regulations/energy-suppliers-reporting/clean-energy-and-pollution-reduction-act-sb-350. Accessed June 2025.

[5] PG&E, Company Profile, 2024. Available at: https://www.pge.com/en/about/company-information/company-profile.html. Accessed June 2025.

[6] AT&T, Investor Profile, 2024. Available at: https://investors.att.com/investor-profile#:~:text=AT%26T%20Communications%20provides%20more%20than,and%20our%20fiber%20network%20expansion. Accessed June 2025.

[7] Comcast, Connectivity and Platforms, 2024. Available at: https://corporate.comcast.com/company/connectivity-platforms. Accessed June 2025.

Modesto Municipal Code, Title 10, Chapter 3, Article 4: Wireless Telecommunication Facilities

The wireless telecommunication facilities ordinance regulates siting, height, and design standards for wireless telecom infrastructure (e.g., cellular towers, antennas, and equipment shelters). Requires conditional use or staff approval permits for facilities exceeding height or located in residential zones, to ensure compatibility with nearby land uses

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed Project will have a significant impact on the environment associated with Utilities if it will:

1. Require or result in the construction of new electric power, natural gas, and telecommunications facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

IMPACTS AND MITIGATION MEASURES

Impact 3.14-11: The proposed Project would not require construction of new electric power, natural gas, or telecommunications facilities or expansion of existing facilities, the construction of which could cause significant environmental effects (Less than Significant)

The proposed project consists of approximately 2 to 3 acres of retail commercial development and up to 2,503,230 square feet (maximum development scenario) of industrial space for warehouse, distribution, and manufacturing uses. Utility services including electric power, natural gas, and telecommunications in the City of Modesto are provided by MID, PG&E and a variety of telecommunication providers, including AT&T, Comcast, and fiber-optic infrastructure developers. MID provides electricity and PG&E delivers gas service within the city through a network of substations, transmission lines, and distribution infrastructure. Telecommunications infrastructure is available throughout most of the city's developed areas, and broadband expansion has been ongoing in support of growth of the city.

The anticipated electric and gas demand from the project would be typical for developments of this type and scale. Electric service to the site would be provided by MID, a publicly owned utility that generates, transmits, and distributes electricity to customers in Modesto and surrounding areas. MID maintains local substations and distribution infrastructure throughout its service area. As a routine part of project implementation, MID would evaluate electrical demand and determine the most efficient way to extend or upgrade service lines. According to MID's 2022 Integrated Resource Plan, the district has sufficient generation capacity and long-term plans to accommodate regional growth and demand increases. Therefore, while minor distribution upgrades (e.g., transformers or service lines) may be necessary, no major off-site facility construction is anticipated (MID, 2022).

Natural gas would be provided by PG&E, which owns and operates underground distribution pipelines throughout the region. PG&E's infrastructure in urban and industrial areas is generally

robust, and minor extensions or pressure adjustments are typically sufficient to accommodate commercial and industrial development of this scale. Similarly, telecommunications services would be extended to the project site through underground conduit and junctions in coordination with local service providers. Existing infrastructure in the project area is expected to accommodate the proposed uses, or require only minor upgrades, such as conduit expansion or new junction boxes, which would occur within existing public rights-of-way.

As a result, the project would not be expected to require the construction of new off-site electric, gas, or telecommunications infrastructure that could result in significant environmental effects. Any minor utility trenching or connection work would occur within previously disturbed or urbanized rights-of-way and be subject to standard City construction requirements, such as erosion control, traffic safety, and air quality regulations. Therefore, impacts related to the construction or expansion of energy and telecommunications infrastructure would be ***less than significant***.

CUMULATIVE IMPACTS

The cumulative setting includes all areas covered in the service areas of the City's electric, natural gas, and telecommunications services.

Impact 3.14-12: Cumulative Impacts Related to Electric Power, Natural Gas, and Telecommunications Facilities. (Less than Significant)

The proposed Project, along with other planned and approved development in the City of Modesto, would incrementally increase demand for electric power, natural gas, and telecommunications services. However, the project is located in an urbanized area currently served by existing infrastructure operated by MID for electric service, PG&E for natural gas, and a variety of private service providers for telecommunications.

As development occurs within the city, utility providers coordinate infrastructure upgrades and capacity expansion in accordance with adopted utility master plans, load forecasts, and capital improvement programs. MID and PG&E routinely evaluate system capacity and reliability and are responsible for ensuring adequate service in compliance with California Public Utilities Commission (CPUC) regulations and applicable State energy policies. Telecommunication providers also continue to expand fiber-optic and wireless service infrastructure throughout the city as demand grows.

The proposed Project would be subject to the City's standard development review and utility connection requirements, and no substantial off-site utility extensions or major infrastructure upgrades are anticipated to accommodate the project. Project-level demand would be nominal relative to system-wide capacity and consistent with service expectations for similar industrial uses.

Therefore, the cumulative impact of the proposed project, in combination with other development in the City of Modesto, would be ***less than significant*** with respect to electric power, natural gas, and telecommunications facilities.

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The California Environmental Quality Act (CEQA) requires that an Environmental Impact Report (EIR) to evaluate a project's effects in relationship to broader changes occurring, or that are foreseeable to occur, in the surrounding environment. Accordingly, this chapter presents a discussion of CEQA-mandated analysis for significant irreversible effects and significant and unavoidable impacts associated with the proposed Project.

4.1 INTRODUCTION

CEQA Guidelines Section 15126 requires that all phases of a project—planning, acquisition, development, and operation—be considered when evaluating the project's impact on the environment. Further, CEQA Guidelines Section 15126.2(a) requires that the evaluation of significant impacts consider direct and reasonably foreseeable indirect effects of the proposed project over the short term and long term. Section 15126 of the CEQA Guidelines also requires an EIR to identify all of the following:

- Significant environmental effects of the proposed project.
- Potentially feasible mitigation measures proposed to avoid or substantially lessen significant effects.
- Significant environmental effects that cannot be avoided if the proposed project is implemented.
- Significant irreversible environmental changes that would result from implementation of the proposed project.
- Growth-inducing impacts of the proposed project.
- Alternatives to the proposed project.[1]

The Executive Summary and Sections 3.1 through 3.14 provide a comprehensive presentation of the proposed Project's environmental effects, potentially feasible mitigation measures, and conclusions regarding the level of significance of each impact both before and after mitigation. Chapter 5, Project Alternatives, presents a comparative analysis of alternatives to the proposed Project. The other CEQA-required analyses described above are presented below.

4.2 SIGNIFICANT UNAVOIDABLE IMPACTS

LEGAL CONSIDERATIONS

Section 15126.2(c) of the CEQA Guidelines requires that an EIR describe any significant impacts that cannot be avoided, even with the implementation of feasible mitigation measures. The environmental effects of the proposed Project on various aspects of the environment are discussed in detail in Sections 3.1 through 3.14. Project-specific and cumulative impacts that cannot be avoided if the project is approved as proposed are identified below. Prior to certifying this EIR, the City Council will be required to adopt Findings of Fact and a Statement of Overriding Considerations

[1] CEQA Guidelines Sections 15126.2(a), 15126.2(c), 15126.2(d), 15126.2(e), 15126.4, and 15126.6.

addressing each of the significant and unavoidable impacts identified in this EIR, in accordance with Public Resources Code Section 21081 and CEQA Guidelines Section 15093.

- **Impact 3.1-3:** Project implementation may, substantially degrade the existing visual character or quality of public views of the site and its surroundings in a non-urbanized area. (Public views are those that are experienced from publicly accessible vantage point.)
- **Impact 3.1-6:** The proposed Project, in combination with other cumulative development, could substantially degrade the existing visual character or quality of public views of the site and its surroundings .
- **Impact 3.2-1:** The proposed Project would result in the conversion of Farmlands, including Prime Farmland and Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural uses.
- **Impact 3.2-4** Cumulative Impacts Related to Agricultural Resources
- **Impact 3.3-1:** Project operation would conflict with or obstruct implementation of the District's air quality plan.
- **Impact 3.3-2:** The proposed Project would result in a cumulatively considerable net increase of a criteria pollutant for which the region is in nonattainment under an applicable federal or State ambient air quality standard.
- **Impact 3.3-5:** Cumulative Impact on the Region's Air Quality
- **Impact 3.11-4:** Cumulative Exposure of Existing and Future Noise-Sensitive Land Uses to Increased Noise Resulting from Cumulative Development.
- **Impact 3.13-1:** Project implementation would conflict with or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).
- **Impact 3.13-2:** Project implementation would conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.
- **Impact 3.13-3:** Project implementation would substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- **Impact 3.13-5:** Cumulative Impacts Related to VMT.
- **Impact 3.13-6:** Cumulative Impacts Related to Conflicts with Adopted Policies, Plans, or Programs Regarding Bicycle or Pedestrian Facilities under Cumulative Conditions.
- **Impact 3.13-7:** Cumulative Impacts Related to Increased Hazards due to a Geometric Design Feature (e.g., sharp curves or dangerous intersections) or Incompatible Uses (e.g., farm equipment).

4.3 SIGNIFICANT IRREVERSIBLE EFFECTS

LEGAL CONSIDERATIONS

Under CEQA, an EIR must analyze the extent to which a project's primary and secondary effects would generally commit future generations to the allocation of nonrenewable resources and to irreversible environmental damage (CEQA Guidelines Sections 15126.2(d) and 15127). Section 15126.2(d) states:

> Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible, since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project.

CEQA Section 15126.2(d) and Public Resources Code Sections 21100(b)(2) and 21100.1(a), require that the EIR include a discussion of significant irreversible environmental changes which would be involved in the proposed action, should it be implemented. Irreversible environmental effects are described as:

- The project would involve a large commitment of nonrenewable resources;
- The primary and secondary impacts of a project would generally commit future generations to similar uses (e.g., a highway provides access to previously remote area);
- The project involves uses in which irreversible damage could result from any potential environmental accidents associated with the project; or
- The phasing of the proposed consumption of resources is not justified (e.g., the project involves the wasteful use of energy).

Determining whether the proposed Project would result in significant irreversible effects requires a determination of whether key resources would be degraded or destroyed such that there would be little possibility of restoring them. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

Long-Term Commitment of Resources

The proposed Project would consist of a phased development of up to 2,503,230 square feet (maximum development scenario) that includes seven warehouse, distribution, and manufacturing buildings, a local-serving retail use, and associated vehicular circulation improvements. The site is currently outside the City of Modesto's Sphere of Influence (SOI) and is proposed for SOI amendment, annexation, and inclusion within the Salida Community Plan Area upon approval.

Construction would include use of building materials such as petroleum-based products and metals that cannot reasonably be recreated. Construction also would involve significant consumption of energy, usually petroleum-based fuels that deplete supplies of nonrenewable resources. Construction of structures and infrastructure would consume energy and water. Construction debris recycling practices would be expected to allow for recovery and reuse of building materials such as concrete, lumber, and steel, and would limit disposal of these materials, some of which are non-renewable. Additionally, construction equipment would have to meet San Joaquin Valley Air Pollution Control District (SJVAPCD) standards as described in Section 3.3, Air Quality. Section 3.7, Greenhouse Gases, Climate Change and Energy, addresses appropriate consumption of energy for development construction.

Once construction of the entire Project is complete, which is expected to be after ten years, land uses associated with buildout of the proposed Project would use some nonrenewable fuels to heat and light structures and would consume water. New land uses would be required to be built and adhere to the latest adopted edition of the California Green Building Standards Code, which would reduce energy demand, water consumption, and wastewater and solid waste generation that would collectively reduce demand for resources. This would lessen emissions and generation of pollution and effluent, and so the severity of corresponding environmental effects.

As discussed in Section 3.4, Biological Resources, all impacts would be less than significant or less than significant with implementation of mitigation measures. As a result, the proposed Project will minimize the potential for impacts to the nonrenewable resources on the project site, including biological resources and water resources, to the greatest extent feasible. More detailed and focused discussions of potential impacts to these nonrenewable resources are contained throughout this Draft EIR.

Nonrenewable agricultural resources such as agricultural land, farmland, and agricultural soils, would be converted during the construction and operation of the Project. The 145-acre Project site consists of active agricultural fields and orchards on the northern and southern portions of the Project site, respectively. The Project site would be converted from agricultural to urban uses as a result of the Project. Stanislaus County has a total land area of 1,515 square miles, with total acreage for harvesting of 575,880 acres. As such, the 145-acre site makes up 0.03 percent of the harvestable acreage in the County. The City's Urban Area General Plan includes a variety of policies that seek to conserve and protect agricultural resources until development is imminent. These include policies that encourage the development of vacant lands within City boundaries prior to conversion of agricultural lands and ensure that urban development near existing agricultural lands will not unnecessarily constrain agricultural practices or adversely affect the economic viability of nearby agricultural operations.

Likewise, Stanislaus County and LAFCo both actively seek to protect and promote agriculture. LAFCo requires applicants to prepare a "Plan for Agricultural Preservation" for annexation proposals that will impact agricultural lands. The Plan must include information such as the proposal's direct and indirect impacts to agricultural resources, the availability of other lands in the City's existing boundaries, and relevant General Plan policies. The Plan must also specify the method or strategy proposed to minimize the loss of agricultural lands. The information provided in the Plan should be consistent with the environmental documentation prepared by the City. However, the conversion of agricultural land to urban uses would result in a long-term commitment of that resource, which is a renewable resource.

Commitment of the Project Site for Future Generations

Development allowed under the proposed Project would dedicate the project site to urbanized land uses, thereby precluding other uses for the life span of the proposed Project, generally estimated to be for the foreseeable future. The most notable impacts would be increased generation of pollutants from vehicle travel and stationary operations and conversion of the land from agriculture to urban,

and the short-term commitment of nonrenewable and/or slowly renewable natural and energy resources, such as water resources, during construction activities. Operations associated with future uses would also consume natural gas and electrical energy. The unavoidable consequences of the proposed Project are described in the appropriate sections of Chapter 3, Environmental Setting, Impacts, and Mitigation Measures.

Irreversible Environmental Damage

Development of the proposed Project would result in irretrievable commitments by introducing development onto the site which is presently undeveloped. The conversion of agricultural lands to urban uses would result in an irretrievable loss of agricultural land, wildlife habitat, and open space.

A variety of resources, including land, energy, water, construction materials, and human resources would be irretrievably committed for development and infrastructure installation associated with development and operation of the proposed Project. Buildout of the Project would require the commitment of a variety of other non-renewable or slowly renewable natural resources such as lumber and other forest products, sand and gravel, asphalt, petrochemicals, and metals.

Additionally, a variety of resources would be committed to the ongoing operation and life of the Project. The introduction of new non-residential (industrial and commercial) uses to the Project site will result in increased energy demand associated with building operations, vehicle travel, equipment operation, and other activities. Fossil fuels are the principal source of energy and the Project will increase consumption of available supplies, including gasoline and diesel fuel. These energy resource demands relate to initial construction, operation, maintenance and the transport of people and goods to and from the project site that would occur with development of the proposed Project.

Development will also physically change the environment in terms of aesthetics, air emissions, noise, traffic, open space, and natural resources. These physical changes are irreversible after development occurs.

Implementation of the proposed Project may have the potential to cause significant environmental accidents through hazardous material releases into the environment during construction activities, or through operation of new commercial or mixed-use land uses. However, compliance with State law and implementation of a Stormwater Pollution Prevention Plan (SWPPP) during construction activities would ensure that future development would not create a significant hazard to the public or environment through reasonably foreseeable upset and accident conditions involving release of hazardous materials (see Section 3.8, Hazards and Hazardous Materials).

Over the past decade, the understanding of global climate change and the role that communities can play in addressing it has grown tremendously. There is a scientific consensus that recent increases in global temperatures are associated with corresponding increases of greenhouse gases (GHGs). This temperature increase is beginning to affect regional climates and is expected to result in impacts on the Central Valley region and the world. Climate change has profound implications for

the availability of the natural resources on which economic prosperity and human development depend.

As discussed in detail in Section 3.7, Greenhouse Gases, Climate Change and Energy, GHG emissions are known to have long-term effects on atmospheric conditions that affect the global climate, with resultant changes in sea level and hydrologic conditions in rivers, heat island effects, and a range of other conditions. These changes are not considered irreversible, but they could last for generations. As described further in Section 3.7, the proposed Project could result in short-term increases in GHG emissions. However, compliance with the City's General Plan policies and programs, adherence to the development standards in the Modesto Municipal Code, as well as consistency with California Buildings Standards and the latest version of the CALGreen Code would ensure that potential new development associated with implementation of the Project would not directly or indirectly generate GHG emissions that may have a significant impact on the environment.

Unjustified Consumption of Resources

Resources that would be permanently and continually consumed by implementation of the proposed Project include water, electricity, natural gas, and fossil fuels; however, the amount and rate of consumption of these resources would not result in the unnecessary, inefficient, or wasteful use of resources (see Section 3.7, Greenhouse Gases, Climate Change and Energy, and Section 3.14, Utilities and Service Systems). The Project's operational activities would comply with all applicable building codes, including the most current version of the Title 24 Energy Efficiency Standards as well as planning policies and standard conservation features. Such compliance would ensure that natural resources are conserved to the maximum extent required under existing regulations.

It is possible that, over time, new technologies or systems will emerge, or will become more cost-effective or user-friendly, to further reduce reliance on nonrenewable natural resources. Nonetheless, construction activities for the proposed Project would result in the irretrievable commitment of nonrenewable energy resources, primarily in the form of fossil fuels (including fuel oil), natural gas, and gasoline for automobiles and construction equipment.

MANDATORY FINDINGS OF SIGNIFICANCE

CEQA Guidelines Section 15065 states that a lead agency shall find that a project may have a significant effect on the environment where there is substantial evidence that the project has potential environmental effects that are individually limited, but cumulatively considerable. As defined in CEQA Guidelines Section 15065(a)(3), cumulatively considerable means "that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." Cumulative impacts are addressed in each technical section of this EIR.

CEQA Guidelines Section 15065(a)(1) states that a lead agency shall find that a project may have a significant effect on the environment where there is substantial evidence that the project has the potential to (1) substantially reduce the habitat of a fish or wildlife species; (2) cause a fish or wildlife

population to drop below self-sustaining levels; or (3) substantially reduce the number or restrict the range of an endangered, rare, or threatened species. These impacts are discussed below.

Additionally, as required by CEQA Guidelines Section 15065(a)(4), a lead agency shall find that a project may have a significant effect on the environment where there is substantial evidence that the project has the potential to cause substantial adverse effects on human beings, either directly or indirectly. These impacts are discussed below.

Substantial Adverse Effects on Fish, Wildlife, and Plant Species

Section 3.4 (Biological Resources) of this Draft EIR fully addresses any impacts that might relate to the reduction of the fish or wildlife habitat, the reduction of fish or wildlife populations, and the reduction or restriction of the range of special-status species as a result of Project development. As described throughout the analysis in this Draft EIR, the proposed Project would not result in any significant impacts that would substantially reduce the habitat of fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or reduce the number or restrict the range of a rare or endangered plant or animal to the environment. As described in greater detail in Section 3.4 (Biological Resources), any potentially significant impacts related to plant and animal species would be reduced to a less-than-significant level through implementation of the mitigation measures included in Section 3.4, as well as through adherence to state and federal regulations. Therefore, this is considered a less-than-significant impact.

4.4 GROWTH-INDUCING IMPACTS

There are two types of growth-inducing impacts: direct and indirect. To assess potential for growth-inducing impacts, General Plan Elements that may encourage and facilitate activities that individually or cumulatively may affect the environment must be evaluated (CEQA Guidelines Section 15126.2(e)). CEQA Guidelines, as interpreted by the City, state that a significant growth-inducing impact may result if implementation of the proposed Project would:

- Induce substantial population growth in an area (for example, by proposing new homes and commercial or industrial businesses beyond the land use density/intensity envisioned in the general plan);
- Substantially alter the planned location, distribution, density, or growth rate of the population of an area; or
- Include extensions of roads or other infrastructure not assumed in the general plan or adopted capital improvements project list, when such infrastructure exceeds the needs of the project and could accommodate future developments.

Direct growth-inducing impacts occur when development imposes new burdens on a community by directly inducing population growth, or by leading to construction of additional developments in the same area. Secondary impacts can include the removal of physical obstacles to population growth (such as a new road into an undeveloped area or a wastewater treatment plant with excess capacity that could allow additional development in the service area). Construction of these types of

infrastructure cannot be considered isolated from the development they facilitate and serve. Physically removing obstacles to growth, or indirectly inducing growth may provide a catalyst for future unrelated development in an area, such as a new residential community that requires additional commercial uses to support residents.

Implementing the proposed Project would continue the planned for growth in the City in a manner consistent with the designated land use of the City's Urban Area General Plan. The Project does not propose any residential uses and therefore would have no impact on direct population growth. The proposed Project would not result in direct population growth beyond the City's capacity that is planned in the General Plan.

The proposed Project would also not significantly or adversely affect the permanent jobs/housing balance. Implementation of the proposed Project would allow for creation of approximately 1,000 jobs. Development associated with the Project would provide for employment opportunities, including during construction phases. Modesto has more employed workers living in the city than there are jobs available, indicating that workers leave the city for employment. Therefore, implementing the proposed Project would help the city achieve a more even jobs to employed balance by providing much-needed jobs.

Implementing the proposed Project would not require extensions of electrical, natural gas, or water utility infrastructure beyond the needs of the proposed Project, but would require connections to existing infrastructure on and adjacent to the Project site. Water and sewer connections are needed at the southeast corner of the Project site, along Dale Road just south of Kiernan Avenue. The City anticipates future water infrastructure to extend northward along Dale Road to Pirrone Road, westward from Dale Road along both Kiernan Avenue and Pirrone Road, and east along Kiernan Avenue from Dale Road. However, those water infrastructure extensions are included in the City's Urban Water Master Plan (UWMP) and would not be constructed as part of the proposed Project. The proposed Project would not extend urban infrastructure other than to the Project site, and thus would not induce growth in other areas outside the City limits. Growth inducement to the undeveloped agricultural land to the east, north, and west of the Project site would not occur as that land is under the Stanislaus County General Plan designations. Land to the west is further constrained by being within the Salida Community Plan Area. The proposed Project would not oversize or extend infrastructure to these areas, and would not induce growth beyond that anticipated under the City's Urban Area General Plan.

Furthermore, the proposed Project would be compatible with other planned growth within the Salida Community Plan Area as future development would be guided by the Salida Community Plan. Areas outside of the Salida Community Plan Area or the city limits would not be pressured to redevelop with new or different land uses as there is planned growth capacity within the City's urban growth limits and anticipated under the Urban Area General Plan. Although there are a few existing residential units immediately east and north of the proposed Project site, neither the proposed Project nor further development within the City would require nearby residents to relocate as residential uses are compatible with the uses anticipated in the Salida Community Plan Area and the

City. Therefore, the proposed Project would not remove a barrier to growth nor create an indirect population increase.

Infrastructure and services would be expanded as necessary to serve City growth, without significant excess capacity, and thus would not encourage additional growth beyond that already planned for in the proposed Project. As a result, the proposed Project would create minimal to no indirect growth, and the planned buildout would be consistent with City projections.

Since the proposed Project would not result in indirect growth, negatively alter the existing jobs/housing balance, or be inconsistent with the City General Plan, growth-inducing impacts would be less than significant.

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Pursuant to California Environmental Quality Act (CEQA) Guidelines Section 15126.6, this environmental impact report (EIR) must describe a range of reasonable alternatives to the proposed Project that might feasibly accomplish most of the basic objectives of the proposed Project and avoid or substantially lessen one or more of the significant effects of the project. The feasibility of an alternative is determined by the lead agency based on a variety of factors including but not limited to site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and site accessibility and control (CEQA Guidelines Section 15126.6(f)(1)).

The chapter discloses the comparative effects of each of the alternatives relative to the proposed Scannell Industrial Project, and evaluates the relationship of the alternatives to the objectives of the Project. As required under Section 15126.6(e) of the CEQA Guidelines, an environmentally superior alternative for the proposed Project is identified at the end of this chapter.

5.0-1 FACTORS IN THE SELECTION OF ALTERNATIVES

PROJECT OBJECTIVES

The principal objective of the proposed Project is to develop a multiple phase and well-planned industrial project with the potential for warehouse, distribution, and manufacturing uses with onsite commercial retail that will attract businesses to the City of Modesto and provide for local employment opportunities.

The City has identified several additional project goals and objectives that inform the Project purpose. These additional Project goals and objectives are summarized as follows:

- Establish City land use and zoning that is consistent with and facilitates the vision for new growth and development in the Salida Community Plan (SCP). This includes emphasizing Industrial uses planned in the eastern portion of the SCP adjacent to the City of Modesto limits.
- Design an industrial facility that could attract a variety of end users, including a transload facility, short-term storage facility, light industrial, and/or manufacturing uses.
- Incorporate a commercial use within the industrial area to provide opportunities for onsite employees to have access to retail services. Locate the commercial use such that it also enhances accessibility for passerby traffic to maximize the success of the commercial businesses.
- Strengthen the local economic base through job creation; development related investment; increased income opportunities; and increased property, and sales taxes through the development of the industrial and commercial uses.
- Provide local and regional employment opportunities that take advantage of the area's high level of accessibility, and help create a jobs/housing balance.
- Install infrastructure improvements, including water, sewer, power, and stormwater systems that meet city standards, and integrate with existing utility network without diminishing services to existing residents.

- Develop a multi-phase plan that could be constructed over an estimated 10-year building horizon, and align infrastructure improvements to the infrastructure needs of each phase.
- Design the facilities with efficient transportation access and circulation within site plan, including accessible loading bays, and logistics management. Ensure that offsite transportation systems can facilitate industrial traffic via designated truck routes.

SIGNIFICANT EFFECTS OF THE PROPOSED PROJECT

Section 15126.2(c) of the CEQA Guidelines requires that an EIR describe any significant impacts that cannot be avoided, even with the implementation of feasible mitigation measures. The environmental effects of the proposed Project on various aspects of the environment are discussed in detail in Sections 3.1 through 3.14. The project-specific and cumulative impacts that cannot be avoided if the proposed Project is approved as proposed are listed below.

- **Impact 3.1-3:** Project implementation may, substantially degrade the existing visual character or quality of public views of the site and its surroundings in a non-urbanized area. (Public views are those that are experienced from publicly accessible vantage point.)
- **Impact 3.1-6:** The proposed Project, in combination with other cumulative development, could substantially degrade the existing visual character or quality of public views of the site and its surroundings .
- **Impact 3.2-1:** The proposed Project would result in the conversion of Farmlands, including Prime Farmland and Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural uses.
- **Impact 3.2-4** Cumulative Impacts Related to Agricultural Resources
- **Impact 3.3-1:** Project operation would conflict with or obstruct implementation of the District's air quality plan.
- **Impact 3.3-2:** The proposed Project would result in a cumulatively considerable net increase of a criteria pollutant for which the region is in nonattainment under an applicable federal or State ambient air quality standard.
- **Impact 3.3-5:** Cumulative Impact on the Region's Air Quality
- **Impact 3.11-4:** Cumulative Exposure of Existing and Future Noise-Sensitive Land Uses to Increased Noise Resulting from Cumulative Development.
- **Impact 3.13-1:** Project implementation would conflict with or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).
- **Impact 3.13-2:** Project implementation would conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.
- **Impact 3.13-3:** Project implementation would substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- **Impact 3.13-5:** Cumulative Impacts Related to VMT.
- **Impact 3.13-6:** Cumulative Impacts Related to Conflicts with Adopted Policies, Plans, or Programs Regarding Bicycle or Pedestrian Facilities under Cumulative Conditions.
- **Impact 3.13-7:** Cumulative Impacts Related to Increased Hazards due to a Geometric Design Feature (e.g., sharp curves or dangerous intersections) or Incompatible Uses (e.g., farm equipment).

5.0-2 ALTERNATIVES NOT SELECTED FOR FURTHER ANALYSIS

The City circulated a Notice of Preparation to the public to solicit recommendations for a reasonable range of alternatives to the proposed Project. Additionally, a public scoping meeting was held during the public review period to solicit recommendations for a reasonable range of alternatives to the proposed Project. No specific alternatives were recommended by commenting agencies or the general public during the NOP public review process.

The City of Modesto considered alternative locations early in the public scoping process. The City's key considerations in identifying an alternative location were as follows:

- Is there an alternative location where significant effects of the Project would be avoided or substantially lessened?
- Is there a site available within the City's Sphere of Influence or within the Salida Community Plan Area with the appropriate size and characteristics such that it would meet the basic Project objectives?

The City's consideration of alternative locations for the Project included a review of land use planning and environmental documents in Modesto and Stanislaus County, including the Salida Community Plan. The search included a review of lands in the north part of Modesto or within the Salida Community Plan Area, that are similarly zoned Industrial or Business Park, is proximate to SR 99, and is of similar size as the Project site.

The City identified an approximately 92-acre property in the northern portion of the Salida Community Plan Area that is owned or controlled by the Project applicant. Situated between SR 99 and the Stanislaus River is a sizable area designated as Business Park in the Salida Community Plan, as shown in Figure 5.0-1. The site is currently vacant and being used for agricultural purposes. This site was ultimately rejected due to site limitations.

Under current conditions, the alternative site does not have vehicular access to the roadway network. There are plans to extend Hammett Road west of SR 99 to the east and connect to the roadway network just north of Modesto. This roadway extension would create an expressway that would be close enough to provide access to the alternate project site. However, the Hammett Expressway project is years away from realization. The lack of connectivity to the roadway network would inhibit access to and from the industrial facility to the state highway network.

The alternative site's remote location relative to the existing roadway network and highway system would prevent the site from building out within the identified 10-year timeframe. Further, this location would not allow the site to annex into the City of Modesto because it is not contiguous with the existing city limits. No infrastructure on or near the site is available with which the project could connect. As a result of these site constraints and design limitations, this alternative was not further considered for analysis.

5.0-3 ALTERNATIVES CONSIDERED IN THIS EIR

This section describes the range of alternatives to the proposed Project that are analyzed in this Draft EIR and examines how specific environmental impacts would differ in severity compared to those associated with the proposed Project. For the most part, significant impacts of the alternatives can be mitigated to less-than-significant levels through adoption of the mitigation measures identified throughout the Draft EIR, which contains the environmental analysis of the proposed Project. To varying degrees, the following alternatives would also avoid and/or lessen impacts, including some or all of the significant and unavoidable impacts, of the proposed Project.

CEQA requires consideration of a "no project" alternative, which addresses the impacts of not moving forward with the proposed Project. The No Project Alternative can take many forms, including doing nothing, depending on what may likely occur if a project is not developed. In the case of the proposed Project, two No Project Alternatives are evaluated.

Five alternatives to the proposed Project were developed based on input from City staff and the technical analysis performed to identify the environmental effects of the proposed Project. The alternatives analyzed in this EIR include the following five alternatives in addition to the proposed Project.

- **Alternative 1: No Project (No Build).** Under this alternative, development of the Project site would not occur, and the Project site would remain in its current existing condition.
- **Alternative 2: No Project/Existing SCP Designations.** Under this alternative, the Project site would develop under the Salida Community Plan's Planned Industrial and Business Park zones, and the Project site would not be annexed to the City of Modesto.
- **Alternative 3: Reduced Intensity.** Under this alternative, the Project site would be developed with the same types of warehouse, distribution, and manufacturing uses with onsite commercial retail uses as described in the Project Description, but the commercial and industrial square footage would decrease by 25 percent, and the amount of developed land would decrease by 25 percent.
- **Alternative 4: Offsite Location.** Under this alternative, the proposed Project would be relocated to a similarly-sized alternate site within the Salida Community Plan Area, on an area zoned for Planned Industrial uses. However, the Project would not annex into the City of Modesto.
- **Alternative 5: No Commercial.** Under this alternative, the Project site would be developed with the same types of office, warehouse, distribution, and manufacturing uses as described in the Project Description, but retail site would be eliminated.

Table 5.0-1 presents an overview of the proposed alternatives, which are analyzed below.

TABLE 5.0-1: COMPARISON OF PROJECT ALTERNATIVES

	PROPOSED PROJECT	*PROPOSED PROJECT -- RATIO OF USE TO BUILDABLE SITE*	*ALTERNATIVE 1: NO PROJECT / NO BUILD*	*ALTERNATIVE 2: NO PROJECT / EXISTING SCP DESIGNATIONS*	*ALTERNATIVE 3: REDUCED INTENSITY (75%)*	*ALTERNATIVE 4: OFFSITE LOCATION*	*ALTERNATIVE 5: NO COMMERCIAL*
BUILDABLE SITE (AC/SF)							
Site Area	145/ 6,326,200	--	0	145/ 6,326,200	109/ 4,737,150	145/ 6,326,200	145/ 6,326,200
BUILDING AREA (SF)							
Office	130,000	0.023424	0	--	97,500	130,000	130,000
Warehouse	2,373,230	0.427612	0	3,947,625	1,779,923	2,373,230	2,373,230
Convenience store/gas station	6,000/ 18 fueling stations	0.021883	0	0	4,500/ 14 fueling stations	6,000/ 18 fueling stations	0
Quick serve restaurant	8,000	0.021883	0	0	6,000	8,000	0
PARKING PROVIDED							
Standard	2,171	0.000391	0	1,544	1,628	2,171	2,030
Trailer	861	0.000155	0	612	646	861	837
Annexation	Yes	--	No	No	Yes	No	Yes

SOURCE: CITY OF MODESTO, 2024; DE NOVO PLANNING GROUP, 2026.

ALTERNATIVE 1 – NO PROJECT (NO BUILD)

CEQA Guidelines Section 15126.6(e) requires an EIR to evaluate a "no project" alternative, which is defined as what would be reasonably expected to occur in the foreseeable future if the project were not approved. Under Alternative 1, no industrial and distribution urban uses would develop on the Project site. The northern half of the site would remain vacant and orchard and agricultural operations would continue on the southern half. There would be no progress toward expanding the City of Modesto, and no progress adding urban uses within the Salida Community Plan Area. No roadway or landscaping improvements along Dale Road, Pirrone Road, or Kiernan Avenue, or other roadway extensions into the Project site, would be constructed. A new retention basin at the western end of the Project site would not be constructed, and stormwater runoff, and the management thereof, would continue as-is. The Project site would not connect to City utility infrastructure including water, wastewater, or storm drainage services.

The City's General Plan would not be amended. The Project site would not be pre-zoned to M-2 Heavy Industrial under the Modesto Zoning Ordinance and would not change the City's existing Zoning Map. Although the Project site is currently zoned for industrial and business park development, under Alternative 1, the Project site would remain undeveloped and continue operating as farmland for the near term. The City's Sphere of Influence (SOI) boundary would not be amended to include the Project site, and the site would not be annexed to the City.

Comparative Analysis of Environmental Effects

IMPACTS IDENTIFIED AS BEING THE SAME AS OR SIMILAR TO THOSE OF THE PROPOSED PROJECT

The No Project (No Build) Alternative would result in no changes to land use and no development would occur on the Project site. The No Project (No Build) Alternative would not induce substantial population increase that has not already been accounted for as a part of the approved General Plan, or analyzed in detail in this EIR. Because the No Project (No Build) Alternative would not add any additional population, would not displace substantial numbers of people, and would not change land use patterns, impacts related to land use and population would be the same or similar to the proposed Project.

IMPACTS IDENTIFIED AS BEING LESS SEVERE THAN THOSE OF THE PROPOSED PROJECT

The development of the Project site in the existing agricultural setting into the proposed Project would physically alter the existing scenic vistas and visual character of the area. Under the No Project (No Build) Alternative, no development would occur, and the existing scenic vistas and visual character of the area would remain unchanged. The natural landscape, including scenic vistas and visual character, would be preserved without any alterations. Therefore, the No Project (No Build) Alternative is expected to have a lesser impact on aesthetic and visual impacts.

The conversion of farmland into the proposed Project would result in the loss of Prime Farmland. Under the No Project (No Build) Alternative, the farmland would remain undeveloped, continuing for the time being its agricultural use. Therefore, the No Project (No Build) Alternative is expected to have a lesser near-term impact on agricultural resources than the proposed Project.

Under the No Project (No Build) Alternative, there will be no additional construction or development activities, resulting in minimal changes to air quality compared to existing conditions. In contrast, the proposed Project involves construction, increased vehicular traffic, and operational activities, which could lead to localized air pollution from emissions, greenhouse gas emissions, or exceedances of air pollutants. Therefore, the No Project (No Build) Alternative is expected to have a lesser impact on air quality and greenhouse gas emissions.

Under the No Project (No Build) Alternative, no construction and no ground disturbing activities would occur. Therefore, there would be no impact to resources on the Project site including existing biological resources or cultural and tribal cultural resources. As such, these impacts would be reduced when compared to the proposed Project.

The No Project (No Build) Alternative would not involve new construction that could be subject to seismic, geologic or soils hazards; thus, this alternative would have no potential for impact.

Under the No Project (No Build) Alternative, no new land uses would be introduced to the Project site, and the potential for hazardous material release on the Project site would be eliminated. As such, this impact would be reduced when compared to the proposed Project.

Under the No Project (No Build) Alternative, potential water quality impacts from construction and operation of the proposed Project would be eliminated. While groundwater recharge is not considered a significant impact under the proposed Project, under this alternative, the land will be

kept in its present state with the majority of the Project site being used for agricultural purposes. The Project site is not a major source of groundwater recharge due to the lack of precipitation and the absence of a major water source. The No Project (No Build) Alternative will have a greater chance of groundwater recharge because it does not introduce large areas of impervious surfaces as would the proposed Project. As such, potential impacts related to hydrology and water quality would be reduced under the No Project (No Build) Alternative when compared to the proposed Project.

Alternative 1 would not develop any land uses, and, therefore, would not introduce any new noise to the area.

Under the No Project (No Build) Alternative, the Project site would remain undeveloped and there would be no increased demand for public infrastructure and utility systems, including water supply systems, energy, and public services. There would be no demand for police or fire services beyond those that currently exist. The No Project (No Build) Alternative would have a reduced impact when compared to the proposed Project because demand on public services would be reduced compared to the proposed Project.

With no new development, the No Project (No Build) Alternative would maintain existing traffic patterns and transportation infrastructure, and not add any traffic volumes to the transportation network. In contrast, the proposed Project would lead to increased vehicular traffic, congestion, and demand for transportation services. Thus, the No Project (No Build) Alternative would have fewer impacts on traffic and transportation systems.

IMPACTS IDENTIFIED AS BEING MORE SEVERE THAN THOSE OF THE PROPOSED PROJECT

There are no impacts from the implementation of the No Project (No Build) Alternative that would be greater than the proposed Project.

Relationship to Significant and Unavoidable Impacts

No development would occur on the Project site as a result of the No Project (No Build) Alternative. The visual character of the Project site as a agricultural site would remain, and no buildings would be constructed that could obstruct or alter the existing public viewshed. Therefore, the No Build (No Development) Alternative would eliminate the significant and unavoidable impact of degrading the existing visual character or quality of public views of the Project site and its surroundings in a non-urbanized area. As such, this impact would be reduced when compared to the proposed Project.

Currently, the majority of the Project site is used for agricultural purposes. The No Project (No Build) Alternative would result in no development on the Project site. As such, this alternative would have no impact on agricultural land, no potential for conflicts with existing agricultural resources, and loss of Prime Farmland or Farmland of Statewide Importance, and would not contribute to the cumulative loss of agricultural resources. The No Project (No Build) Alternative would eliminate the significant and unavoidable impact of converting Important Farmland. As such, this impact would be reduced when compared to the proposed Project.

Under the No Project (No Build) Alternative, the Project site would not be developed, and there would be no net change in emissions and no potential for a conflict with any adopted plans or

policies related to air quality. Implementation of the No Project (No Build) Alternative would eliminate the significant and unavoidable air quality and emissions impacts of the proposed Project. As such, this impact would be reduced when compared to the proposed Project.

Since the Project site would remain developed with agricultural uses, it would not induce a significant amount of additional traffic or operational noise to the area. Therefore, there would be no increased exposure of sensitive receptors to cumulative noise levels.

The No Project (No Build) Alternative would not introduce additional vehicle, pedestrian, or bicycle travel on the area roadways. The No Project (No Build) Alternative would have a reduced traffic impact when compared to the proposed Project. Therefore, implementation of the No Project (No Build) Alternative would eliminate the significant and unavoidable VMT impacts associated with the proposed Project.

Relationship to Project Objectives

Development under the No Project (No Build) Alternative would not achieve any of the Project objectives as the alternative would not result in the rezoning and industrial development of the site that is consistent with and facilitates the vision for new growth and development in the SCP Area; design an industrial facility that could accommodate a variety of industrial, warehouse, or manufacturing users; incorporate a commercial use to provide retail opportunities for onsite and offsite users; create economic growth by providing jobs, investment opportunities, or sales and property tax revenue; provide a location for regional job opportunities and improve the area's jobs/housing balance; install infrastructure improvements to the Project site; phase construction over time and sequence infrastructure improvements accordingly; or provide vehicular access to the Project site, create onsite circulation, or improve existing roadway frontages.

ALTERNATIVE 2 – NO PROJECT/EXISTING SCP DESIGNATIONS

It is common under CEQA to evaluate a no project/existing designations or existing zoning alternative to a proposed project. Under present conditions, the majority of Project site is currently designated as Salida Community Plan Planned Industrial (SCP-PI), with areas along Kiernan Avenue and Dale Road designated as Salida Community Plan Business Park (SCP-IBP) in the Stanislaus County General Plan. The Modesto Urban Area General Plan designates the Project site as the Salida Community Plan Area, noting that future uses on the site would not change from those that currently exist. The City has not zoned the Project site, but it is zoned as SCP. Under this alternative, the Project site would not be annexed to the City of Modesto, and would remain under the jurisdiction of Stanislaus County. The Project site would retain its existing Stanislaus County General Plan designation and zoning, and be built out accordingly. The Project site would not be annexed to the City of Modesto, and would remain in the County's jurisdiction.

To calculate the amount of development that could occur on the Project site under Alternative 2, the analysis considered the gross site acreage, and estimated that approximately 62.5 percent of the site would build out as Planned Industrial (PI) and 37.5 percent of the site built out as Business Park (BP). As shown in Table 5.0-2, considering the maximum allowable floor area ratios (FARs) in

each zone, Alternative 2 would result in 3,947,625 sf of industrial, warehouse, or manufacturing building space.

TABLE 5.0-2: ALTERNATIVE 2 DEVELOPMENT SUMMARY

	% OF SITE	*SITE AREA (SF)*	*FLOOR AREA RATIO (FAR)*	*BUILDING (SF)*
PI-SCP Zoning	62.5%	3,947,625	0.7	2,763,338
BP-SCP Zoning	37.5%	2,368,575	0.5	1,184,288
Project Site	100%	6,316,200	0.6	3,947,625

SOURCE: DE NOVO PLANNING GROUP, 2025.

To accommodate those uses, 1,544 standard vehicular parking spaces and 612 trailer parking spaces would be provided onsite. Onsite circulation improvements would still occur, such as establishing ingress and egress access points for the site and internal vehicle and pedestrian circulation. Landscape improvements along the site's frontage would still occur, as would development of a stormwater basin to control drainage runoff.

Comparative Analysis of Environmental Effects

IMPACTS IDENTIFIED AS BEING THE SAME AS OR SIMILAR TO THOSE OF THE PROPOSED PROJECT

Alternative 2 would result in the same amount of ground disturbance as the proposed Project because development would be distributed through the entire Project site. The conversion of farmland as a result of the proposed Project would result in the loss of Prime Farmland. Under the No Project/Existing SCP Designations Alternative, the same amount of Prime Farmland would be lost, and agricultural uses on the Project site would cease. Therefore, Alternative 2 is expected to have an equal near-term impact on agriculture resources as the proposed Project.

Under Alternative 2, the same acreage of ground disturbing activities would occur. Therefore, the impact on existing onsite biological resources or cultural and tribal cultural resources would be comparable to the proposed Project. Impacts between the proposed Project and Alternative 2 would be equal.

Under the No Project/Existing SCP Designations Alternative, the same acreage of land would be disturbed during construction activities and converted from permeable farmland to impermeable urban uses. The potential water quality impacts from construction and operation of the proposed Project would be similar as under the proposed Project. The Project site is not a major source of groundwater recharge due to the lack of precipitation and the absence of a major water source, so development on the Project site for the proposed Project and Alternative 2 would be equal. As such, potential impacts related to hydrology and water quality would be the same under the No Project/Existing SCP Designations Alternative when compared to the proposed Project.

Under the No Project/Existing SCP Designations Alternative, a similar type of development would occur as the proposed Project. The existing visual character of the area would change similarly to the proposed Project. The agricultural landscape, including visual character, would change and result in a similar impact on visual resources, and, therefore, the No Project/Existing SCP Designations Alternative is expected to have a similar impact on aesthetic and visual impacts as compared to the proposed Project.

IMPACTS IDENTIFIED AS BEING LESS SEVERE THAN THOSE OF THE PROPOSED PROJECT

Development of Alternative 2 would not change the land use designation in either the Stanislaus General Plan or the SCP. The zoning of the Project site would remain as it is now, and the Project site would not be rezoned and developed under the City of Modesto's standards. The Modesto UAGP would not be amended to include the Project site within the city limits, and the site would not be annexed to the city. Alternative 2 would not change the land use patterns established in the Stanislaus General Plan and SCP. Like the proposed Project, the No Project/Existing SCP Designations Alternative would not induce substantial population increase that has not already been accounted for as a part of the approved General Plan, or analyzed in detail in this EIR. More employees would be on the Project site than under the proposed Project. Because Alternative 2 would not affect existing land use and zoning, it would have a slightly less severe impact compared to the proposed Project.

IMPACTS IDENTIFIED AS BEING MORE SEVERE THAN THOSE OF THE PROPOSED PROJECT

Under the No Project/Existing SCP Designations Alternative, construction of the entire 145-acre Project site would be necessary, which could include grading, trenching for utilities, or pouring concrete foundations. These activities would be similar to those of the proposed Project. Alternative 2 would construct more square footage as compared to the proposed Project, which could increase the amount of construction activities or duration of construction activities. Due to more building square footage being developed, there would be increased changes to air quality compared to the proposed Project, and the impact would be greater. Operationally, Alternative 2 would have increased vehicular traffic as compared to the proposed Project because the building square footage is larger and there would be more employees, which could lead to increased localized air pollution from emissions, greenhouse gas emissions, or exceedances of air pollutant thresholds. Therefore, the No Project/Existing SCP Designations Alternative is expected to have a greater impact on air quality and greenhouse gas emissions.

The No Project/Existing SCP Designations Alternative would involve new construction that could be subject to seismic, geologic or soils hazards. Alternative 2 would disturb an equal amount of acreage as the proposed Project, resulting in development across the Project site. The depth of excavation and soil leveling would be the same between Alternative 2 and the proposed Project. However, Alternative 2 would likely have more employees on the Project site as compared to the proposed Project because the amount of square footage to be developed would be more. Therefore, Alternative 2 would expose more people and structures to seismic, geologic or soils hazards as the proposed Project, and Alternative 2's impact would be greater than under the proposed Project.

Under Alternative 2, the same types of industrial, manufacturing, and warehousing uses would be introduced to the Project site. The potential types of hazardous materials that could be introduced to the Project site would be similar, and such materials would be handled in a similar manner and in compliance with established rules and regulations. Because the square footage of buildings constructed onsite for Alternative 2 would be larger, and more trucks and employees would be present, the potential for hazardous material release on the Project site would be increased when compared to the proposed Project.

With the increase of vehicular and truck traffic under Alternative 2, there would be more noise created by transportation sources compared to the proposed Project. There would be more truck bays, trailer parking spaces, and buildings, resulting in more onsite operational noise.

Under Alternative 2, the Project site would be developed with uses similar to that of the proposed Project, but increased amount of square footage would be developed. In turn, Alternative 2 would have more onsite employees and an increased demand for public infrastructure and utility systems. Additionally, the demand for police or fire services would be more than that under the proposed Project. The No Project/Existing SCP Designations Alternative would have an increased impact when compared to the proposed Project because demand on public services and utilities and infrastructure would be increased compared to the proposed Project.

The No Project/Existing SCP Alternative would develop the entirety of the Project site. It is anticipated that site ingress and egress locations would be the same as under the proposed Project. Alternative 2 would have the same traffic patterns and transportation infrastructure as the proposed Project. However, it is expected that traffic volumes associated with the alternative would be greater than that under the proposed Project. Truck traffic, in particular, would still travel on local, regional, and interstate roadways, although there may be more and an increase in vehicle miles traveled. The impact would still exceed the threshold and remain significant and unavoidable under the No Project/Existing SCP Designations Alternative. Thus, the No Project/Existing SCP Designations Alternative would have more impacts on traffic and transportation systems than the proposed Project.

Relationship to Significant and Unavoidable Impacts

Development would occur on the Project site as a result of the No Project/Existing SCP Designations Alternative, and the existing visual character of the Project site would change. Buildings would be constructed that could obstruct or alter the existing public viewshed. These buildings would have more square footage as compared to the proposed Project, which could result in more buildings on the Project site. These factors would result in a greater impact on visual resources and more degradation of the existing visual character or quality of public views of the Project site and its surroundings in a non-urbanized area. As such, this significant and unavoidable impact would remain under Alternative 2, but would be greater when compared to the proposed Project.

Currently, the majority of the Project site is used for agricultural purposes. The No Project/Existing SCP Designations Alternative would result in the development of the entire Project site, just as with the proposed Project. As such, this alternative would remove the same acreage of Prime Farmland or Farmland of Statewide Importance, and would contribute to the cumulative loss of agricultural resources. The significant and unavoidable impact on agricultural resources would be the same under Alternative 2 as under the proposed Project.

Under the No Project/Existing SCP Designations Alternative, preparation of the entire Project site would be necessary, which could include grading, trenching for utilities, or pouring concrete foundations. These activities would be similar to those of the proposed Project. Alternative 2 would construct more square footage as compared to the proposed Project, which could increase the

amount of construction activities or extend the duration of construction activities. Due to more building square footage being developed, there would be increased construction related impacts to air quality compared to the proposed Project. Operationally, Alternative 2 would have increased vehicular traffic as compared to the proposed Project because the building square footage is larger and there would be more employees, which could lead to more localized air pollution from emissions, greenhouse gas emissions, or exceedances of air pollutant thresholds. Development of the No Project/Existing SCP Designations Alternative would result in a cumulatively considerable net increase of a criteria air pollutant for which the region is in nonattainment. Emissions from Alternative 2 would be expected to be slightly more than those under the proposed Project. Therefore, the No Project/Existing SCP Designations Alternative is expected to have a significant and unavoidable impact on air quality, but to a greater degree than the proposed Project.

The square footage and number of truck trips would be more under Alternative 2, resulting in more operational noise or cumulative traffic noise. Development of the Project site would still affect existing sensitive receptors to the north and east of the site, and would have a cumulatively considerable contribution to cumulative noise levels.

The No Project/Existing SCP Designations Alternative would introduce more vehicle or truck trips on the area roadways as the proposed Project due to the increased building square footage under Alternative 2. It is expected that traffic volumes associated with the alternative would be more than that under the proposed Project. Truck traffic, in particular, would still travel on local, regional, and interstate roadways, although there may be more trucks than the proposed Project. With more trucks and more employee vehicles accessing the Project site under Alternative 2, vehicle miles traveled would still exceed the threshold and remain significant and unavoidable under the No Project/Existing SCP Designations Alternative. Thus, the No Project/Existing SCP Designations Alternative would have greater impacts on traffic and transportation systems.

Relationship to Project Objectives

Development under the No Project/Existing SCP Designations Alternative would establish industrial land uses and would result in the rezoning of the property in a manner that is consistent with and facilitates the vision for new growth and development in the SCP Area, even though the Project site would not be annexed to the City of Modesto. Alternative 2 would result in an industrial facility that could accommodate a variety of industrial, warehouse, or manufacturing users, but to a greater extent than the proposed Project due to the increased size associated with greater FARs. As shown in Table 5.0-1, Alternative 2 would result in approximately 3,947,625 sf of industrial building space, while the proposed Project would result in approximately 2,503,230 square feet (sf) of industrial land uses. This is an increase of 1,444,395 sf. Alternative 2 would create economic growth by providing jobs, investment opportunities, or sales and property tax revenue, provide a location for regional job opportunities and improve the area's jobs/housing balance.

Although infrastructure improvements would be provided to the Project site, those utility services would be maintained by the County and would adhere to County standards. The Project site would not tie into the city's infrastructure networks, although construction could be phased over time and infrastructure improvements sequenced accordingly. Alternative 2 would provide vehicular access

to the Project site, create onsite circulation, and improve existing roadway frontages in line with the Project Objectives.

ALTERNATIVE 3 – REDUCED INTENSITY

Under this alternative, development of the Project site would be reduced by 25 percent, resulting in a smaller development footprint and less square footage for all uses, and fewer standard vehicular parking spaces and trailer parking spaces.

Development of the Project site would occur only on the northeast, southeast, and southwest quadrants of the site (Figure 5.0-2). The northwest quadrant of the Project site, nearest to Gregori High School, would remain vacant or resume active agricultural production.

Alternative 3 would develop the same types of warehouses, distribution, manufacturing, and commercial uses as envisioned under the proposed Project. Only 75 percent of the Project site would be developed, and all uses under Alternative 3 would be 75 percent of those uses under the proposed Project. As shown in Table 5.0-1, a total of 4,737,150 sf of the site would be developed, a 25 percent reduction from the 6,326,200-sf site to be developed under the proposed Project. Of that square footage, approximately 97,500 sf would be developed as offices and 1,779,923 sf of warehouse, distribution, and manufacturing buildings. Approximately 6,000 sf of quick serve restaurants and 4,500 sf convenience store with 14 fueling stations would be developed near the intersection of Kiernan Avenue and Dale Road for maximum visibility. Onsite parking would be reduced by 25 percent, resulting in 1,628 standard vehicular parking spaces and 646 trailer parking spaces.

Vehicular site access would remain the same under Alternative 3 as under the proposed Project, with three ingress/egress points along Dale Road and four ingress/egress points along Kiernan Avenue. Frontage improvements along Kiernan Avenue, Dale Road, and Pirrone Road would still occur, but only along the reduced site footprint, resulting in no roadway frontage improvements along a portion of Pirrone Road.

Similar to the proposed Project, the Project footprint in Alternative 3 would be annexed to the City of Modesto, and the site would be served by City of Modesto services and utility infrastructure. Water, sewer, storm drainage, and electricity connections would be the same under Alternative 3 as under the proposed Project, although less onsite infrastructure would be needed. An onsite storm water basin would still be constructed, but would have approximately 25 percent less capacity than under the proposed Project.

Comparative Analysis of Environmental Effects

IMPACTS IDENTIFIED AS BEING THE SAME AS OR SIMILAR TO THOSE OF THE PROPOSED PROJECT

There are no impacts from the implementation of the Reduced Intensity Alternative that would be equal to or similar to the proposed Project.

IMPACTS IDENTIFIED AS BEING LESS SEVERE THAN THOSE OF THE PROPOSED PROJECT

The development of the Project site in the existing setting into the proposed Project would physically alter the existing scenic vistas and visual character of the area. Under the Reduced Intensity Alternative, a similar type of development would occur as the proposed Project. The existing scenic vistas and visual character of the area would change similarly to the proposed Project. The natural landscape, including scenic vistas and visual character, would also change under Alternative 3 as it would for the proposed Project. Alternative 3, however, would develop less acreage and square footage than the proposed Project, which could result in smaller buildings or shorter buildings. The northwestern quadrant of the Project site would remain developed with agricultural row crops, and a view corridor from the southwest to the northeast across the Project site would remain. These factors would result in a lesser impact on visual resources, and, therefore, the Reduced Intensity Alternative is expected to have a lesser impact on aesthetic and visual impacts as compared to the proposed Project.

Alternative 3 would result in 25 percent less ground disturbance than the proposed Project, resulting in approximately 108.75 acres of disturbance compared to 145 acres for the proposed Project. The conversion of farmland into the proposed Project would result in the loss of Prime Farmland; however, under the Reduced Intensity Alternative, 36.25 fewer acres of Prime Farmland would be converted to urban uses. Agricultural production could still remain on the northwestern 36.25 acres of the Project site, and that acreage would not be converted to urban uses. Therefore, Alternative 3 would have a lesser impact on agriculture resources than the proposed Project.

Similarly, Alternative 3 would result in 25 percent less ground disturbance than the proposed Project, resulting in approximately 108.75 acres of disturbance compared to 145 acres for the proposed Project. Therefore, the impact on existing onsite biological resources or cultural and tribal cultural resources would be less than the proposed Project.

Under the Reduced Intensity Alternative, preparation of approximately 108.75 acres of the Project site would be necessary, which could include grading, trenching for utilities, or pouring concrete foundations. Although these activities would be similar to those of the proposed Project, Alternative 3 would disturb less acreage and construct less square footage than the proposed Project. Less ground disturbance and a smaller project could reduce the amount of construction activities or shorten the duration of construction activities. Due to less building square footage being developed, there would be reduced changes to air quality compared to the proposed Project, and the impact would be less. Operationally, Alternative 3 would have decreased vehicular traffic as compared to the proposed Project because the building square footage is smaller and there would be fewer employees, which could lead to lessened localized air pollution from emissions, greenhouse gas emissions, or exceedances of air pollutant thresholds. Therefore, the Reduced Intensity Alternative is expected to have a lesser impact on air quality and greenhouse gas emissions.

The Reduced Intensity Alternative would involve new construction that could be subject to seismic, geologic or soils hazards. Alternative 3 would disturb 25 percent less acreage as the proposed Project, resulting in development on only 108.75 acres of the Project site. The depth of excavation and soil leveling would be the same between Alternative 3 and the proposed Project. However, Alternative 3 would likely have fewer employees on the Project site as compared to the proposed

Project because the amount of square footage to be developed would be less. Therefore, Alternative 3 would expose fewer people and structures to seismic, geologic or soils hazards as the proposed Project, and Alternative 3's impact would be less than under the proposed Project.

Under Alternative 3, the same types of industrial, manufacturing, and warehousing uses would be introduced to the Project site. The potential types of hazardous materials that could be introduced to the Project site would be similar, and such materials would be handled in a similar manner and in compliance with established rules and regulations. Because the square footage of buildings constructed onsite for Alternative 3 would be smaller, and fewer trucks and employees would be present, the potential for hazardous material release on the Project site would be reduced when compared to the proposed Project.

Under the Reduced Intensity Alternative, approximately 36.25 fewer acres would be disturbed during construction activities and converted from permeable farmland to impermeable urban uses. The potential water quality impacts from construction and operation of the proposed Project would be similar as under the proposed Project. The Project site is not a major source of groundwater recharge due to the lack of precipitation and the absence of a major water source. However, because fewer acres would be converted from permeable to impermeable surfaces, the Reduced Intensity Alternative would have greater potential for groundwater recharge and would generate less stormwater runoff than the proposed Project. It is likely, however, that an onsite storm drainage basin would still be required, but would be smaller than that proposed for the Project. As such, potential impacts related to hydrology and water quality would be less under the Reduced Intensity Alternative when compared to the proposed Project.

Development of Alternative 3 would result in rezoning approximately 108.75 acres of the Project site to meet the City of Modesto's standards. Approximately 36.25 acres would remain under County jurisdiction and would maintain the SCP designation of Planned Industrial (PI) Reserve. The Modesto UAGP would be amended to include 108.75 acres of the Project site within the city limits, and only that portion of site would be annexed to the city. Alternative 3 would not fundamentally change the land use patterns established in the Stanislaus County General Plan, SCP, or Modesto UAGP. Like the proposed Project, the Reduced Intensity Alternative would not induce substantial population increase that has not already been accounted for as a part of an adopted General Plan, or analyzed in detail in this EIR. Fewer employees would be on the Project site than under the proposed Project, but no residential uses would be developed on the Project site. Because Alternative 3 would not add any additional population nor displace substantial numbers of people, impacts related to land use and population would be less than those associated with the proposed Project.

With the reduction of vehicular and truck traffic under Alternative 3, there would be less noise created by transportation sources compared to the proposed Project. There would be fewer truck bays, fewer trailer parking spaces, and smaller buildings, resulting in lesser onsite operational noise. Buildings on the Project site would be consolidated away from Gregori High School under Alternative 3, resulting in less noise emanating from the Project site to the school.

Under Alternative 3, the Project site would be developed with uses similar to that of the proposed Project, but a reduced amount of square footage would be developed. In turn, Alternative 3 would

have fewer onsite employees. Although there would be an increased demand for public infrastructure and utility systems above existing conditions, including water supply systems, energy, and public services, the demand would be less than under the proposed Project. Additionally, the demand for police or fire services would be less than that under the proposed Project. The Reduced Intensity Alternative would have a reduced impact when compared to the proposed Project because demand for public services and utilities, and the need for new or expanded infrastructure would be reduced compared to the proposed Project.

The Reduced Intensity Alternative would develop three quarters of the Project site, with development fronting Kiernan Avenue and Dale Road. It is anticipated that site ingress and egress locations would be the same as under the proposed Project. Alternative 3 would have similar traffic patterns and transportation infrastructure as the proposed Project. However, due to the smaller size of Alternative 3, it is expected that traffic volumes associated with the alternative would also be less than that under the proposed Project. Truck traffic, in particular, would still travel on local, regional, and interstate roadways, although there may be fewer trucks than the proposed Project. Although there would be fewer truck and fewer employee vehicles accessing the Project site, vehicle miles traveled would likely still exceed the threshold and remain significant and unavoidable under the Reduced Intensity Alternative. Thus, the Reduced Intensity Alternative would have fewer impacts on traffic and transportation systems.

IMPACTS IDENTIFIED AS BEING MORE SEVERE THAN THOSE OF THE PROPOSED PROJECT

There are no impacts from the implementation of the Reduced Intensity Alternative that would be greater than the proposed Project.

Relationship to Significant and Unavoidable Impacts

Development would occur on the Project site as a result of the Reduced Intensity Alternative, and the existing visual character of the Project site would change. Buildings would be constructed that could obstruct or alter the existing public viewshed. However, these buildings would have less square footage as compared to the proposed Project, which could result in smaller or shorter buildings. Further, the buildings would be concentrated along Kiernan Avenue and Dale Road, maintaining a visual corridor across the northwestern portion of the Project site. These factors would result in a lesser impact on visual resources and less degradation of the existing visual character or quality of public views of the Project site and its surroundings in a non-urbanized area. As such, this significant and unavoidable impact would remain under Alternative 3, but would lessen when compared to the proposed Project.

Currently, the majority of the Project site is used for agricultural purposes. The Reduced Intensity Alternative would result in development on 25 percent fewer acres than the proposed Project, converting 108.75 acres of farmland into urban uses as compared to the 145 acres the proposed Project would convert. As such, this alternative would remove fewer acres of Prime Farmland or Farmland of Statewide Importance, and would contribute to the cumulative loss of agricultural resources. The significant and unavoidable impact on agricultural resources would be less under Alternative 3 as under the proposed Project because fewer acres would be converted to urban uses.

Under the Reduced Intensity Alternative, preparation of approximately 108.75 acres of the Project site would be necessary, which could include grading, trenching for utilities, or pouring concrete foundations. Although these activities would be similar to those of the proposed Project, Alternative 3 would disturb less acreage and construct less square footage than the proposed Project. Less ground disturbance and a smaller project could reduce the amount of construction activities or shorten the duration of construction activities. Due to less building square footage being developed, there would be minimal changes to air quality compared to the proposed Project, and the impact would be less. Operationally, Alternative 3 would have decreased vehicular traffic as compared to the proposed Project because the building square footage is smaller and there would be fewer employees, which could lead to lessened localized air pollution from emissions, greenhouse gas emissions, or exceedances of air pollutant thresholds. However, it is likely that operational emissions could still conflict with or obstruct implementation of the Air District's Air Quality Plan, although to a lesser degree due to reduced emissions. Development of the Reduced Intensity Alternative would result in a cumulatively considerable net increase of a criteria air pollutant for which the region is in nonattainment. Emissions from Alternative 3 would be expected to be lower than those under the proposed Project. Therefore, the Reduced Intensity Alternative is expected to have a significant and unavoidable impact on air quality, but to a lesser degree than the proposed Project.

The square footage and number of truck trips would be less under Alternative 3, resulting in less operational noise or cumulative traffic noise. However, development of the Project site would still affect existing sensitive receptors to the north and east of the site, and would have a cumulatively considerable contribution to cumulative noise levels.

The Reduced Intensity Alternative would not introduce as many additional vehicle or truck trips on the area roadways as the proposed Project due to the smaller size of Alternative 3. It is expected that traffic volumes associated with the alternative would be less than that under the proposed Project. Truck traffic, in particular, would still travel on local, regional, and interstate roadways, although there may be fewer trucks than the proposed Project. Although there would be fewer truck and fewer employee vehicles accessing the Project site under Alternative 3, vehicle miles traveled would likely still exceed the threshold and remain significant and unavoidable under the Reduced Intensity Alternative, but the impact would be less than under the proposed Project. Thus, the Reduced Intensity Alternative would have fewer impacts on traffic and transportation systems than the proposed Project.

Relationship to Project Objectives

Development under the Reduced Intensity Alternative would establish industrial land use and zoning that is consistent with and facilitates the vision for new growth and development in the SCP Area, even though only a portion of the Project site would be annexed to the City of Modesto. Alternative 3 would result in an industrial facility that could accommodate a variety of industrial, warehouse, or manufacturing users, but to a lesser extent than the proposed Project due to the reduced development. Alternative 3 would incorporate a commercial use to provide retail opportunities for onsite and offsite users, create economic growth by providing jobs, investment opportunities, or sales and property tax revenue, provide a location for regional job opportunities and improve the area's jobs/housing balance. However, the jobs-based objectives would not be achieved as well

under Alternative 3 as under the proposed Project due to the smaller square footage anticipated, resulting in slightly less economic growth and jobs.

Alternative 3 would extend infrastructure improvements to the Project site, and those utility services would be provided and maintained by the City, similar to the proposed Project. The Project site would tie into the city's infrastructure networks, and construction could be phased over time and infrastructure improvements sequenced accordingly. Alternative 3 would provide vehicular access to the Project site, create onsite circulation, and improve existing roadway frontages in line with the Project Objectives.

ALTERNATIVE 4 – OFFSITE LOCATION

Under the Offsite Location Alternative, development of the Project would occur in a different location than that under the proposed Project. The Offsite Location Alternative would develop the Project west of SR 99, on a similarly sized site, one-half mile by one-half mile. The Offsite Location would be bound by Kiernan Road to the north, Toomes Road to the east, Covert Road to the south, and Hammett Road to the west (Figure 5.0-3). Lateral Number Six cuts across the southwestern corner of the site. The site is within the SCP Planning Area and is zoned as Planned Industrial (PI). The Offsite Location is currently surrounded by an existing middle school and agricultural uses to the north, low density residential uses to the east, and agricultural uses to the south and west (Figure 5.0-4). The SCP anticipates that low- and medium-high density residential uses, an elementary school, and park uses will build out north of the Offsite Location, complementing the existing middle school. The SCP also anticipates land to the south to develop into a low- and medium density residential neighborhood, with a park and commercial uses, as shown in Figure 5.0-3.

The area identified for Alternative 4, Offsite Location, has several existing uses onsite. Large portions of the Offsite Location have active agricultural uses, including row crops and orchards. The Offsite Location includes approximately 15-20 single-family residences, with associated agricultural outbuildings and outdoor storage areas. Flory Industries, a major nut-harvesting equipment supplier and retailer, is located at 4737 Toomes Road, near the intersection of Kiernan Avenue and Toomes Road. The Flory Industries manufacturing facilities and offices are located on the original property purchased in 1909. Another business, Gary's Fencing and Wire Supplies, is located onsite at 4718 Hammett Road.

The location for the Offsite Location Alternative was chosen as an alternate location for the Project because it is one of the few significantly sized areas within the SCP Planning Area that is zoned for Planned Industrial (PI). The size of the Offsite Location closely matches the acreage of the proposed Project, approximately 145 acres.

Under Alternative 4, all existing uses on the site would be removed, including homes, businesses, and agricultural operations, and be replaced with the proposed industrial, warehouse, manufacturing, and commercial uses proposed under the Project. The same uses and square footages that are proposed for the Project would be proposed for the Offsite Location. This alternative would develop 2,503,230 square feet of warehouse, distribution, and manufacturing space. In addition, the retail site would develop a 6,000 square foot convenience store with 18

fueling stations, and 8,000 square feet of quick-serve restaurants. A stormwater basin would also be required to manage stormwater runoff.

The site plan for the Offsite Location Alternative would be a mirror image of the proposed Project, placing the drainage basin on the east side of the site, closest to the single-family homes to the east. Site ingress and egress access points would be along the western boundary, Hammett Road. Because Kiernan Avenue to the north leads eastward toward easy access to SR 99, additional access points would be located along Kiernan Avenue rather than along the south side of the site, Covert Road, which travels eastward into a residential neighborhood. Providing site access points along the western and northern boundaries of the site would direct truck traffic away from existing low-density residential areas.

The Offsite Location would not be annexed into the City of Modesto as the site is not contiguous with the city limits. The site would retain the SCP Planning Area designations identified in the Stanislaus County General Plan and SCP. Utilities such as water, sewer, and storm drainage infrastructure would be provided by Stanislaus County providers including the Salida Sanitary District (sewer) and the City of Modesto Public Works Department (water). The Salida Fire Protection District would provide fire protection services and the Stanislaus County Sheriff would provide police protection services.

Comparative Analysis of Environmental Effects

IMPACTS IDENTIFIED AS BEING THE SAME AS OR SIMILAR TO THOSE OF THE PROPOSED PROJECT

The development of the Project site in the existing setting into the proposed Project would physically alter the existing scenic vistas and visual character of the area. The area identified for Alternative 4, Offsite Location, has several existing uses onsite. Large portions of the Offsite Location have active agricultural uses, including row crops and orchards. Under the Offsite Location Alternative, a similar type of development would occur as the proposed Project at the same intensity. The existing scenic vistas and visual character of the area would change similarly to the proposed Project. Under this alternative, the agricultural and rural residential uses would be converted to a developed industrial site. The natural landscape, including scenic vistas and visual character, would also change under Alternative 4 as it would for the proposed Project. The entirety of the site under Alternative 4 would be developed, the same as the proposed Project. These factors would result in a similar level of impact on aesthetics and visual resources as the proposed Project.

Both Alternative 4 and the proposed Project would cause ground disturbance across approximately 145 acres on each site. Although this site is located in a different area than the Project, similar special-status species which are known in the region may occur at the off-site location. In terms of habitat quality for this alternative location, potential habitat for special-status bumble bees is likely present in the agricultural areas. Similarly, suitable foraging habitat for special-status bird species is likely present in the agricultural areas within the off-site location. Further, development of the off-site location would eliminate foraging habitat for special-status bats by removing the agricultural areas. Although the type of habitat and previous level of disturbance differs between the two sites, mitigation measures would be required for Alternative 4 to account for habitat loss and unanticipated discoveries of cultural resources, as it would for the proposed Project. Therefore, the

Offsite Location Alternative's impact on existing onsite biological resources or cultural and tribal cultural resources would be similar to the proposed Project.

The Offsite Location Alternative would involve new construction that could be subject to seismic, geologic or soils hazards. Both the Project site and the Offsite Location Alternative site have fine sandy loam and sandy loam soils. This soil type Alternative 4 would disturb an equal amount of acreage as the proposed Project. The depth of excavation and soil leveling would likely be the same between Alternative 4 and the proposed Project. Alternative 4 would have the same number of employees as the proposed Project, exposing an equal number of people and structures to seismic, geologic or soils hazards as the proposed Project. The Offsite Location Alternative would have equal geologic, soils, and seismic impacts as the proposed Project.

Under Alternative 4, the same types of industrial, manufacturing, and warehousing uses would be introduced to the Project site. The potential types of hazardous materials that could be introduced to the Project site would be similar, and such materials would be handled in a similar manner and in compliance with established rules and regulations. Because the square footage of buildings constructed onsite for Alternative 4 would be the same as the proposed Project, and there would be the same number of trucks and employees, the potential for hazardous material release on the Offsite Location site would be the same as the proposed Project.

Both the Offsite Location Alternative and the proposed Project would disturb approximately 145 acres during construction activities and convert permeable farmland to impermeable urban uses, the potential water quality impacts from construction and operation of the proposed Project would be similar as under the proposed Project. The Project site and the Offsite Location are not major sources of groundwater recharge due to the lack of precipitation and the absence of a major water source. Like the proposed Project, a drainage basin would be required to capture stormwater runoff from the Offsite Location. Because the same number of acres would be converted from permeable to impermeable surfaces, Alternative 4 would have the same potential for groundwater recharge and stormwater runoff as the proposed Project.

The Offsite Location Alternative would develop the same acreage as the Project site, resulting in an equal number of vehicles and trucks accessing the site. Alternative 4 would likely have ingress and egress locations along Kiernan Avenue to the north, and along Hammett Road to the west. Access onto Kiernan Avenue is the only reasonable east-west roadway to access the Offsite Location. Hammett Road would provide north-south access to the Offsite Location, which would direct trucks and traffic away from the adjacent residential neighborhood. Traffic patterns for the Offsite Location would differ from the proposed Project due to the nature of the location. Trucks departing the Offsite Location site would use Hammett Road or Kiernan Avenue to enter the roadway network, then travel east along Kiernan Avenue. Trucks would turn to southbound Salida Boulevard to Broadway Avenue. Trucks could then access SR 99 at the Broadway Avenue interchange. For vehicles and trucks coming from SR 99, that route would be reversed. Therefore, the roadway network would experience the same amount of traffic volume as the proposed Project, but different local and regional roadways and intersections would be affected. Because the traffic volumes would be the same between Alternative 4 and the proposed Project, and the two sites are roughly the same distance from the state highway system, it is likely that the vehicle miles traveled for the Offsite

Alternative would be similar to the proposed Project. VMT, therefore, would exceed the threshold and remain significant and unavoidable for Alternative 4. Thus, the Offsite Location Alternative would have similar impacts on traffic and transportation systems.

Under Alternative 4, the demand for public infrastructure and utility systems would be the same as the proposed Project because the square footage and development uses would be the same. However, due to the different location, the Offsite Alternative would connect into different infrastructure networks or use different service providers. For example, the proposed Project would use the City of Modesto's infrastructure for storm drainage services. In contrast, the Stanislaus County Public Works Department would provide storm drainage services to the Alternative 4 location. Service providers aside, Alternative 4 would have an equal demand for water supply, wastewater treatment, storm drainage, energy, police protection, and fire protection as the proposed Project.

IMPACTS IDENTIFIED AS BEING LESS SEVERE THAN THOSE OF THE PROPOSED PROJECT

Alternative 4 would result in the conversion of approximately 116 acres of Prime Farmland,[1] including actively irrigated and harvested orchards. Comparatively, development of the proposed Project would result in the permanent conversion of 145 acres of Prime Farmland to urban uses. Although the proposed Project site is not currently being used for agricultural farming, the underlying soil type indicates that the Project site could be used for agriculture if it were irrigated. Since fewer acres of Prime Farmland would be converted to urban uses under the Offsite Location Alternative as compared to the proposed Project, Alternative 4 would have a lesser impact on agricultural resources.

IMPACTS IDENTIFIED AS BEING MORE SEVERE THAN THOSE OF THE PROPOSED PROJECT

Under the Offsite Location Alternative, preparation of approximately 145 acres of the Project site would be necessary, which could include grading, trenching for utilities, or pouring concrete foundations. Therefore, the amount of construction activities and duration of construction activities would be similar between Alternative 4 and the proposed Project. The acreage disturbed under the proposed Project would be the same. Further, the operational emissions from vehicular traffic would be similar to the proposed Project as the number of employees would be the same, and both sites are a similar distance from SR 99, a major trucking route. However, the Offsite Location Alternative would require the demolition of several buildings in order to prepare the site for construction. This additional step required for Alternative 4 could result in additional pollutant emissions from the demolition itself, using different construction equipment to demolish the structures and remove orchards, and could prolong the construction schedule. As a result, Alternative 4 could lead to increase localized air pollution from emissions, greenhouse gas emissions, or exceedances of air pollutant thresholds from construction activities when compared to the proposed Project. Therefore, Alternative 4 would have a greater impact on air quality, greenhouse gas emissions, and energy than the proposed Project.

[1] California Department of Conservation, 2025. California Important Farmland Finder. Available: https://maps.conservation.ca.gov/DLRP/CIFF/. Accessed: August 6, 2025.

Alternative 4 would not fundamentally change the land use patterns established in the Stanislaus General Plan or the SCP as the Project uses are permitted in the PI zone. Like the proposed Project, the Offsite Location Alternative would not induce substantial population increase that has not already been accounted for as a part of an approved General Plan, or analyzed in detail in this EIR. Development of Alternative 4 would, however, result in the displacement of people and residential uses. Approximately 15-20 houses are present on the Offsite Location site, and those would be demolished to implement the Project's industrial, warehouse, manufacturing, and commercial uses. The displacement of residents would necessitate the construction of housing elsewhere to accommodate them. In contrast, development of the proposed Project would not result in the removal of residential units or the displacement of people Because Alternative 4 would cause people to be displaced, the Offsite Location Alternative's impacts related to land use and population would be greater than the proposed Project.

Under Alternative 4, the Project site would be developed with the same uses as the proposed Project at the same intensity. The number of employees, truck bays, and truck trips would be the same under both scenarios and the same noise levels would emanate from the Offsite Location as the proposed Project site. The Offsite Location, however, would be adjacent to a residential neighborhood to the east. The proposed drainage basin could be located on the east side of the Offsite Location site, which, along with Toomes Road, would provide some buffering distance between the Offsite Location and the residences. However, more sensitive receptors could be affected by noise at the Offsite Location compared to the proposed Project site due to the residential density adjacent to the site. Therefore, noise impacts would be greater under the Offsite Location Alternative than the proposed Project.

Relationship to Significant and Unavoidable Impacts

Development of Alternative 4 would alter the existing visual character of the Offsite Location site. Buildings would be constructed that could obstruct or alter the existing public viewshed. The density, height, and siting of buildings would be similar to the proposed Project, which would create a similar level of visual obstruction. However, the viewshed that would be affected under Alternative 4 would be different by obstructing agricultural fields and views from urban uses from the east. Alternative 4 would result in a similar level of impact on visual resources and degradation of the existing visual character or quality of public views as the proposed Project site. As such, this significant and unavoidable impact would remain under Alternative 4 at an equal, but different, level as the proposed Project.

Currently, the majority of the Offsite Location is used for agricultural purposes, but other portions of the site are built with impervious urban uses. The Offsite Location Alternative would result in the removal of all Prime Farmland on the site, but fewer acres than the proposed Project. As such, this alternative would remove the fewer acres of Prime Farmland or Farmland of Statewide Importance, and would contribute to the cumulative loss of agricultural resources. The significant and unavoidable impact on agricultural resources would be less under Alternative 4 as under the proposed Project because fewer acres would be converted to urban uses.

Under the Offsite Location Alternative and the proposed Project, site preparation of approximately 145 acres would be necessary, which could include grading, trenching for utilities, or pouring concrete foundations. However, Alternative 4 would require the demolition of several buildings which could increase the amount of construction activities or lengthen the duration of construction activities. Therefore, it is possible that Alternative 4 could have higher pollution emissions due to construction activities. Operationally, Alternative 4 would have the same level of vehicular traffic as the proposed Project because the building square footage, types of uses, and number of employees would be the same, resulting in equal impacts on localized air pollution from emissions, greenhouse gas emissions, or exceedances of air pollutant thresholds. It is likely that operational emissions could still conflict with or obstruct implementation of the Air District's Air Quality Plan. Development of Alternative 4 would result in a similar level of cumulatively considerable net increase of a criteria air pollutant for which the region is in nonattainment. Emissions from Alternative 4 would be expected to be the same as those under the proposed Project, resulting in the same intensity of the significant and unavoidable impact on air quality.

Under Alternative 4, the square footage and number of truck trips would result in the same as or similar to operational noise and cumulative traffic noise as the proposed Project. The Offsite Location Alternative site would be adjacent to many sensitive receptors, specifically residential uses to the east of the site. Therefore, it is anticipated that development of Alternative 4 would affect existing sensitive receptors to the east of the site, and would have a cumulatively considerable contribution to cumulative noise levels.

The Offsite Location Alternative would introduce an equal number of additional vehicle or truck trips on the area roadways as the proposed Project. Given the same uses and distance from SR 99, Alternative 4 would likely have a similar amount vehicle miles traveled and would likely still exceed the threshold and remain significant and unavoidable. Thus, the Offsite Location Alternative would have similar impacts on traffic and transportation systems and VMT as the proposed Project.

Relationship to Project Objectives

Development under the Offsite Location Alternative would establish industrial land use and zoning that is consistent with and facilitates the vision for new growth and development in the SCP Area, although the development would occur on the west side of the SCP Area, not contiguous to the City of Modesto. Under Alternative 4, an industrial facility that could accommodate a variety of industrial, warehouse, or manufacturing users would be developed comparable to the proposed Project. Alternative 4 would incorporate a commercial use to provide retail opportunities for onsite and offsite users, create economic growth by providing jobs, investment opportunities, or sales and property tax revenue, provide a location for regional job opportunities and improve the area's jobs/housing balance.

Infrastructure improvements would be provided to the Project site, but would not be built to City standards because the Offsite Location would not be annexed to the City of Modesto. Utilities would instead meet the requirements set forth by Stanislaus County and tie into existing infrastructure networks. Construction could be phased over time and infrastructure improvements sequenced

accordingly. Alternative 4 would provide vehicular access to the Offsite Location Alternative site, create onsite circulation, and improve existing roadway frontages in line with the Project Objectives.

ALTERNATIVE 5 – NO COMMERCIAL

Alternative 5 would develop the same types of office, warehouse, distribution, and manufacturing uses as envisioned under the proposed Project. The 3-acre retail site under the proposed Project would be left open and undeveloped. A concept of this allows for a reorientation of the southwestern warehouses, such that they are rotated compared to the proposed Project (Figure 5.0-5). The total square footage of the buildings would remain the same as the office/industrial portion of the proposed Project at 2,503,230 square feet (sf); specific tenants are not known; therefore, a mix of office, warehouse, manufacturing and distribution uses are assumed. Vehicular site access would remain the same under Alternative 5 as under the proposed Project. Frontage improvements along Kiernan Avenue, Dale Road, and Pirrone Road would still occur.

Similar to the proposed Project, the Project footprint in Alternative 5 would be annexed to the City of Modesto, and the site would be served by City of Modesto services and utility infrastructure. Water, sewer, storm drainage, and electricity connections would be the same under Alternative 5 as under the proposed Project. An onsite storm water basin would still be constructed.

Comparative Analysis of Environmental Effects

IMPACTS IDENTIFIED AS BEING THE SAME AS OR SIMILAR TO THOSE OF THE PROPOSED PROJECT

Alternative 5 would result in the same amount of ground disturbance as the proposed Project because development would be distributed through the entire Project site. The conversion of farmland as a result of the proposed Project would result in the loss of Prime Farmland. Under the No Commercial Alternative, the same amount of Prime Farmland would be lost, and agricultural uses on the Project site would cease. Similarly, there are no Williamson Act contracts on the Project site, and the site is not zoned for agricultural use. Therefore, Alternative 5 is expected to have an equal near-term impact on agriculture resources as the proposed Project.

Under Alternative 5, the same acreage and location of ground disturbing activities would occur. Similarly, because this alternative would develop the same site as the Project, identical habitat impacts and special-status species impacts would result from this alternative. Therefore, the impact on existing onsite biological resources would be comparable to the proposed Project. Impacts between the proposed Project and Alternative 5 would be equal. The same mitigation measures in Section 3.4 would apply to Alternative 5.

Similar to impacts to biological resources, under Alternative 5, the same acreage and location of ground disturbing activities would occur. Because this alternative would develop the same site as the Project, identical potential for impacts to historical, archaeological, and tribal cultural resources exists. The same mitigation measures in Section 3.5 would apply to Alternative 5.

Under the No Commercial Alternative, the same acreage and location of land would be disturbed during construction activities and converted from permeable farmland to impermeable urban uses. The potential water quality impacts from construction and operation of the proposed Project would

be similar as under the proposed Project. The Project site is not a major source of groundwater recharge due to the lack of precipitation and the absence of a major water source, so development on the Project site for the proposed Project and Alternative 5 would be equal. As such, potential impacts related to hydrology and water quality would be the same under the No Commercial Alternative when compared to the proposed Project.

Under Alternative 5, the Project site would be developed with uses similar to that of the proposed Project, but the retail site would be left open and undeveloped. In turn, Alternative 5 would have fewer onsite employees. There would be an increased demand for utilities above existing conditions, including water supply systems, wastewater systems, solid waste, and stormwater drainage; the demand would be similar as the proposed Project. For example, as shown in Appendix F, the water demand is calculated using the total gross acreage of the site and the water use factor (acre-feet per year per acre). Because the same acreage and water use factor would be utilized, the same water demand would result from this alternative. The No Commercial Alternative would have a similar impact when compared to the proposed Project because demand on utilities and infrastructure would be similar compared to the proposed Project. The impacts to public services would also be similar because similar uses on the same site would be developed under this alternative.

Similarly, the development of the Project site in the existing agricultural setting into the proposed Project would physically alter the existing scenic vistas and visual character of the area. Under the No Commercial Alternative, a similar type of development would occur as the proposed Project. The existing scenic vistas and visual character of the area would change similarly to the proposed Project. The natural landscape, including scenic vistas and visual character, would also change under Alternative 5 as it would for the proposed Project. Further, Mitigation Measure 3.1-1 in Section 3.1 would also be required for this alternative in order to reduce impacts to light and glare to a less-than-significant level. These factors would result in a similar impact on visual resources, and, therefore, the No Commercial Alternative is expected to have a similar impact on aesthetic and visual impacts as compared to the proposed Project.

Development of Alternative 5 would require similar land use and zoning entitlements as the Project.

Lastly, construction noise under Alternative 5 would be similar as the Project due to the proposed location, size, and types of buildings.

IMPACTS IDENTIFIED AS BEING LESS SEVERE THAN THOSE OF THE PROPOSED PROJECT

Under the No Commercial Alternative, construction of the entire Project site would be necessary, which could include grading, trenching for utilities, or pouring concrete foundations. These activities would be similar to those of the proposed Project.

As part of the Trip Generation Assumptions for the Scannell Industrial Project Alternatives Analysis Memorandum (Fehr & Peers, 2026), trip generation estimates for the No Commercial Alternative were calculated and compared to the proposed Project. Below are the key conclusions from the comparison:

- The No Commercial Alternative would reduce 9,960 daily gross trips, 926 AM peak-hour, and 748 PM peak-hour gross trips compared to the proposed Project.
- The No Commercial Alternative would reduce 3,400 daily net-new trips, 288 AM peak-hour, and 208 PM peak-hour net-new trips compared to the proposed Project.
- The No Commercial Alternative would reduce 80 daily heavy-duty truck trips, 9 AM peak-hour, and 2 PM peak-hour heavy-duty truck trips compared to the proposed Project.

As described above, the No Commercial Alternative results in a substantial reduction (approximately 54%) in daily gross trips compared to the proposed Project. The reduction in net-new daily trips (approximately 29%) is considerably lower because a large proportion of gross retail trips (included for the proposed Project) are pass-by trips, whereas the elimination of retail uses removes all associated pass-by trip generation from the Kiernan/Dale corner. The reduction in heavy-duty truck trips is low, as industrial uses generate truck trips at a much higher rate than retail uses throughout a typical weekday. As a result, VMT would be reduced when compared to the Project.

The No Commercial Alternative would develop the entirety of the Project site. It is anticipated that site ingress and egress locations would be similar to the proposed Project. Alternative 5 would have similar traffic patterns and transportation infrastructure as the proposed Project. However, due to the elimination of retail uses under Alternative 5, it is expected that traffic volumes associated with the alternative would also be less than that under the proposed Project. Truck traffic, in particular, would still travel on local, regional, and interstate roadways, although there would be fewer trucks than the proposed Project. Although there would be fewer truck and fewer employee vehicles accessing the Project site, vehicle miles traveled would likely still exceed the threshold and remain significant and unavoidable under the No Commercial Alternative. Thus, the No Commercial Alternative would have fewer impacts on traffic and transportation systems than the proposed Project.

The No Commercial Alternative would involve new construction that could be subject to seismic, geologic or soils hazards. Alternative 5 would disturb an equal amount of acreage as the proposed Project, resulting in development across the Project site. The depth of excavation and soil leveling would be the same between Alternative 5 and the proposed Project. The amount of erosion would be comparable to the Project under this alternative. Similarly, the same acreage and location of land would be disturbed during construction activities, resulting in the same impacts to paleontological resources as the Project. However, Alternative 5 would likely have fewer employees on the Project site as compared to the proposed Project because the retail component and its associated employees are eliminated under this alternative. Therefore, Alternative 5 would expose fewer people and structures to seismic, geologic or soils hazards as the proposed Project, and Alternative 5's impact would be less than under the proposed Project.

Under Alternative 5, the same types of industrial, manufacturing, and warehousing uses would be introduced to the Project site; the retail parcel would be left open and undeveloped. The potential types of hazardous materials that could be introduced to the Project site would be similar, and such materials would be handled in a similar manner and in compliance with established rules and regulations. Because fewer trucks and employees would be present under this Alternative, the potential for hazardous material release on the Project site would be reduced when compared to

the proposed Project. The same mitigation measures that apply to the Project related to hazards would apply to this alternative.

Like the proposed Project, the No Commercial Alternative would not induce substantial population increase that has not already been accounted for as a part of the approved General Plan, or analyzed in detail in this EIR. Fewer employees would be on the Project site than under the proposed Project, but no residential uses would be constructed. Because Alternative 5 would not add any additional population nor displace substantial numbers of people, impacts related to land use and population would be less than the proposed Project.

As noted above, Alternative 5 would have decreased vehicular traffic as compared to the proposed Project because the elimination of retail uses would result in fewer employees, which could lead to lessened localized air pollution from emissions, greenhouse gas emissions, or exceedances of air pollutant thresholds. Therefore, the No Commercial Alternative is expected to have a lesser impact on all impacts related to air quality and greenhouse gas emissions.

With the reduction of vehicular and truck traffic under Alternative 5, there would be less noise created by transportation sources compared to the proposed Project. There would be fewer trailer parking spaces, resulting in lesser onsite operational noise. Buildings on the Project site could be spread out under Alternative 5, resulting in less concentrated noise sources onsite.

IMPACTS IDENTIFIED AS BEING MORE SEVERE THAN THOSE OF THE PROPOSED PROJECT

There are no impacts from the implementation of the No Commercial Alternative that would be greater than the proposed Project.

Relationship to Significant and Unavoidable Impacts

Development would occur on the Project site as a result of the No Commercial Alternative, and the existing visual character of the Project site would change. Buildings would be constructed that could obstruct or alter the existing public viewshed. These factors would result in an equal impact on visual resources and similar degradation of the existing visual character or quality of public views of the Project site and its surroundings in a non-urbanized area. As such, this significant and unavoidable impact would remain under Alternative 5.

Currently, the majority of the Project site is used for agricultural purposes. The No Commercial Alternative would result in development on the same acreage as the proposed Project, converting an equal amount of farmland into urban uses as compared to the proposed Project. As such, this alternative would remove an equal number of acres of Prime Farmland or Farmland of Statewide Importance, and would contribute to the cumulative loss of agricultural resources. The significant and unavoidable impact on agricultural resources would be equal under Alternative 5 as under the proposed Project because an equal number of acres would be converted to urban uses.

Under the No Commercial Alternative, preparation of the entire Project site would be necessary, which could include grading, trenching for utilities, or pouring concrete foundations. These activities would be similar to those of the proposed Project. Operationally, Alternative 5 would have decreased vehicular traffic as compared to the proposed Project because there would be fewer

employees and the retail component would be removed, which could lead to lessened localized air pollution from emissions, greenhouse gas emissions, or exceedances of air pollutant thresholds. However, it is likely that operational emissions could still conflict with or obstruct implementation of the Air District's Air Quality Plan, although to a lesser degree due to reduced emissions. Development of the No Commercial Alternative would result in a cumulatively considerable net increase of a criteria air pollutant for which the region is in nonattainment. Emissions from Alternative 5 would be expected to be lower than those under the proposed Project. Therefore, the No Commercial Alternative is expected to have a significant and unavoidable impact on air quality, but to a lesser degree than the proposed Project.

The number of truck and automobile trips would be less under Alternative 5, resulting in less operational noise or cumulative traffic noise. However, development of the Project site would still affect existing sensitive receptors to the north and east of the site, and would have a cumulatively considerable contribution to cumulative noise levels.

The No Commercial Alternative would not introduce as many additional vehicle or truck trips on the area roadways as the proposed Project due to the replacement of retail uses with industrial uses under this Alternative. As noted above, traffic volumes associated with the alternative would be less than that under the proposed Project. Truck traffic, in particular, would still travel on local, regional, and interstate roadways, although there would be fewer trucks than the proposed Project. Although there would be fewer truck and fewer employee vehicles accessing the Project site under Alternative 5, vehicle miles traveled would likely still exceed the threshold and remain significant and unavoidable under the No Commercial Alternative, but the impact would be less than under the proposed Project. Thus, the No Commercial Alternative would have fewer impacts on traffic and transportation systems than the proposed Project.

Relationship to Project Objectives

Development under the No Commercial Alternative would establish industrial land use and zoning that is consistent with and facilitates the vision for new growth and development in the SCP Area. Alternative 5 would result in an industrial facility that could accommodate a variety of industrial, warehouse, or manufacturing users, but to a lesser extent than the proposed Project due to the elimination of the commercial component. Alternative 5 would not incorporate a commercial use to provide retail opportunities for onsite and offsite users, create economic growth by providing jobs, investment opportunities, or sales and property tax revenue, provide a location for regional job opportunities and improve the area's jobs/housing balance. Similarly, the jobs-based objectives would not be achieved as well under Alternative 5 as under the proposed Project due to the slight reduction in economic growth and jobs.

Alternative 5 would extend infrastructure improvements to the Project site, and those utility services would be provided and maintained by the City, similar to the proposed Project. The Project site would tie into the city's infrastructure networks, and construction could be phased over time and infrastructure improvements sequenced accordingly. Alternative 5 would provide vehicular access to the Project site, create onsite circulation, and improve existing roadway frontages in line with the Project Objectives.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA requires that an environmentally superior alternative be identified among the alternatives that are analyzed in the EIR. If the No Project (No Build) Alternative is the environmentally superior alternative, an EIR must also identify an environmentally superior alternative among the other alternatives (CEQA Guidelines Section 15126.6(e)(2)). The environmentally superior alternative is that alternative with the least adverse environmental impacts when compared to the proposed Project.

Table 5.0-3 presents a comparison of the alternative Project impacts with those of the proposed Project. As shown in the table, the No Project (No Build) Alternative is the environmentally superior alternative. However, as required by CEQA, when the No Project (No Build) Alternative is the environmentally superior alternative, the environmentally superior alternative among the others must be identified. Among the other remaining alternatives, Alternative 3 results in fewer environmental impacts than Alternative 5 because it reduces the total site area by 25 percent, resulting in lesser impacts across all topical areas, while Alternative 5 develops the same 145-acre footprint as the proposed Project and results in equal or similar impacts in several topical areas, including Aesthetics, Agriculture, Biological Resources, Cultural Resources, Geology, Hydrology, Public Services, and Utilities. Therefore, Alternative 3, Reduced Intensity, is identified as the environmentally superior alternative among the non-No-Project alternatives.

TABLE 5.0-3: COMPARISON OF ALTERNATIVE PROJECT IMPACTS TO THE PROPOSED PROJECT

ENVIRONMENTAL ISSUE	*PROPOSED PROJECT*	*ALTERNATIVE 1: NO PROJECT / NO BUILD*	*ALTERNATIVE 2: NO PROJECT / EXISTING SCP DESIGNATIONS*	*ALTERNATIVE 3: REDUCED INTENSITY*	*ALTERNATIVE 4: OFFSITE LOCATION*	*ALTERNATIVE 5: NO COMMERCIAL*
Aesthetics and Visual Resources	SU	Less (Best)	Greater	Less (2nd Best)	Equal/ Similar	Equal/ Similar
Agricultural Resources	SU	Less (Best)	Equal/ Similar	Less (2nd Best)	Less	Equal/ Similar
Air Quality	SU	Less (Best)	Greater	Less (2nd Best)	Greater	Less
Biological Resources	LTSMM	Less (Best)	Equal/ Similar	Less (2nd Best)	Equal/ Similar	Equal/ Similar
Cultural and Tribal Resources	LTSMM	Less (Best)	Equal/ Similar	Less (2nd Best)	Equal/ Similar	Equal/ Similar
Geology and Soils	LTSMM	Less (Best)	Equal/ Similar	Less (2nd Best)	Equal/ Similar	Equal/ Similar
Greenhouse Gases, Climate Change and Energy	LTS	Less (Best)	Greater	Less (2nd Best)	Greater	Less
Hazards and Hazardous Materials	LTSMM	Less (Best)	Greater	Less (2nd Best)	Equal/ Similar	Less
Hydrology and Water Quality	LTSMM	Less (Best)	Equal/ Similar	Less (2nd Best)	Equal/ Similar	Equal/ Similar
Land Use and Population	LTS	Less (Best)	Less	Less (2nd Best)	Greater	Less
Noise	SU	Less (Best)	Greater	Less (2nd Best)	Greater	Less

ENVIRONMENTAL ISSUE	*PROPOSED PROJECT*	*ALTERNATIVE 1: NO PROJECT / NO BUILD*	*ALTERNATIVE 2: NO PROJECT / EXISTING SCP DESIGNATIONS*	*ALTERNATIVE 3: REDUCED INTENSITY*	*ALTERNATIVE 4: OFFSITE LOCATION*	*ALTERNATIVE 5: NO COMMERCIAL*
Public Services	LTS	Less (Best)	Greater	Less (2nd Best)	Equal/ Similar	Equal/ Similar
Transportation and Circulation	SU	Less (Best)	Greater	Less (2nd Best)	Equal/ Similar	Less
Utilities and Service Systems	LTSMM	Less (Best)	Greater	Less (2nd Best)	Equal/ Similar	Equal/ Similar

SU = AT LEAST ONE IMPACT WAS FOUND TO BE SIGNIFICANT AND UNAVOIDABLE.

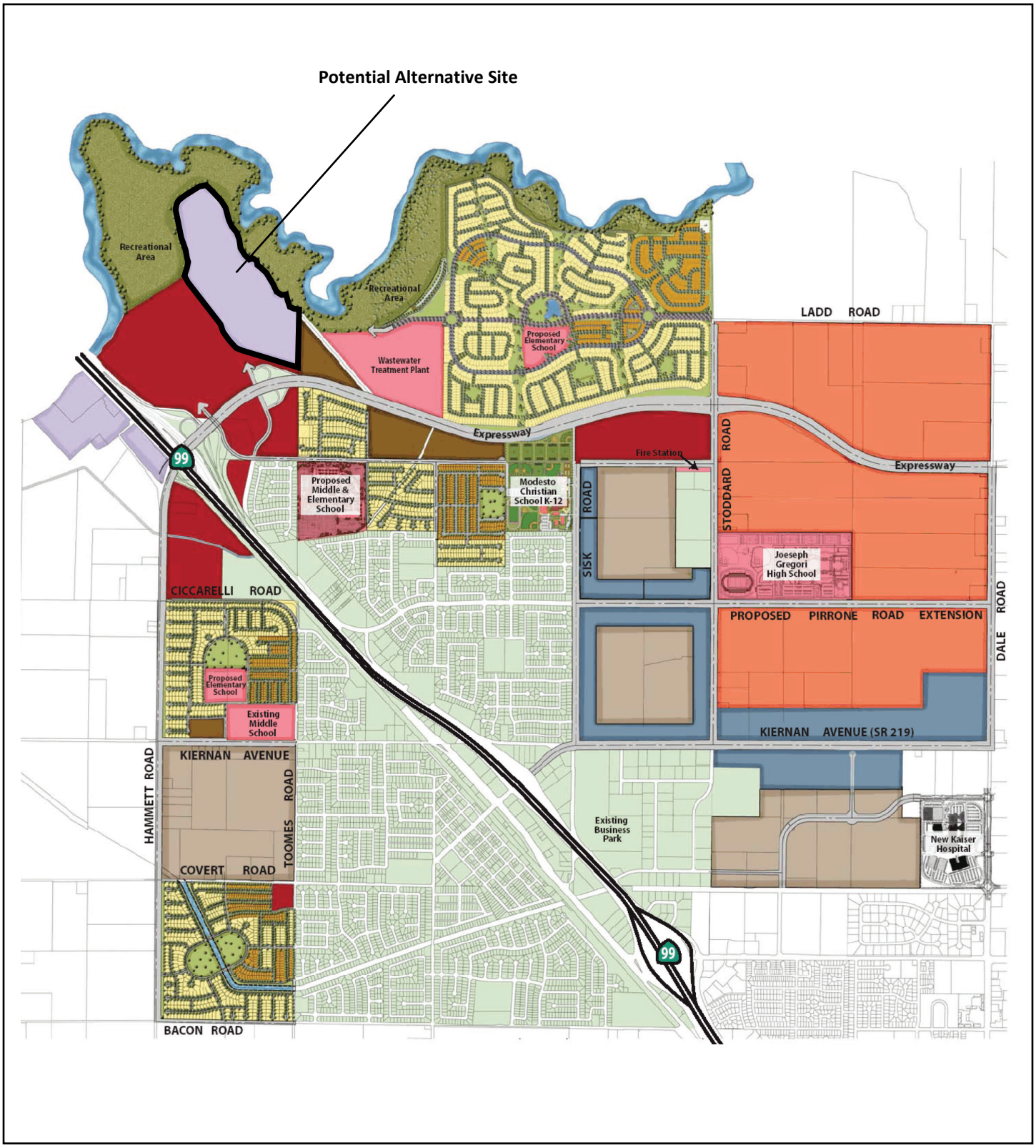
LTSMM = AT LEASE ONE IMPACT WAS FOUND TO BE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

LTS = ALL IMPACTS WERE FOUND TO BE LESS THAN SIGNIFICANT.

GREATER = GREATER IMPACT THAN THAT OF THE PROPOSED PROJECT

LESS = LESS IMPACT THAN THAT OF THE PROPOSED PROJECT

EQUAL/SIMILAR = NO SUBSTANTIAL CHANGE IN IMPACT FROM THAT OF THE PROPOSED PROJECT



Legend

- Potential Alternative Site
- Business Park
- High Visibility Business Park
- Commercial
- Planned Industrial
- PI Reserve
- Existing Salida Community
- Public Uses
- Private School
- Parks & Open Spaces
- Low Density Residential
- Medium Density Residential
- Medium-High Density Residential

Source: Salida Community Plan, August 7, 2007. Map Date: July 9, 2025.

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 5.0-1.
Alternative Site Not Selected for Further Analysis

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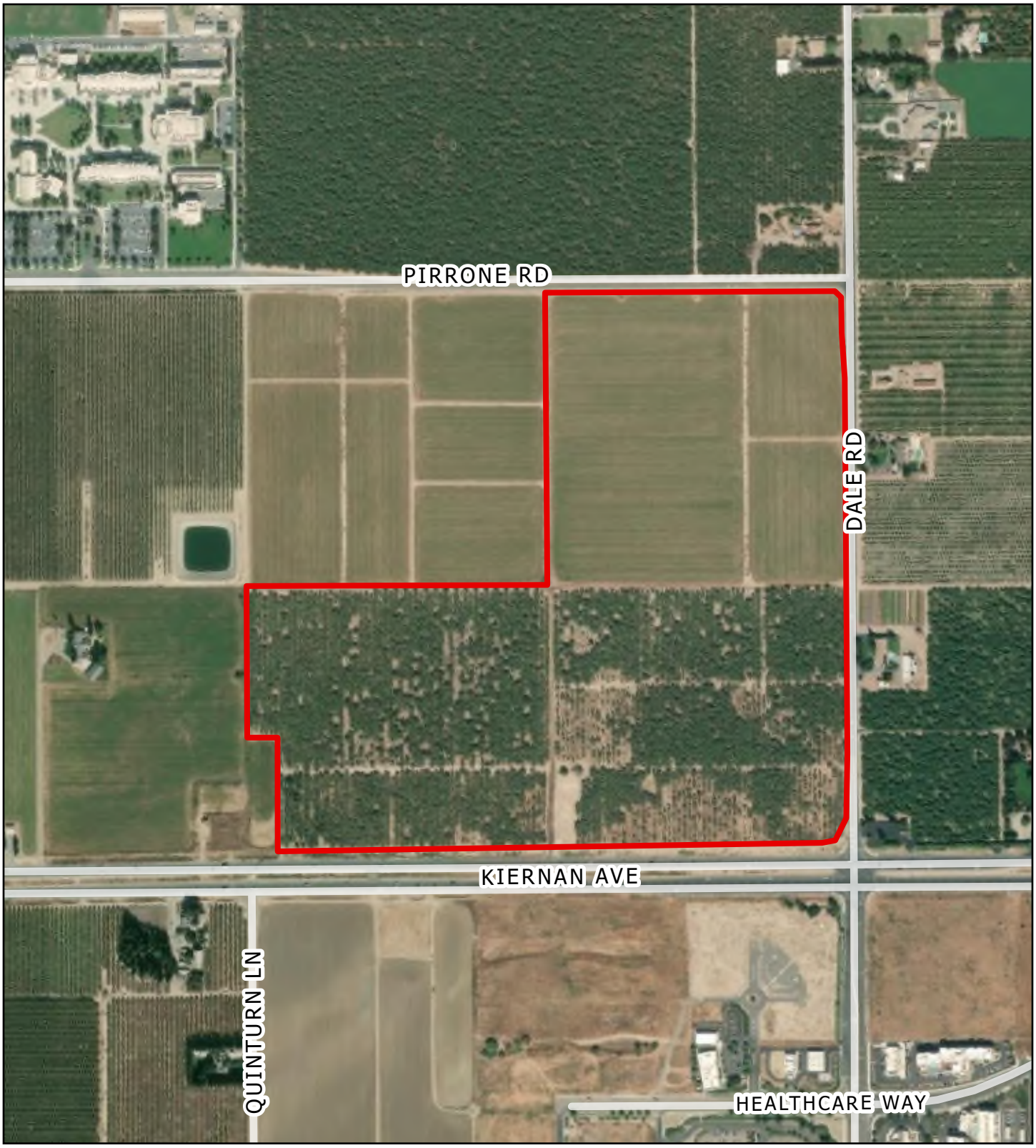

Legend

Reduced Intensity Alternative

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 5.0-2. Reduced Intensity Alternative

0 150 300 Feet

Sources: Stanislaus County GIS: MAXAR Imagery 9/23/2023. Map Date: July 9, 2025.

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Legend

- Offiste Location Project Site
- Business Park
- High Visibility Business Park
- Commercial
- Planned Industrial
- PI Reserve
- Existing Salida Community
- Public Uses
- Private School
- Parks & Open Spaces
- Low Density Residential
- Medium Density Residential
- Medium-High Density Residential

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 5.0-3.
Offsite Location Alternative

Source: Salida Community Plan, August 7, 2007. Map Date: July 9, 2025.

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A LAND USE PLANNING, DESIGN, AND ENVIRONMENTAL FIRM

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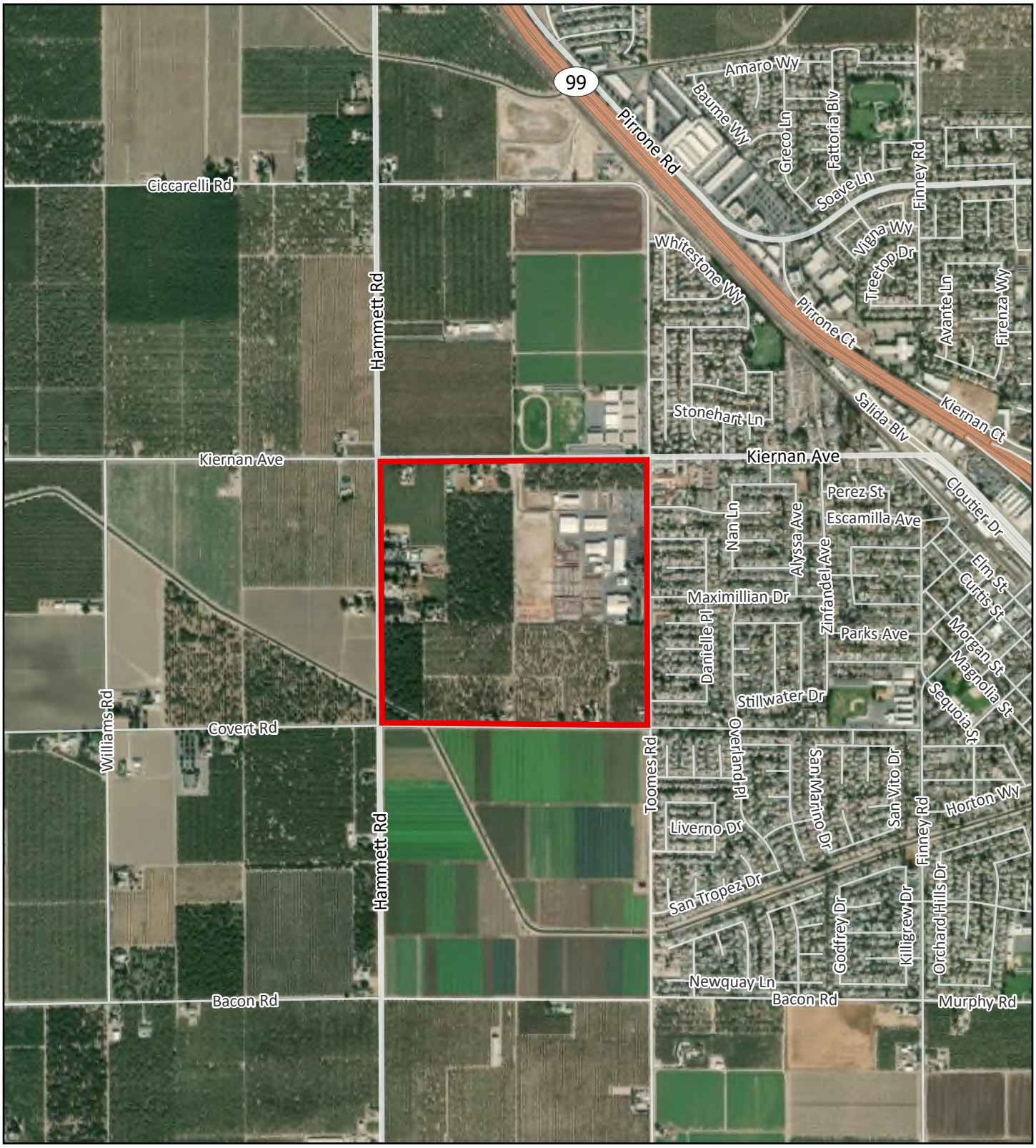

Legend

Offsite Location Project Site

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 5.0-4. Offsite Location Alternative Aerial View

0 500 1,000 Feet

Sources: Stanislaus County GIS: MAXAR Imagery 9/23/2023. Map Date: July 9, 2025.

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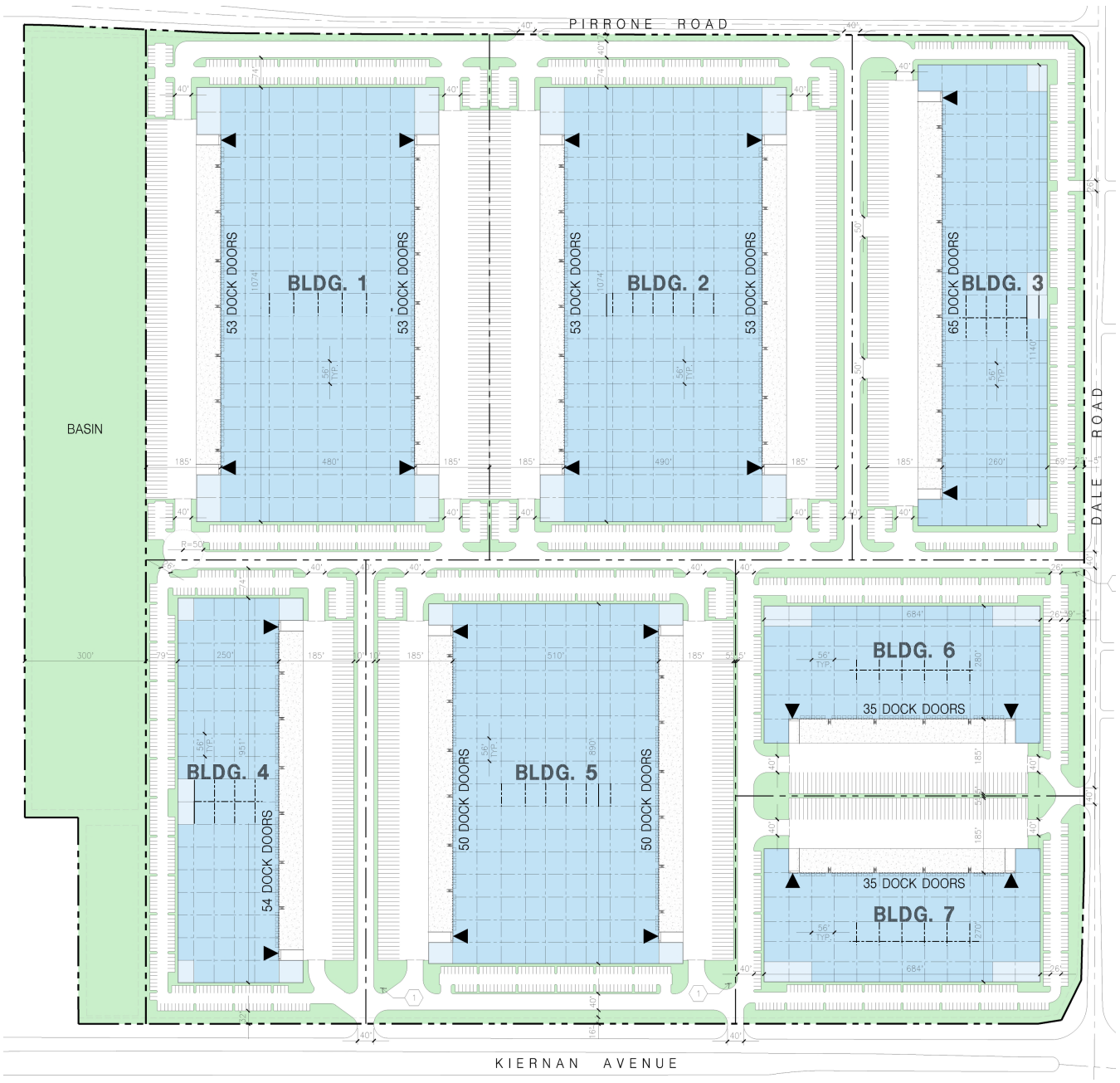

Legend

- Potential Office
- Warehouse
- Landscape
- Drive Thru Door

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 5.0-5. No Retail Alternative

0 150 300 Feet

Source: HPA Architecture, 3-19-2026. Map Date: May 12, 2026.

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APPENDIX A

Notice of Preparation and NOP Comments

NOTICE OF PREPARATION

TO: State Clearinghouse
State Responsible Agencies
State Trustee Agencies
Other Public Agencies
Interested Organizations

FROM: Tristan Osborn | Planning Manager
City of Modesto | Planning Division
1010 10th St.,
Modesto, CA 95354
209-577-5267
tosborn@modestogov.com

SUBJECT: Notice of Preparation – Environmental Impact Report for the Scannell Industrial Project

Notice is hereby given that the City of Modesto is the lead agency for the preparation of an Environmental Impact Report (EIR) to consider the Scannell Industrial Project. The proposed Project will result in the construction of between 2,000,000 and 2,500,000 square feet of warehouse, distribution, and manufacturing space. In addition, a small 2–3-acre retail site is proposed at the corner of Dale Road and Kiernan Avenue (SR 219) to provide retail service to the project. The proposed Project includes a Tentative Map that would create eight parcels for the industrial and retail buildings. A detailed Project Description can be reviewed at the City or by accessing the City's website: https://www.modestogov.com/1559/California-Environmental-Quality-Act-AB-

The City of Modesto is interested in the input and/or comments of public agencies and the public as to the scope and content of the environmental information that is germane to the agencies' statutory responsibilities in connection with the proposed Project. Responsible/trustee agencies will need to use the EIR prepared by the City of Modesto when considering applicable permits, or other approvals for the proposed project. Due to the time limits mandated by State law, your response must be sent and received by the City of Modesto not later than 30 days following the publication of this Notice of Preparation. The 30-day review period begins February 21, 2025 and ends on March 27, 2025. If we do not receive a response from your agency or organization, we will presume that your agency or organization has no response to make. A responsible agency, trustee agency, or other public agency may request a meeting with the City or its representatives in accordance with Section 15082(c) of the CEQA Guidelines. Please send your response to Tristan Osborn | Planning Manager at the City of Modesto | Planning Division, 1010 10th Street, Modesto, CA 95354. If you have any questions, please contact Modesto Planning at 209-577-5267 or via email at: planning@modestogov.com.

SCOPING MEETING: A virtual scoping meeting for this project will be held on March 20, 2025 from 3:00 p.m. to 4:00 p.m.. You may attend the meeting by going to https://modestogov.zoom.us/j/6152421565?omn=88291759833 clicking "join."

PROBABLE ENVIRONMENTAL EFFECTS AND SCOPE OF THE EIR: All environmental topics identified in Appendix G of the State CEQA Guidelines will be analyzed within the EIR, including: Aesthetics, Agricultural and Forestry Resources, Air Quality, Biological Resources, Cultural Resources, Energy, Geology/Soils, Greenhouse Gases/Climate Change, Hazards and Hazardous Materials, Hydrology/Water Quality, Land Use/Planning, Mineral Resources, Noise, Population/Housing, Public Services, Recreation, Transportation/Circulation, Tribal Resources, Utilities and Service Systems, Wildfire, Cumulative Impacts, and Growth Inducing Impacts. An Initial Study has not been prepared for the proposed Project.

1 PROJECT LOCATION

The Scannell Industrial Project (proposed Project) is comprised of approximately 145 acres located at the northwest corner of Kiernan Avenue and Dale Road intersection, within the unincorporated Community of Salida. The Project site is located within the Stanislaus County Salida Community Plan (SCP) and is zoned for development as Salida Community Plan Industrial/Business Park (SCP-IBP) and Salida Community Plan Planned Industrial (SCP-PI). The area is also within the City of Modesto General Plan Planning Area with a designation of Salida Community Plan (SCP).

Figures 1 and 2 show the Project's regional location and vicinity.

2 PROJECT SETTING

EXISTING SITE CONDITIONS

The Project site and surrounding properties are generally in agricultural use. There are also light industrial developments east and west of the project site, along Kiernan Avenue. Joseph A. Gregori High School is located northwest of the site and the Kaiser Permanente Modesto Medical Center and similar business park uses are located immediately south, within the City of Modesto. The Project site is located on the Assessor's Parcel Number (APN) 003-019-026 as displayed on Figure 3.

SITE TOPOGRAPHY

The Project site is relatively flat and ranges in elevation from approximately 75 to 82 feet above mean sea level.

EXISTING SITE USES

Figure 4 shows aerial imagery of the current existing site uses within the Project site. As shown, the Project site is comprised of active agricultural fields and orchards to the northern and southern portions of the Project site, respectively.

EXISTING SURROUNDING USES

The Project site and surrounding properties are generally in agricultural use. The Project site is primarily bounded by lands within the unincorporated county to the north, east and west. Lands within the City of Modesto are located to the south. Uses within the surrounding area include the following:

- North – Agricultural lands, Joseph A. Gregori High School.
- East – Agricultural lands, industrial developments, along Kiernan Avenue.
- South – Kaiser Permanente Modesto Medical Center and similar business park uses, within the City of Modesto.
- West – Agricultural lands, industrial developments.

3 GENERAL PLAN LAND USE AND ZONING DESIGNATIONS

EXISTING GENERAL PLAN LAND USE DESIGNATIONS

CITY OF MODESTO

The Modesto General Plan Land Use Map designates the Project site as the Salida Community Plan (SCP) Area. The Modesto General Plan notes that if the Salida Comprehensive planning district (or any portion thereof) is annexed to the City of Modesto, that the City does not propose to change any land use designations from those adopted by Stanislaus County.

STANISLAUS COUNTY

The Stanislaus County General Plan Land Use Map designates the Project site as Salida Community Plan Business Park (SCP-IBP) and Salida Community Plan, Planned Industrial (SCP-PI). A description of each Stanislaus County land use designation is described in further detail below.

- **Salida Community Plan Business Park (SCP-IBP):** The Business Park designation is intended to accommodate development of a full range of uses, including modern, employment-intensive uses. Principal development and employment generating uses allowed within this designation include research, product development, professional office, commercial, and business services.
- **Salida Community Plan Planned Industrial (SCP-PI):** The Planned Industrial zoning designation is intended to help alleviate the existing jobs-housing imbalance in the County by promoting development of employment-generating industrial/business park uses in the area roughly bound by Ladd Road, Dale Road, Pelandale Expressway, and Sisk Road.

Figure 5a and 5b depicts the Stanislaus County and City of Modesto General Plan land use designations for the Project site and the surrounding areas.

EXISTING ZONING DESIGNATIONS

CITY OF MODESTO

The Project site is located outside the Modesto city limits and the City of Modesto has not zoned the Project site.

STANISLAUS COUNTY

The Stanislaus County Zoning Ordinance (Chapter 21.66 of the County Code) designates the project site for Salida Community Plan (SCP) zoning District. The SCP District is intended to implement the General Plan's stated vision for the development of the Salida Community Plan Amendment Area. There are nine sub-zoning districts for the SCP District, of which the Project site is Salida Community Plan, Industrial/ Business Park (SCP-IBP) and Salida Community Plan, Planned Industrial (SCP-PI). Figure 6a and Figure 6b depicts the Stanislaus County and City of Modesto zoning districts for the Project site and the surrounding areas.

SURROUNDING GENERAL PLAN DESIGNATIONS

Within Stanislaus County, lands to the north and west of the Project site are designated Salida Community Plan Business Park (SCP-IBP) and Salida Community Plan Planned Industrial (SCP-PI); lands to the east are designated Agriculture (AG); and lands to the south are designated Salida Community Plan Business Park (SCP-IBP). As mentioned, the City of Modesto designates the lands to the north and west of the Project site as Salida Community Plan Area.

4 PROJECT GOALS AND OBJECTIVES

Consistent with the California Environmental Quality Act (CEQA), Guidelines Section 15124(b), a clear statement of objectives and the underlying purpose of the proposed Project shall be discussed. The principal objective of the proposed Project is to implement and achieve the goals and objectives of the General Plan through the approval and subsequent implementation of the Scannell Industrial Project (the proposed Project).

The principal objective of the proposed Project is to develop a multiple phase and well-planned industrial project with the potential for warehouse, distribution, and manufacturing uses with onsite commercial retail that will attract businesses to the City of Modesto and provide for local employment opportunities.

The City has identified several additional project goals and objectives that inform the Project purpose. These additional Project goals and objectives are as follows:

- Establish land use and zoning that is consistent with and facilitates the vision for new growth and development in the Salida Community Plan (SCP). This includes emphasizing Industrial uses planned in the eastern portion of the SCP adjacent to the City of Modesto limits.
- Design an industrial facility that could attract a variety of end users, including a transload facility, short-term storage facility, light industrial, and/or manufacturing uses.
- Incorporate a commercial use within the industrial area to provide opportunities for onsite employees to have access to retail services. Locate the commercial use such that it also enhances accessibility for passerby traffic to maximize the success of the commercial businesses.
- Strengthen the local economic base through job creation; development related investment; increased income opportunities; and increased property, and sales taxes through the development of the industrial and commercial uses.
- Provide local and regional employment opportunities that take advantage of the area's high level of accessibility, and help create a jobs/housing balance.
- Install infrastructure improvements, including water, sewer, power, and stormwater systems that meet city standards, and integrate with existing utility network without diminishing services to existing residents.
- Develop a multi-phase plan that could be constructed over an estimated 10-year building horizon, and align infrastructure improvements to the infrastructure needs of each phase.
- Design the facilities with efficient transportation access and circulation within site plan, including accessible loading bays, and logistics management. Ensure that offsite transportation systems can facilitate industrial traffic via designated truck routes.

5 PROJECT CHARACTERISTICS AND DESCRIPTION

PROJECT CHARACTERISTICS

The proposed Project will result in the construction of between 2,000,000 and 2,500,000 square feet of warehouse, distribution, and manufacturing space. In addition, a small 2–3-acre retail site is proposed at the corner of Dale Road and Kiernan Avenue (SR 219) to provide retail service to the project. The proposed Project includes a Tentative Map that would create eight parcels for the industrial and retail buildings. Figure 7 provides an illustration of the proposed buildings and parcel lines. Figure 8 provides an illustration of the utility plan.

The applicant proposes to construct seven industrial buildings. The warehouse buildings would be single-story, with a maximum height of 45 feet. The size of each building (in square feet) is summarized in Table 2, below. For the purpose of analysis, future uses are anticipated to be evenly split between manufacturing, warehouse, and distribution uses. The end user is not known currently, but cold storage is anticipated to occupy between 0-20% of the total space.

TABLE 2: SUMMARY OF PROPOSED OFFICE AND WAREHOUSE BUILDINGS

	BUILDING 1	*BUILDING 2*	*BUILDING 3*	*BUILDING 4*	*BUILDING 5*	*BUILDING 6*	*BUILDING 7*
Site Area (sf)	1,145,488	1,116,754	753,947	988,633	627,181	601,557	316,397
Building Area (sf) Office/Warehouse	20,000/ 531,640	20,000/ 510,160	20,000/ 322,700	20,000/ 435,230	20,000/ 240,010	20,000/ 240,010	10,000/ 93,480
Parking Provided Standard/Trailer	290/200	275/200	401/105	265/178	357/ 89	358/89	225/0

SOURCE: CITY OF MODESTO, 2024.

The projected project phasing is currently expected to be four (4) phases of development over approximately ten (10) years. Each phase would include removal of existing almond trees or ground crops (based on current farming practices). Improvements to serve each phase could include, but would not be limited to, any required off-site street improvements and extension of utilities, site grading, construction of underground utilities on-site (water, sewer and dry utilities), storm drainage and storm drainage retention, paving, landscaping, lighting, and the construction of buildings. As the project develops, the timing, size, and number of phases may change based on market conditions.

The project would operate continuously, and the site would be active 24 hours a day, seven days a week. It is estimated that the warehouse facilities would provide approximately 1,000 employment opportunities, based on the employment generation assumptions in the Salida Community Plan.

The 2–3-acre retail site does not have a proposed end use, but a variety of commercial retail uses allowed under the City's commercial land use and zoning standards could occupy the retail site. Based on the size of the parcel, it is expected that the end user would be a local serving retail as opposed to regional shopping, and examples of such uses include a gas station, and possibly a small restaurant use.

CITY OF MODESTO GENERAL PLAN AMENDMENT

The proposed Project includes an amendment to the City of Modesto General Plan to designate the site Industrial (I), while maintaining the SCP as a land use overlay designation. Ultimately the General Plan land use designation on the Project site would be SCP-I. This designation would allow uses consistent with uses anticipated under the Salida Community Plan.

- **Salida Community Plan (SCP) Overlay.** An overlay designation for areas located within the Salida Community Plan area.
    - **Industrial (I)**. To allow industrial uses in the Modesto Urban Area consistent with the SCP. This designation provides for the full range of industrial uses, including but not limited to manufacturing, food processing, trucking, packing, and recycling, as well as those enterprises which may want to combine office and production aspects of their business in the same complex. The guiding intensity is a Floor Area Ratio of approximately 0.50.

Figure 9 shows the proposed General Plan land use.

PRE-ZONING

The Project site is in unincorporated Stanislaus County and outside the City of Modesto city limits. The Project site is not zoned under the Modesto Zoning Ordinance. The proposed Project would pre-zone the Project site to Heavy Industrial (M-2), as described below. The proposed prezoning will ensure that land uses on the Project site align with the long-term vision for development of Salida Community Plan area.

- **M-2 Heavy Industrial (M-2)**. The M-2 Zone is intended to provide suitable sites for a wide range of industrial, manufacturing, business park and other similar uses that are further from non-industrial and potentially incompatible uses.

Figure 10 shows the proposed pre-zoning.

CIRCULATION IMPROVEMENTS

Pirrone Road is a two-lane road constructed on the north boundary of the Project site, Dale Road is a two-lane road on the east boundary of the Project site, and Kiernan Avenue is a four-lane divided State Highway on the south boundary of the Project site. Kiernan Avenue is planned to be widened to six lanes in the future. The intersection of Dale Road with Kiernan Avenue is signalized.

Access to the Project site would be provided at two locations; main project access will be to Dale Road with a right-in/right-out access to Kiernan Avenue. Each of these access points allow for emergency vehicle access. As part of the Project, Dale Road, Pirrone Road, and Kiernan Avenue along the Project site's frontages would be improved with landscaping, as required by the City of Modesto.

The site plan includes various standard parking and trailer stalls as noted in table 2, which would be provided within the interior of the site between buildings. The trailer parking stalls would be in the center of the site, primarily adjacent to docking doors of each building; while the standard parking stalls would primarily be located along the Project site boundaries.

UTILITIES AND PLANNED INFRASTRUCTURE IMPROVEMENTS

The construction of infrastructure improvements will be required to accommodate development of the proposed Project. The proposed Project would connect to existing City infrastructure to provide water, sewer, and storm drainage utilities. Dry utility infrastructure (i.e. electrical, gas, telephone, cable) would also be installed to provide utility services to the Project. All infrastructure would be developed to the City of Modesto standards.

Water Service

Upon annexation, the Project would be added to the City of Modesto's future service area. An existing water line and anticipated point of connection is in Dale Road just south of Kiernan Avenue. The Modesto Water Master Plan identifies a 12" waterline that would extend from Kiernan Avenue to Pirrone Road via Dale Road. The proposed Project would require the 12" waterline extension, and would be required to loop the system consistent with the City's standards.

Sewer Service

The project site is located within the City of Modesto's future sewer service area (City of Modesto Wastewater Collection System Master Plan, 2017). The nearest sewer point of connection is at the 12" line located on Dale Road, south of Kiernan Avenue. That 12" line connects to a 27" sewer line at the intersection of Dale Road and Healthcare Way. This 12" sewer line will be extended north in Dale Road across Kiernan Avenue to serve the project.

Storm Drain

This Project site is in an area that is not served by existing public storm drain systems and will therefore need to retain all storm water on site. The proposed site plan includes an approximately 6.75-acre storm drainage basin. The final sizing could increase or decrease based a variety of engineering design factors that control storm drainage.

SOI AMENDMENT AND ANNEXATION

The Project site is currently located within Stanislaus County and within the City of Modesto's General Plan Planning Area, but outside the City's Sphere of Influence (SOI). The proposed Project includes an SOI amendment to incorporate the site into the City's SOI. Concurrent with the SOI amendment, the proposed Project proposes an annexation of the 145-acre site into the City of Modesto. This process will include the preparation of a LAFCo Plan for Services to address infrastructure, utilities, and public services, as well as an amendment to the City's Municipal Service Review (MSR) to ensure that the SOI boundary is reflected in the MSR. The annexation and related approvals will ultimately require review and approval by the Stanislaus County LAFCo. Figure 11 shows the proposed annexation and SOI amendment.

6 USES OF THE EIR AND REQUIRED AGENCY APPROVALS

This EIR may be used for the following project approvals and permits associated with adoption and implementation of the proposed Project.

CITY OF MODESTO

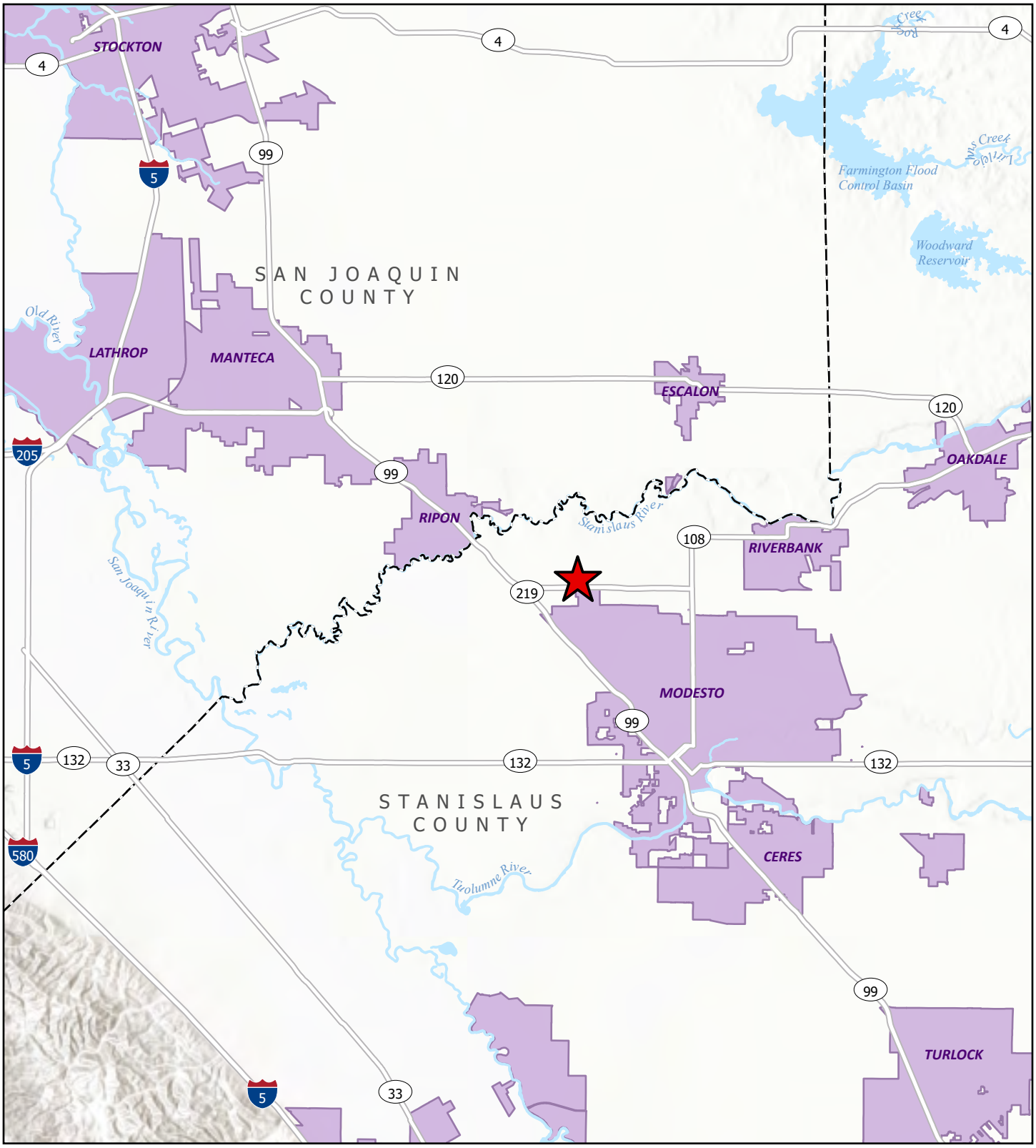
The City of Modesto will be the Lead Agency for the proposed Project, pursuant to the State Guidelines for Implementation of CEQA, Section 15050. Actions that would be required from the City include, but are not limited to the following:

- Certification of the Environmental Impact Report (EIR);
- Adoption of the Findings of Fact, Statement of Overriding Considerations (if necessary), and Mitigation Monitoring and Reporting Program (MMRP);
- Approval of City of Modesto General Plan Amendment to Salida Community Plan-Industrial (SCP-I);
- Approval of City of Modesto Prezoning to Heavy Industrial (M-2);
- Approval of Recommendation to LAFCo for an Amendment to the City's SOI to include the Project site;
- Approval of Recommendation to LAFCo for Annexation of the Project site into the City of Modesto;
- Approval of an Amendment to the City of Modesto Municipal Service Review (MSR);
- Approval of Development Plan Review for building design, landscaping, and other site features;
- Issuance of grading, encroachment, and building permits as necessary for Project construction.

OTHER GOVERNMENTAL AGENCY APPROVALS

The following agencies are considered "Responsible Agencies" and will need to rely on this EIR to issue permits or approve certain aspects of the proposed Project. A "Responsible Agency" is any public agency, other than the lead agency, which has the responsibility for approving the project where more than one public agency is involved. Other governmental agencies that may require approval include, but are not limited to, the following:

- Central Valley Regional Water Quality Control Board (CVRWQCB) – Storm Water Pollution Prevention Plan (SWPPP) NOI pursuant to the Clean Water Act;
- San Joaquin Valley Air Pollution Control District (SJVAPCD) – Construction-related permits;
- San Joaquin Valley Air Pollution Control District (SJVAPCD) – As an industrial development, the Project may be subject to Indirect Source Review (ISR);
- San Joaquin Valley Air Pollution Control District (SJVAPCD) – As an industrial development, the Project may be subject to Authority to Construct depending on the industrial user;
- Stanislaus County Local Agency Formation Commission (LAFCO)- Approval of SOI Amendment, Annexation, MSR Amendment, and Plan for Services;
- Modesto Fire Department – Plan check of the site plan and roadway improvements for adequate emergency vehicle access and fire flow capabilities; Plan check of all building plans for Early Suppression, Fast Response (ESFR) fire sprinkler system.



Legend

- Project Location
- County Area
- Water Feature
- Incorporated Area

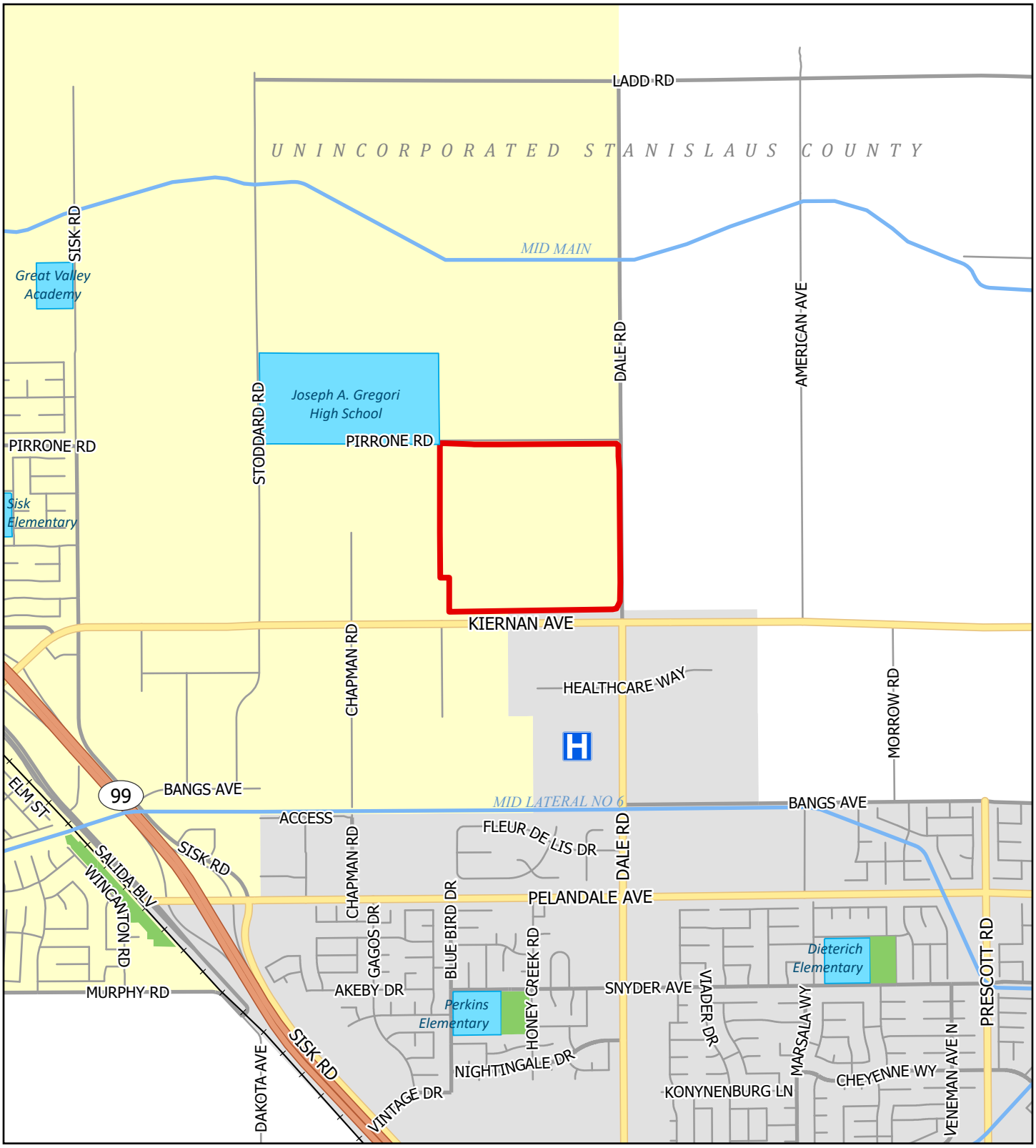
SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 1. Regional Location Map

0 1 2 Miles

Sources: California State Geoportal. Map Date: December 5, 2024.

De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm



Legend

- Project Boundary
- City of Modesto
- Salida Community Plan Area
- Public School
- Park
- Canal
- Kaiser Medical Center

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 2. Project Vicinity Map

0 500 1,000 Feet

Sources: Stanislaus County GIS; California School Campus Database; CPAD2024a; OSHPD. Map Date: December 5, 2024.

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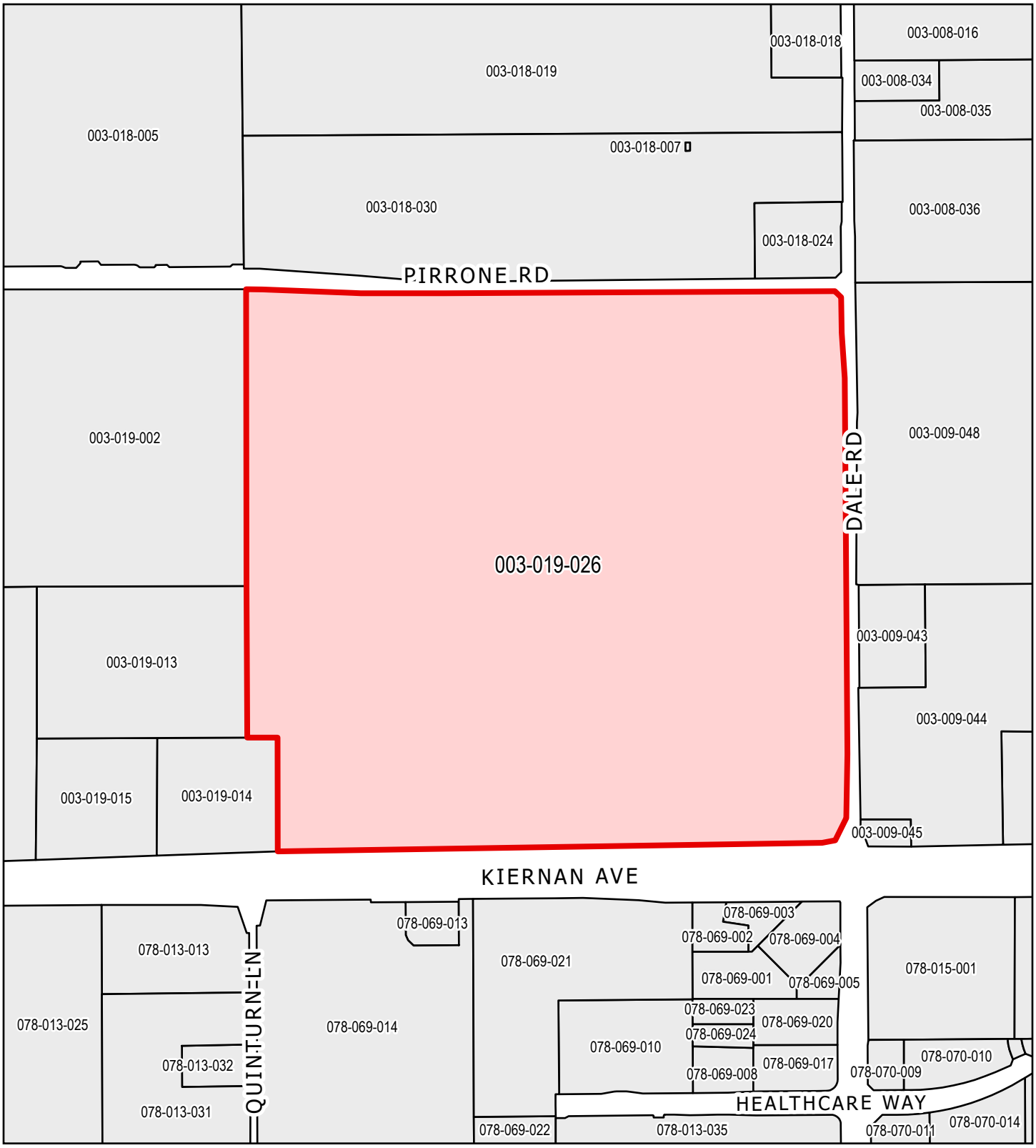


Legend

- Project Parcel
- Surrounding Parcel

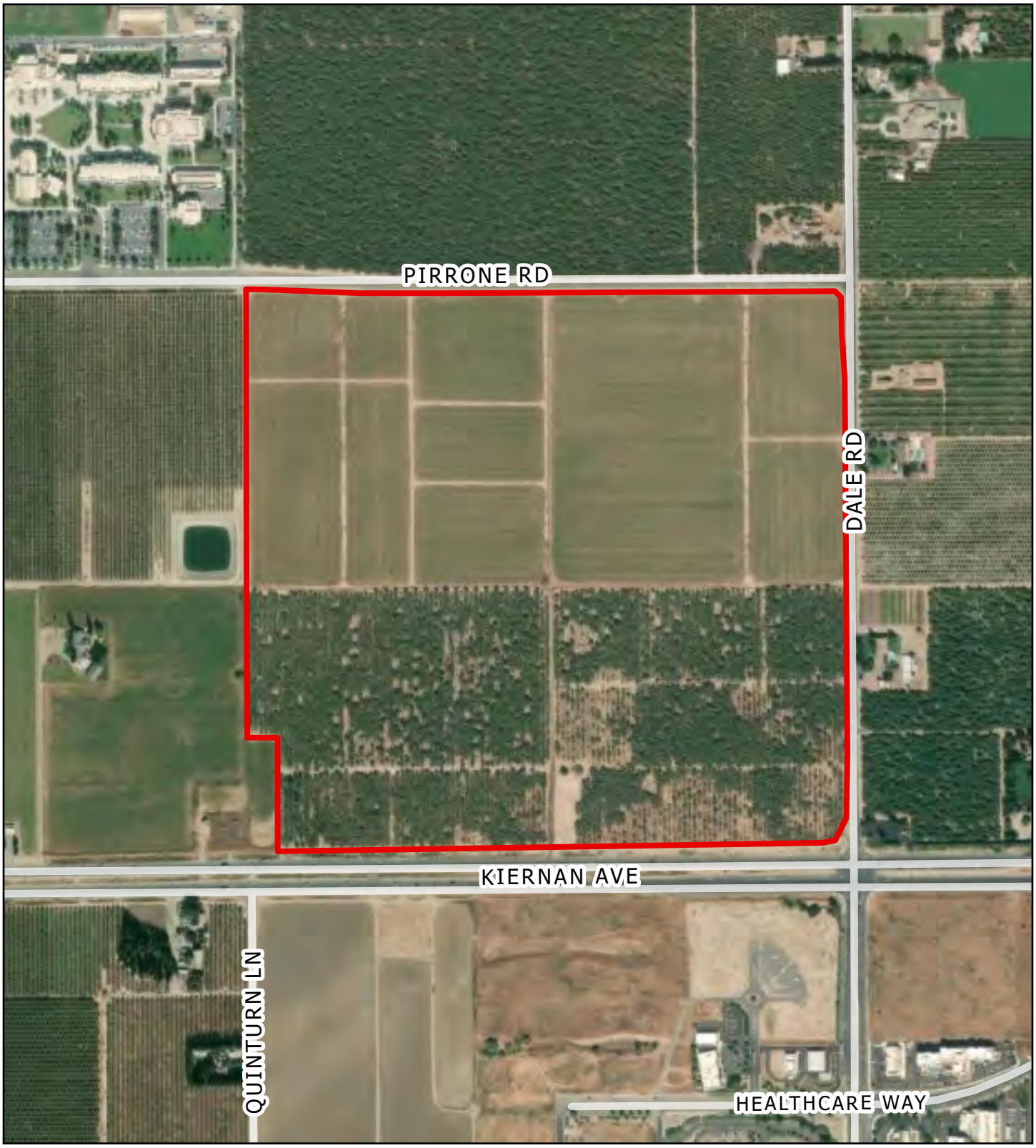
SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 3. Assessor Parcel Map

0 150 300 Feet

Sources: Stanislaus County GIS. Map Date: December 5, 2024.

De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm



Legend

Project Parcel

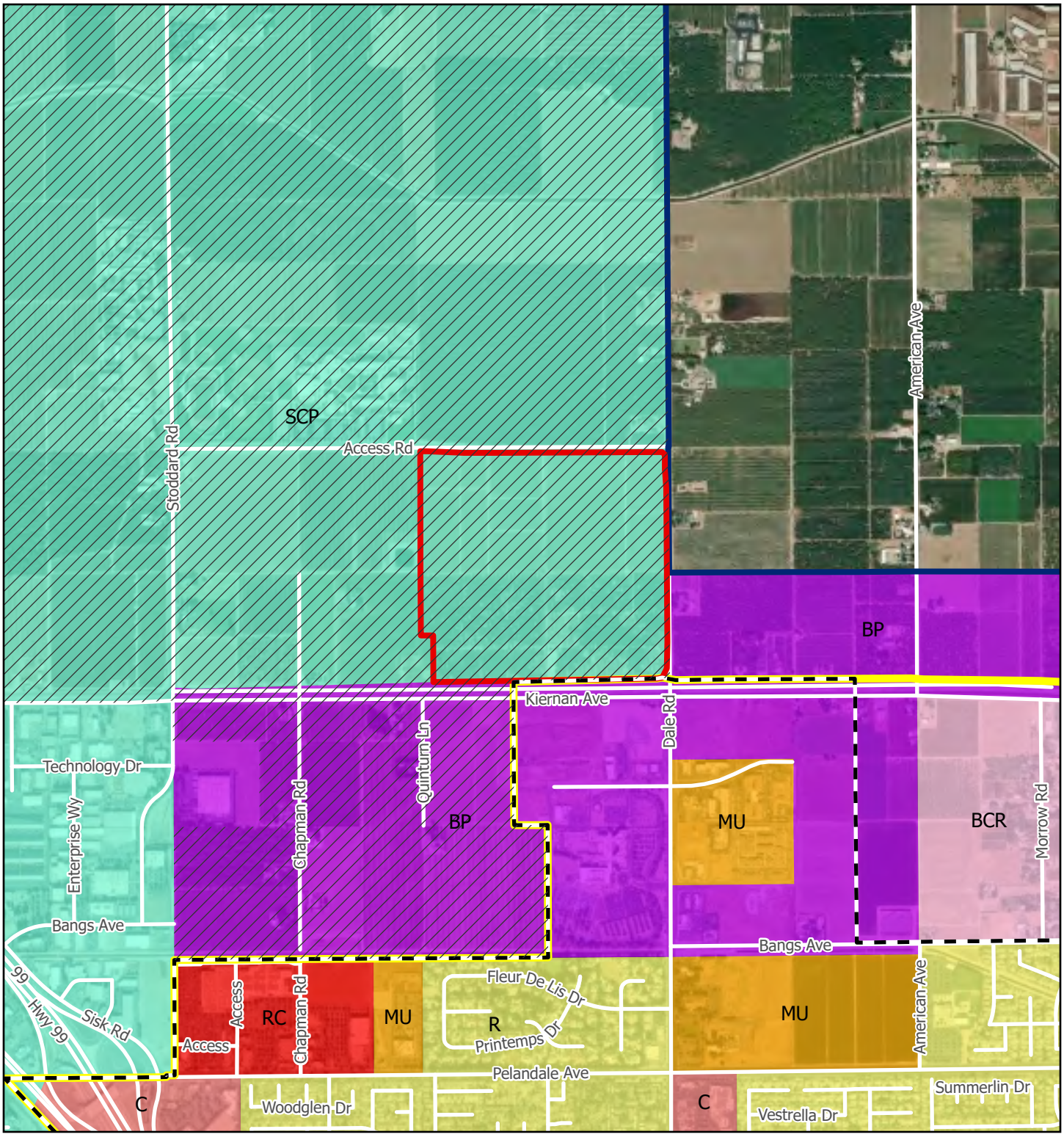
SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 4. Aerial View of Project Site

0 150 300
Feet

Sources: Stanislaus County GIS: MAXAR Imagery 9/23/2023.
Map Date: December 5, 2024.

DE NOVO PLANNING GROUP
A LAND USE PLANNING, DESIGN, AND ENVIRONMENTAL FIRM



Legend

- Project Parcel
- City of Modesto
- Modesto Sphere of Influence
- Modesto General Plan Planning Area
- Salida Community Plan Area
- R - Residential
- MU - Mixed Use
- C - Commercial
- RC - Regional Commercial
- BCR - Business-Commercial-Residential
- BP - Business Park
- SCP - Salida Community Plan

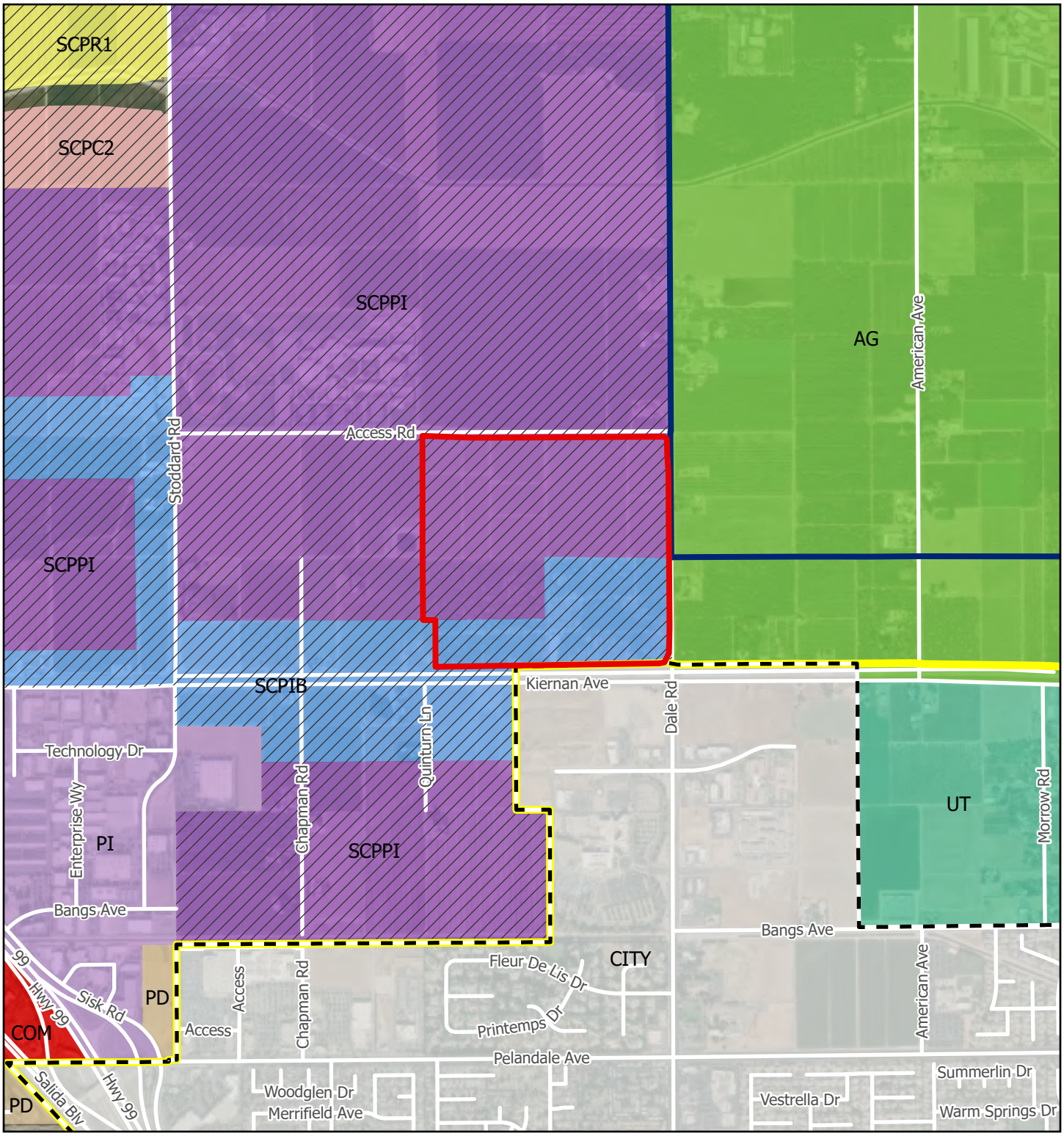
SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 5a.
Existing General Plan Land Use Designations
City of Modesto

0 500 1,000 Feet

DE NOVO PLANNING GROUP
A LAND USE PLANNING, DESIGN, AND ENVIRONMENTAL FIRM

Sources: City of Modesto General Plan. Map Date: December 13, 2024.



Legend

- Project Parcel
- City of Modesto
- Modesto Sphere of Influence
- Modesto General Plan Planning Area
- Salida Community Plan Area
- AG - Agriculture
- COM - Commercial
- PD - Planned Development
- PI - Planned Industrial
- UT - Urban Transition
- SCPR1 - Salida Community Plan R-1
- SCPC2 - Salida Community Plan C-2
- SCPIB - Salida Community Plan IPB
- SCPPI - Salida Community Plan PI
- CITY - City of Modesto

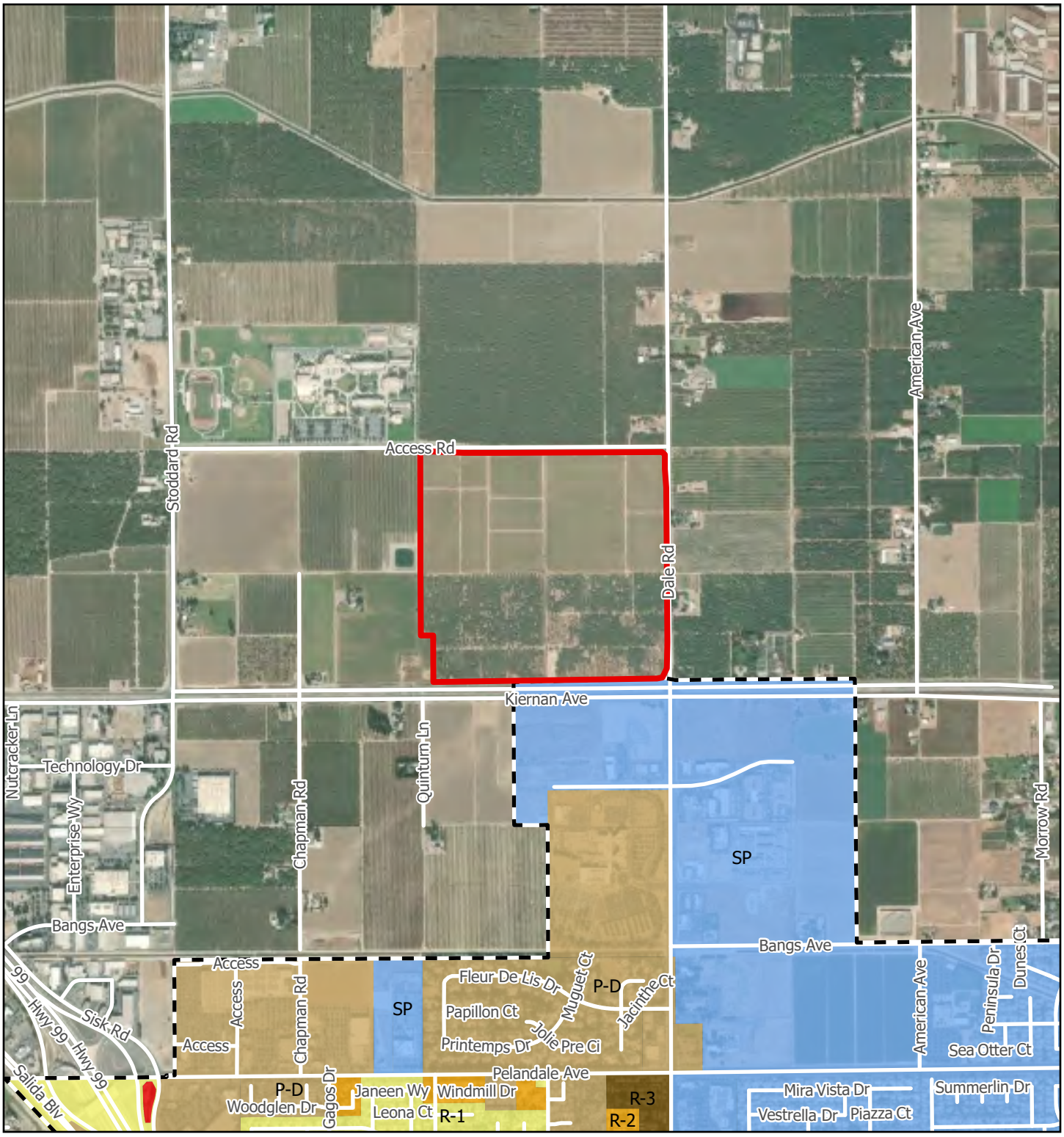
SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 5b.
Existing General Plan Land Use Designations
Stanislaus County

0 500 1,000 Feet

DE NOVO PLANNING GROUP
A LAND USE PLANNING, DESIGN, AND ENVIRONMENTAL FIRM

Sources: Stanislaus County General Plan. Map Date: December 13, 2024.



Legend

- Project Parcel
- City of Modesto
- R-1
- R-2
- R-3
- C-3
- P-D
- SP

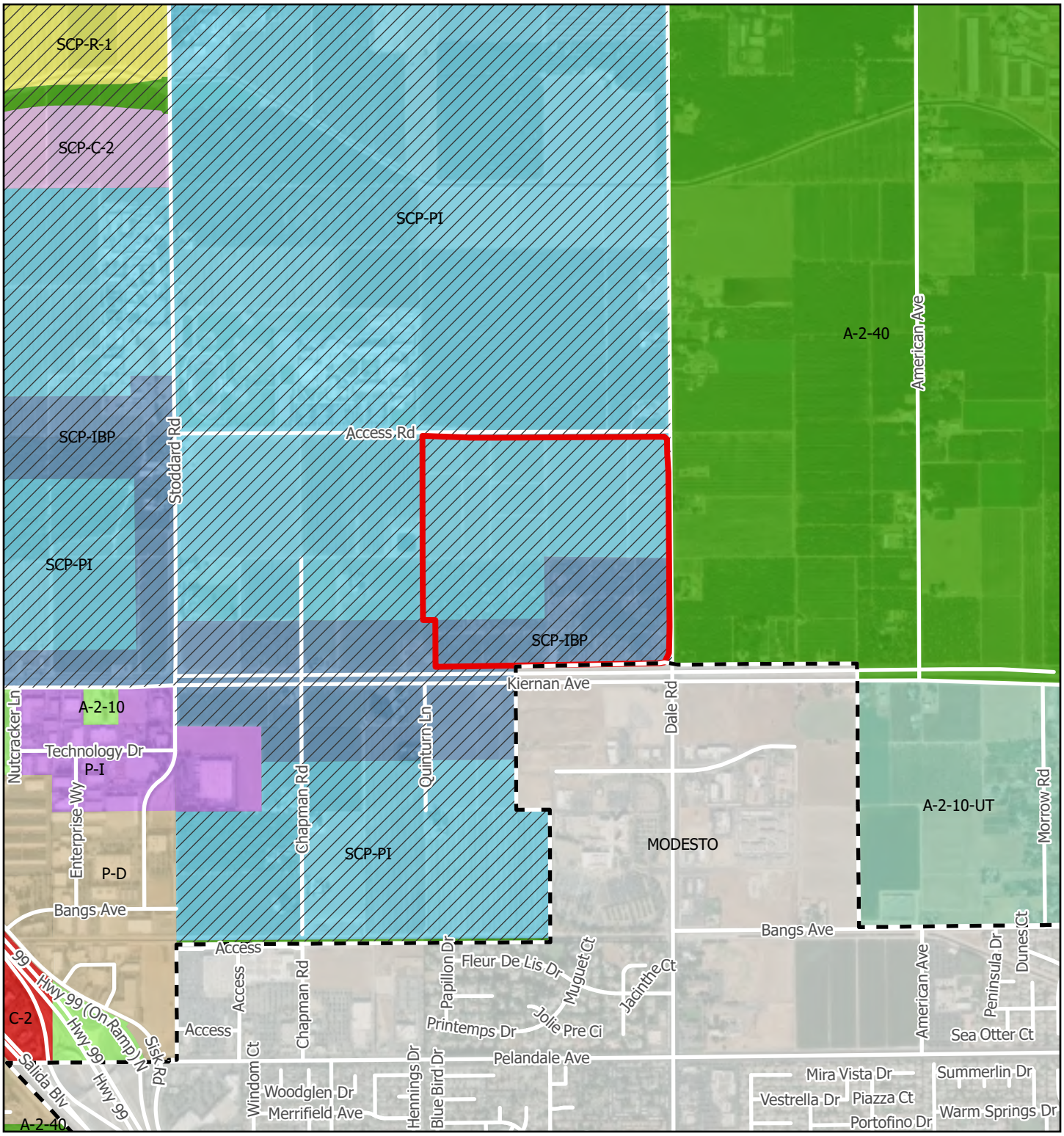
SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 6a.
Existing Zoning Districts - City of Modesto

0 500 1,000 Feet

Sources: City of Modesto Zoning Map. Map Date: December 13, 2024.

DE NOVO PLANNING GROUP
A LAND USE PLANNING, DESIGN, AND ENVIRONMENTAL FIRM



Legend

- Project Parcel
- City of Modesto
- Salida Community Plan Area
- A-2-10 - General AG 10 Acre
- A-2-10-UT - General AG 10 Acre UT
- A-2-40 - General AG 40 Acre
- C-2 - General Commercial
- P-I - Planned Industrial
- P-D - Planned Development
- SCP-R-1 - Salida Community Plan SF
- SCP-C-2 - Salida Community Plan C-2
- SCP-IBP - Salida Community Plan IBP
- SCP-PI - Salida Community Plan PI
- City of Modesto

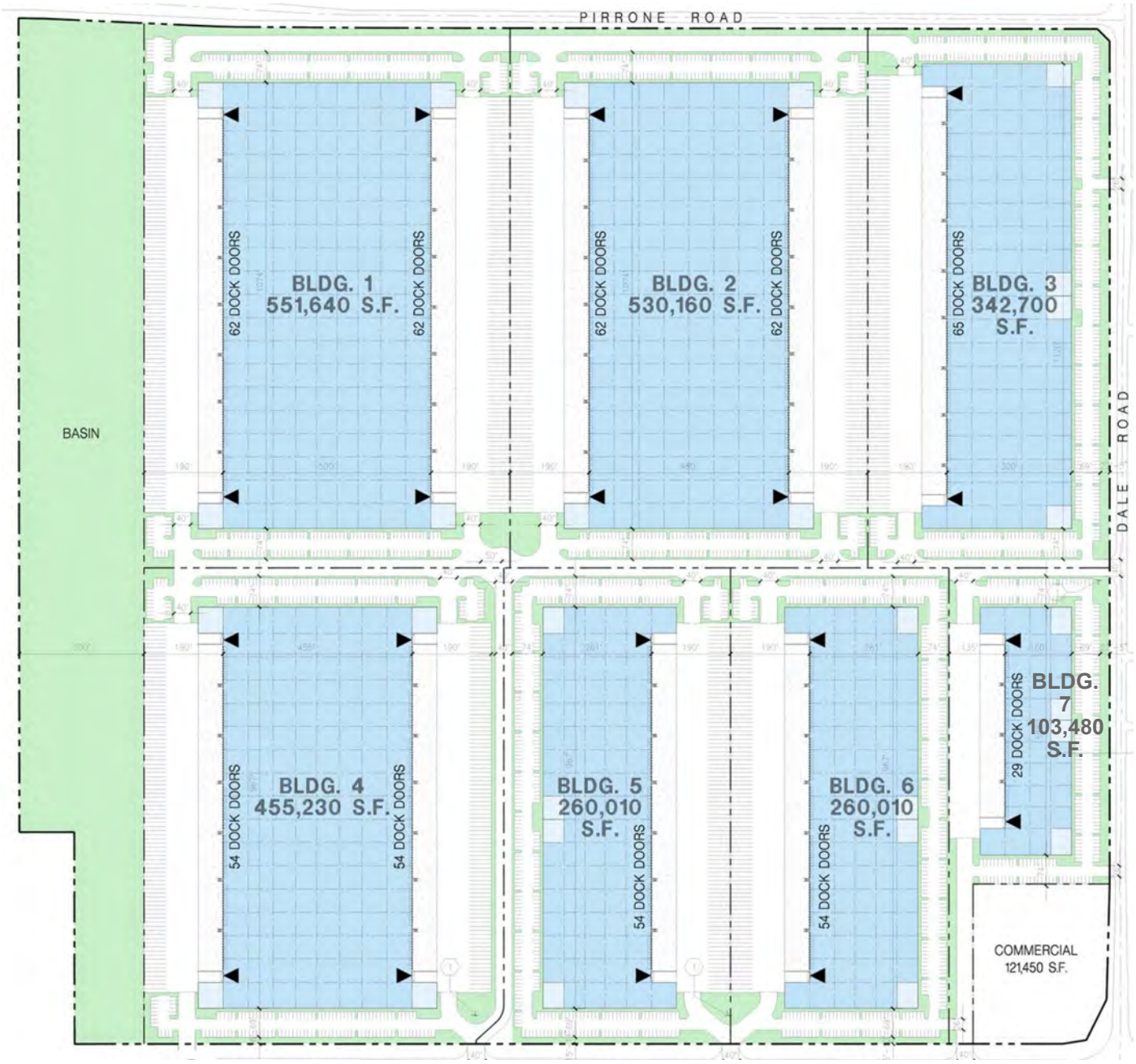
SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 6b. Existing Zoning Districts Stanislaus County

0 500 1,000 Feet

DE NOVO PLANNING GROUP
A LAND USE PLANNING, DESIGN, AND ENVIRONMENTAL FIRM

Sources: Stanislaus County Zoning. Map Date: December 13, 2024.



Legend

- Potential Office
- Warehouse
- Drive Thru Door

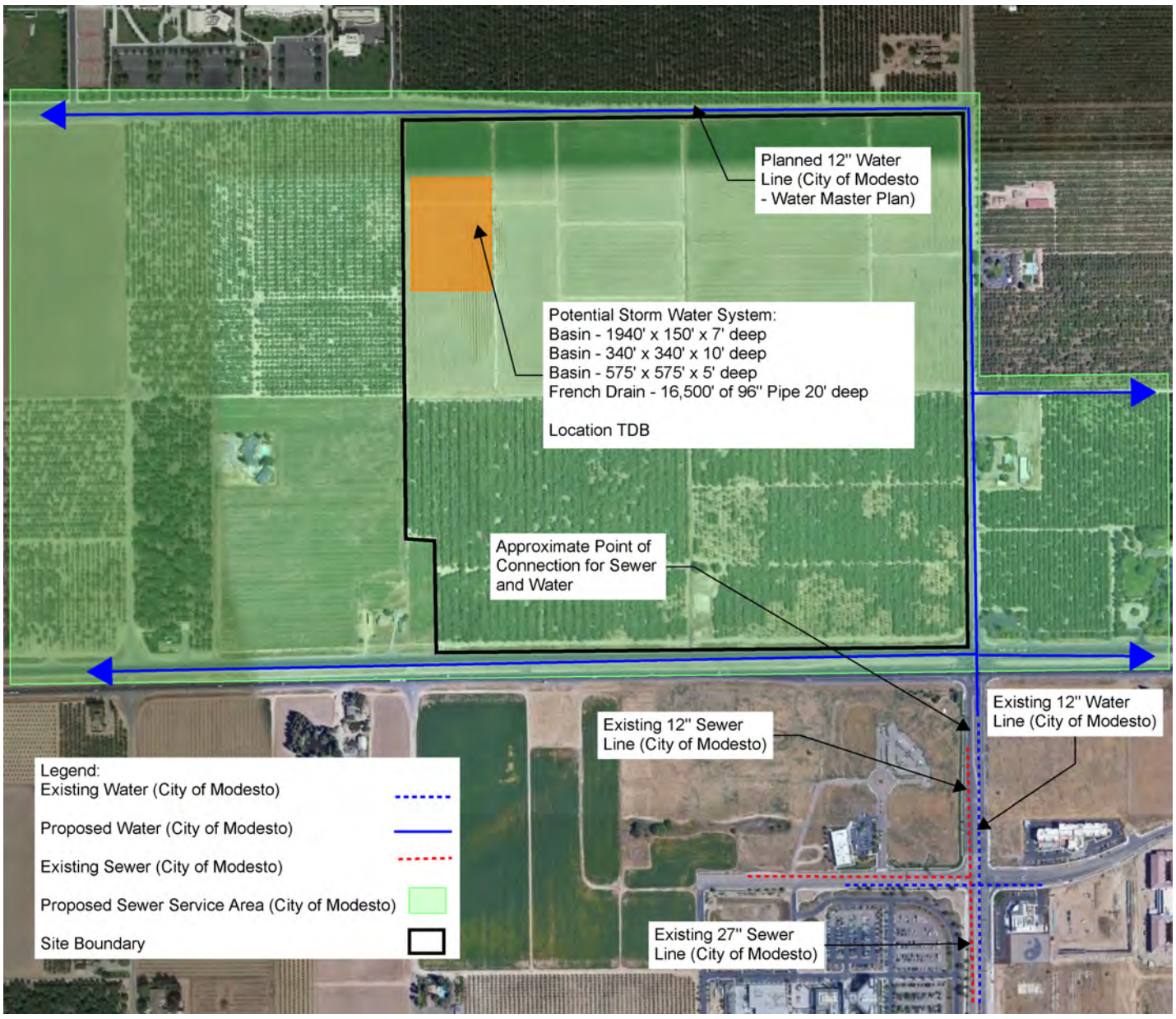
SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 7. Proposed Tentative Map

0 150 300 Feet

Source: Stanislaus County. Map Date: December 5, 2024.

DE NOVO PLANNING GROUP
A LAND USE PLANNING, DESIGN, AND ENVIRONMENTAL FIRM

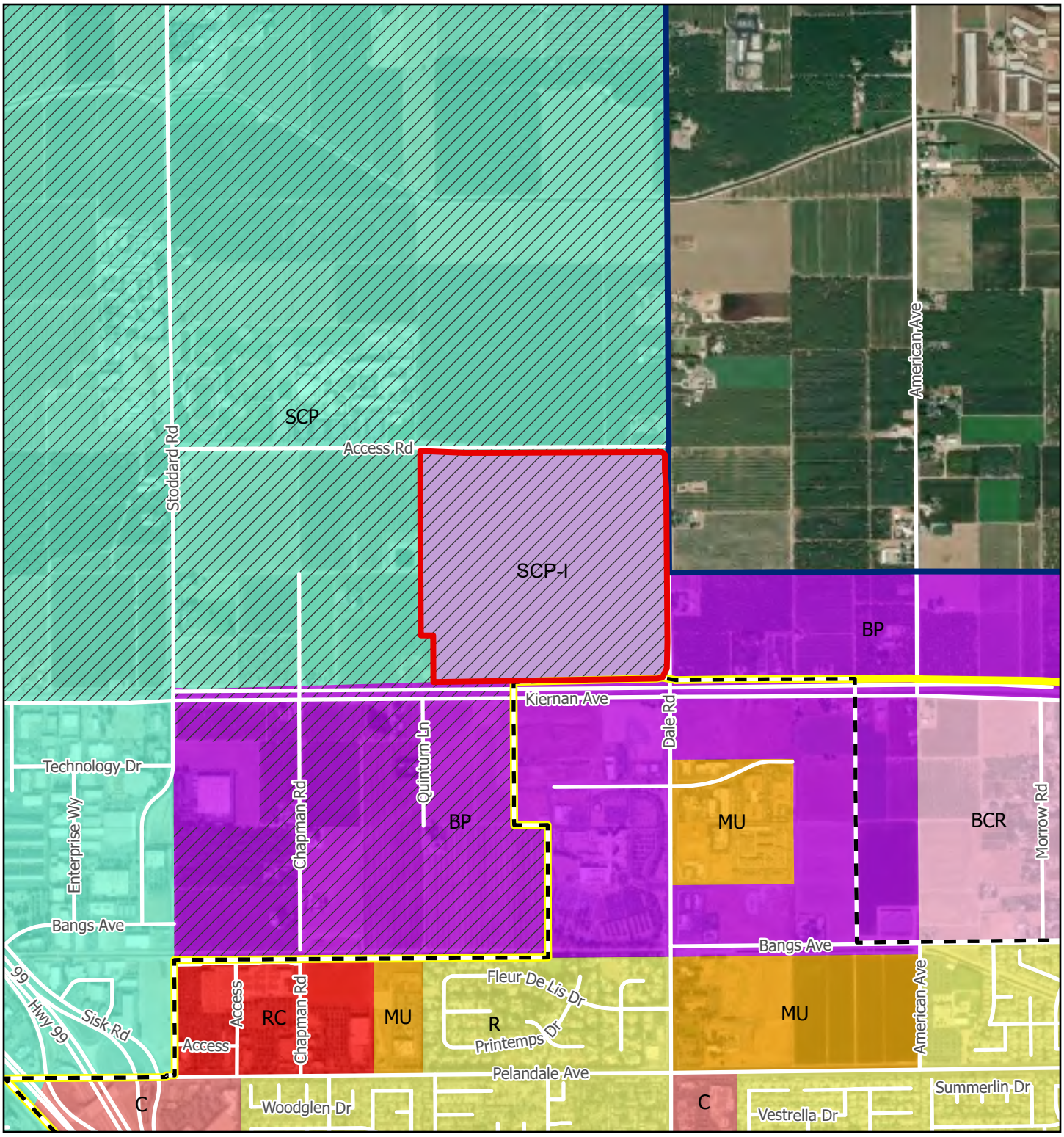


SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 8. Utility Plan

0 250 500 Feet

Source: North Star Engineering Group. Map Date: December 5, 2024.



Legend

- Project Parcel
- City of Modesto
- Modesto Sphere of Influence
- Modesto General Plan Planning Area
- Salida Community Plan Area

City of Modesto General Plan

- R - Residential
- MU - Mixed Use
- C - Commercial
- RC - Regional Commercial
- BCR - Business-Commercial-Residential
- BP - Business Park
- SCP - Salida Community Plan
- SCP-I - Salida Community Plan I

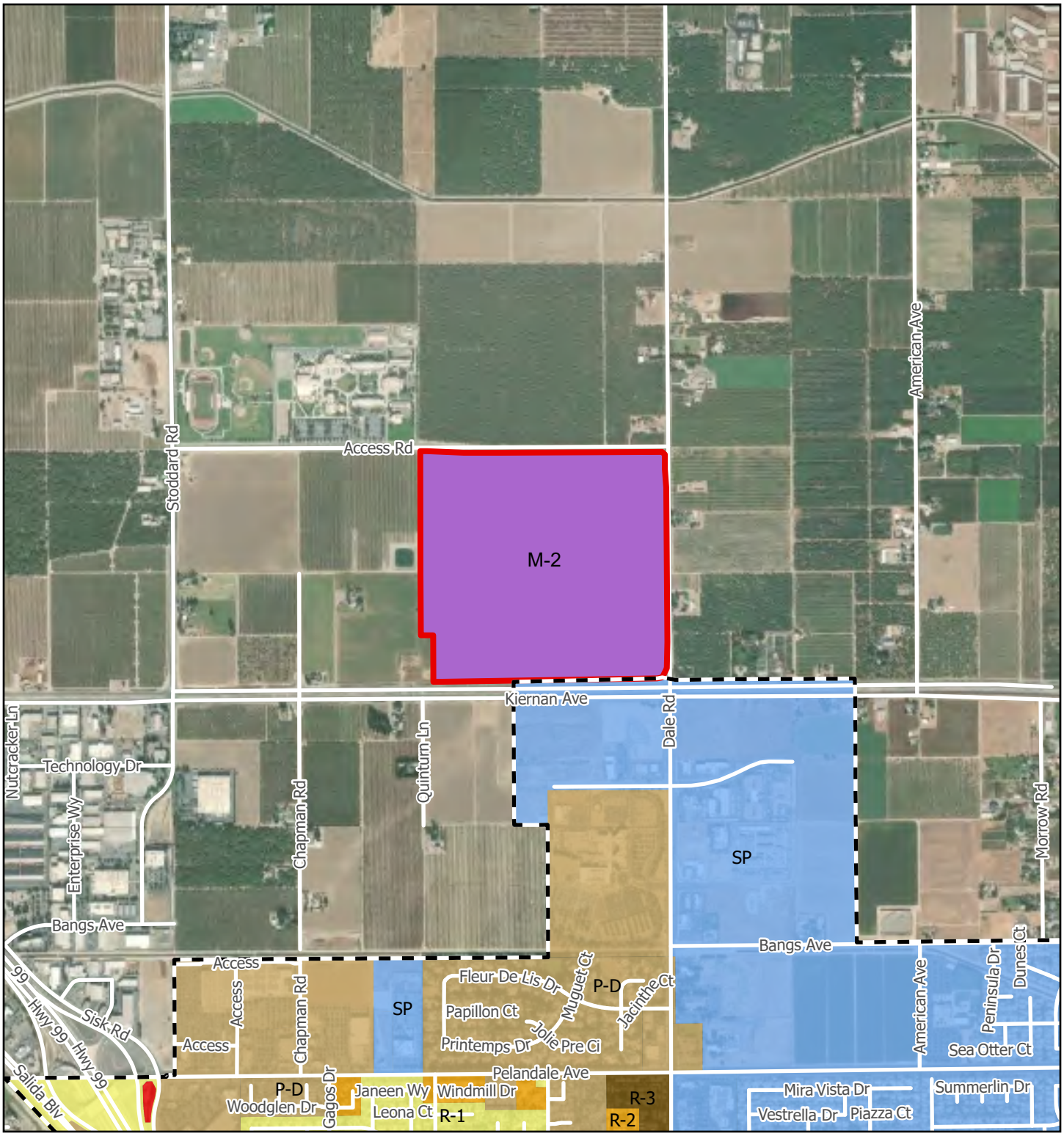
Sources: City of Modesto General Plan. Map Date: December 13, 2024.

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 9.
Proposed General Plan Land Use Designations

0 500 1,000 Feet

DE NOVO PLANNING GROUP
A LAND USE PLANNING, DESIGN, AND ENVIRONMENTAL FIRM



Legend

- Project Parcel
- City of Modesto

City of Modesto Zoning

- R-1 -Low Density Residential
- R-2 - Medium Density Residential
- R-3 - Medium-High Density Residential
- C-3 - Highway Commercial
- P-D - Planned Development
- SP -Specific Plan
- M-2 - Heavy Industrial

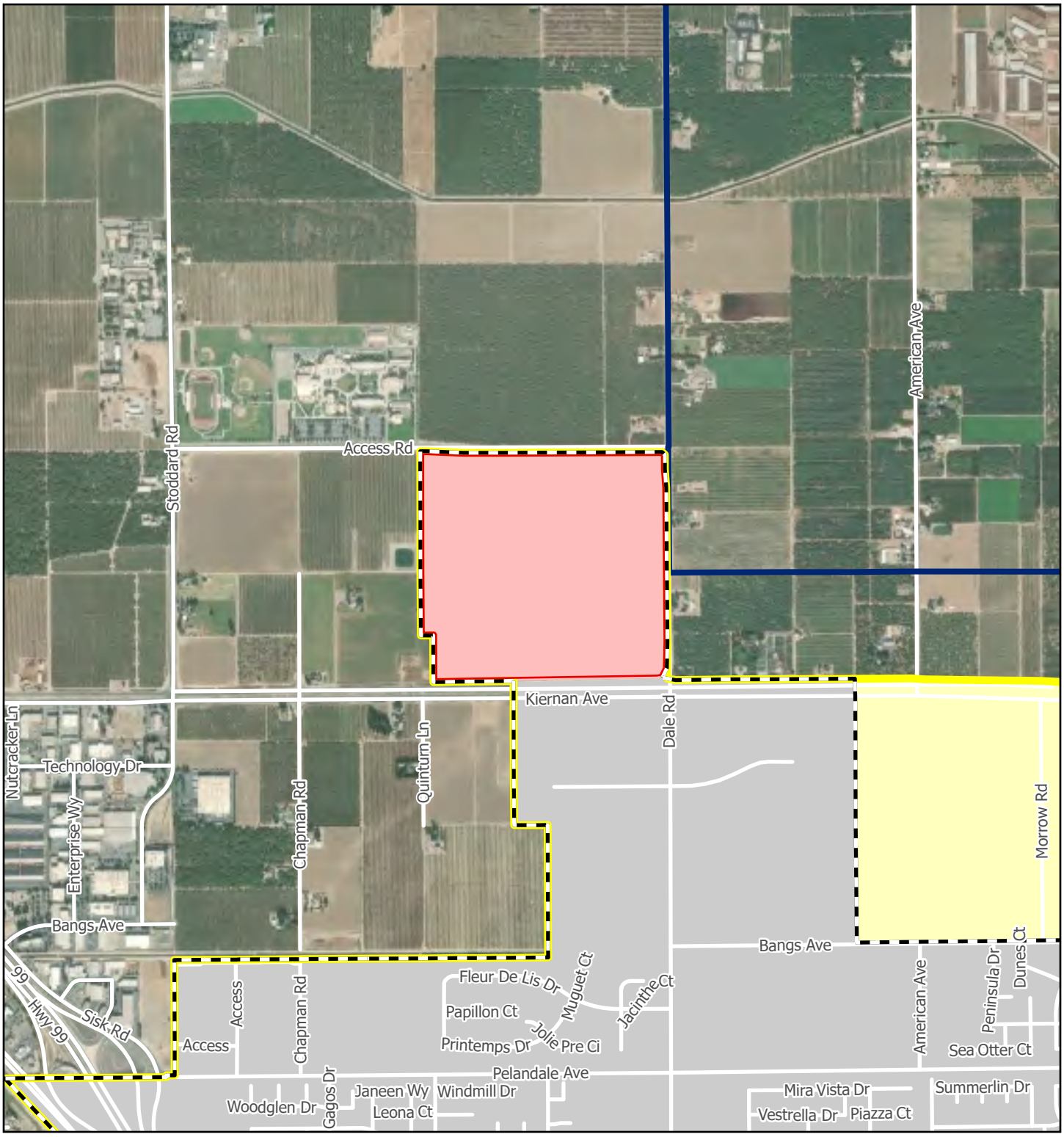
SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 10. Proposed Zoning Districts

0 500 1,000 Feet

DE NOVO PLANNING GROUP
A LAND USE PLANNING, DESIGN, AND ENVIRONMENTAL FIRM

Sources: City of Modesto Zoning Map. Map Date: December 13, 2024.



Legend

- Project Parcel
- Existing City of Modesto
- Existing Modesto Sphere of Influence
- Annexation Area
- City of Modesto Boundary with Annexation
- Sphere of Influence with Annexation

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 11. Annexation Area

0 500 1,000 Feet

DE NOVO PLANNING GROUP
A LAND USE PLANNING, DESIGN, AND ENVIRONMENTAL FIRM

Sources: City of Modesto; Stanislaus County. Map Date: December 13, 2024.

STATE OF CALIFORNIA Gavin Newsom, *Governor*

NATIVE AMERICAN HERITAGE COMMISSION

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NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov

February 25, 2025

Tristan Osborn
City of Modesto Planning Division
1010 10th Street
Modesto CA 95354

Re: 2025020776 Scannell Industrial Project, Stanislaus County

Dear Mr. Osborn:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides 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. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

- **a.** A brief description of the project.
- **b.** The lead agency contact information.
- **c.** Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
- **d.** A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

- **a.** For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

- **a.** Alternatives to the project.
- **b.** Recommended mitigation measures.
- **c.** Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:

- **a.** Type of environmental review necessary.
- **b.** Significance of the tribal cultural resources.
- **c.** Significance of the project's impacts on tribal cultural resources.
- **d.** If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

- **a.** Whether the proposed project has a significant impact on an identified tribal cultural resource.
- **b.** Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or

b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

a. Avoidance and preservation of the resources in place, including, but not limited to:

i. Planning and construction to avoid the resources and protect the cultural and natural context.

ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:

i. Protecting the cultural character and integrity of the resource.

ii. Protecting the traditional use of the resource.

iii. Protecting the confidentiality of the resource.

c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).

e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).

f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.

b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.

c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (https://ohp.parks.ca.gov/?page_id=30331) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
    b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
   a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
   b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
   a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
   b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
   c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Pricilla.Torres-Fuentes@NAHC.ca.gov.

Sincerely,

Pricilla Torres-Fuentes

Pricilla Torres-Fuentes
Cultural Resources Analyst

cc: State Clearinghouse

March 06, 2024

TO: JEREMY BALLARD, SENIOR PLANNER, STANISLAUS COUNTY PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT

FROM: NINOS SHAMOON, DEPARTMENT OF ENVIRONMENTAL RESOURCES

SUBJECT: **APPLICATION NO. PLN2023-0044 – SCANNELL PROPERTIES, LLC**

The Stanislaus County Hazardous Materials Division has reviewed the information available on the subject project and it is our position that the project **will not have a significant impact to the environment**. Listed below are the specific impacts which support our determination and the mitigation or conditions that need to be implemented:

The applicant shall determine, to the satisfaction of the Department of Environmental Resources (DER), that a site containing (or formerly containing) residences or farm buildings, or structures, has been fully investigated (via Phase I study, and if necessary, Phase II study) prior to the issuance of any grading permit. Any discovery of underground storage tanks, former underground storage tank locations, buried chemicals, buried refuse, or contaminated soil shall be brought to the immediate attention of DER.

The applicant should contact the Department of Environmental Resources – Hazardous Materials Division (DER-HMD) at (209) 525-6700 or your district Hazardous Materials Specialist Yama Noorzai (see contact information below) regarding regulatory requirements for hazardous materials and/or wastes.

Yama Noorzai
Department of Environmental Resources
Hazardous Materials Division
3800 Cornucopia Way, Suite C
Modesto, CA 95358
Direct: (209) 525-4749
ynoorzai@envres.org

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ANDREW J. GRAF
TANYA A. GULESSERIAN
DARION N. JOHNSTON
RACHAEL E. KOSS
AIDAN P. MARSHALL
ALAURA R. McGUIRE

Of Counsel
MARC D. JOSEPH

March 12, 2025

Via U.S. Mail and Email
Jessica Hill
Director of Community & Economic Development
City of Modesto
P.O. Box 642
Modesto, CA 95353
Email: jhill@modestogov.com

Diane Nayares-Perez
City Clerk
City of Modesto
P.O. Box 642
Modesto, CA 95353
Email: dnayaresperez@modestogov.com

Via Email Only
Tristan Osborn
Planning Manager
Email: tosborn@modestogov.com

Re: —Public Records Act Request – Scannell Industrial Project

Dear Ms. Hill, Ms.Nayares-Perez, and Mr. Osborn:

We are writing on behalf of Stanislaus County Residents for Responsible Development ("Stanislaus Residents") to request a copy of any and all public records referring or related to the Scannell Industrial Project ("Project") proposed by Scannell Properties, LLC ("Applicant"). This request includes, but is not limited to, any and all file materials, applications, correspondence, resolutions, memos, notes, analysis, email messages, files, maps, charts, and any other documents related to the Project.

The Project would include the construction of approximately seven industrial buildings comprising of between 2,000,000 and 2,500,000 square feet of warehouse, distribution, and manufacturing space. Additionally, up to three acres of retail development would be constructed at the corner of Dale Road and Kiernan Avenue. The Project is located at 3243 Kiernan Avenue (State Route 219), at the northwest corner of Kiernan Avenue and Dale Road intersection, within the unincorporated Community of Salida (APN 003-019-026).

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This request is made pursuant to the **California Public Records Act** (Government Code §§ 7920.000, *et seq.*). This request is also made pursuant to Article I, section 3(b) of the California Constitution, which provides a Constitutional right of access to information concerning the conduct of government. Article I, section 3(b) provides that any statutory right to information shall be broadly construed to provide the greatest access to government information and further requires that any statute that limits the right of access to information shall be narrowly construed.

We request access to the above records in their original form, as maintained by the agency.[1] Pursuant to Government Code Section 7922.570, if the requested documents are in electronic format, please upload them to a file hosting program such as Dropbox, Next Request or a similar program. Alternatively, if the electronic documents are 10 MB or less (or can be easily broken into sections of 10 MB or less), they may be emailed to me as attachments.

We will pay for any direct costs of duplication associated with filling this request up to $200.[2] However, please contact me with a cost estimate before copying/scanning the materials.

Please use the following contact information for all correspondence:

U.S. Mail
Lauren Evans
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080-7037

Email
levans@adamsbroadwell.com

[1] Gov. Code § 7922.570; *Sierra Club v. Super. Ct.* (2013) 57 Cal. 4th 157, 161-62.
[2] Gov. Code §§ 7922.530, 7922.575; *North County Parents v. Dept. of Education* (1994) 23 Cal.App.4th 144; *County of Los Angeles v. Super. Ct.* (2000) 82 Cal.App.4th 819, 826.

If you have any questions, please call me at (650) 589-1660 or email me at levans@adamsbroadwell.com. Thank you for your assistance.

Sincerely,

Lauren Evans

Lauren Q. Evans
Legal Assistant

LQE:ljl

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RACHAEL E. KOSS
AIDAN P. MARSHALL
ALAURA R. McGUIRE

Of Counsel
MARC D. JOSEPH

March 12, 2025

Via U.S. Mail and Email
Jessica Hill
Director of Community & Economic Development
City of Modesto
P.O. Box 642
Modesto, CA 95353
Email: jhill@modestogov.com

Diane Nayares-Perez
City Clerk
City of Modesto
P.O. Box 642
Modesto, CA 95353
Email: dnayaresperez@modestogov.com

Via Email Only
Tristan Osborn
Planning Manager
Email: tosborn@modestogov.com

Re: Request for Mailed Notice of Actions and Hearings – Scannell Industrial Project

Dear Ms. Hill, Ms. Nayares-Perez, and Mr. Osborn:

We are writing on behalf of Stanislaus County Residents for Responsible Development ("Stanislaus Residents") to request mailed notice of the availability of any environmental review document, prepared pursuant to the California Environmental Quality Act, related to the Scannell Industrial Project ("Project") proposed by Scannell Properties, LLC ("Applicant"), as well as a copy of the environmental review document when it is made available for public review.

The Project would include the construction of approximately seven industrial buildings comprising of between 2,000,000 and 2,500,000 square feet of warehouse, distribution, and manufacturing space. Additionally, up to three acres of retail development would be constructed at the corner of Dale Road and Kiernan Avenue. The Project is located at 3243 Kiernan Avenue (State Route 219), at the northwest corner of Kiernan Avenue and Dale Road intersection, within the unincorporated Community of Salida (APN 003-019-026).

printed on recycled paper

We also request mailed notice of any and all hearings and/or actions related to the Project. These requests are made pursuant to Public Resources Code Sections 21092.2, 21080.4, 21083.9, 21092, 21108, 21152 and 21167(f) and Government Code Section 65092, which require local agencies to mail such notices to any person who has filed a written request for them with the clerk of the agency's governing body.

Please use the following contact information for all correspondence:

U.S. Mail
Lauren Evans
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080-7037

Email
levans@adamsbroadwell.com

If you have any questions, please call me at (650) 589-1660 or email me at levans@adamsbroadwell.com. Thank you for your assistance.

Sincerely,

Lauren Evans

Lauren Q. Evans
Legal Assistant

LQE:ljl

Leonard Powell
Resident, Salida, CA
calhearingofficer@gmail.com

March 19, 2025

Tristan Osborn, Planning Manager
City of Modesto | Planning Division
1010 10th Street
Modesto, CA 95354
Email: planning@modestogov.com; tosborn@modestogov.com

Subject: **Public Comment on Notice of Preparation – Environmental Impact Report for the Scannell Industrial Project**

Dear Tristan Osborn,

I submit this letter in response to the Notice of Preparation (NOP) for the Environmental Impact Report (EIR) for the Scannell Industrial Project. This proposed annexation and industrial development raises serious concerns regarding its legality, environmental impacts, infrastructure funding obligations, and compliance with state and federal laws.

The City of Modesto must recognize that proceeding with this project in its current form could violate voter-mandated land use restrictions, state environmental laws, and constitutional protections under both state and federal law. Public officials who knowingly participate in an unlawful process may lose their qualified immunity and could be held personally liable under 42 U.S.C. § 1983 for violating constitutional rights under color of law.

Legal and Procedural Violations

1. Annexation Proposal Circumvents Established Land Use and Infrastructure Requirements[1].

This parcel falls under a county-approved land use plan that imposed mandatory infrastructure contributions and environmental safeguards to ensure that growth occurs in a responsible and equitable manner[2]. These requirements included:

- The completion of a Programmatic Environmental Impact Report (PEIR) before development approvals.

[1] Stanislaus County "NOTICE OF PREPARATION OF A PROGRAM ENVIRONMENTAL IMPACT REPORT NO. PLN2024 - 0083 - SALIDA COMMUNITY PLAN AMENDMENT AREA"

[2] Appendix IA8 "Salida Community Plan" Element of the Stanislaus County General Plan

- Payments into designated infrastructure and transportation funds to ensure regional freeway interchange improvements.
- Compliance with voter-approved land use restrictions that prohibit premature development before certain infrastructure benchmarks are met.

By attempting to annex this parcel into the City of Modesto, the applicant and the City are unlawfully circumventing these voter-imposed conditions. This effectively shifts the infrastructure burden onto remaining unincorporated areas, violating equal protection principles and fair-share development funding obligations.

Furthermore, the California Supreme Court has ruled that development projects cannot evade legally imposed growth restrictions and financial obligations simply by shifting jurisdictional oversight (Friends of Mammoth v. Board of Supervisors, 8 Cal.3d 247 (1972)).

2. CEQA Violations: The Attempt to Avoid a Programmatic EIR

The California Environmental Quality Act (CEQA, Public Resources Code § 21000 et seq.) requires a thorough and legally adequate analysis of the cumulative environmental effects of a project, including:

- Traffic congestion and infrastructure deterioration, particularly concerning freeway interchanges.
- Air quality impacts from increased industrial activity and vehicle emissions.
- Water resource depletion and stormwater management, particularly in light of ongoing drought conditions.
- Loss of agricultural land and displacement of local communities.

The City must not attempt to segment the environmental review process by treating this project in isolation rather than within the broader context of regional land use planning obligations. Courts have repeatedly ruled against agencies that piecemeal environmental review to avoid meaningful impact analysis (Banning Ranch Conservancy v. City of Newport Beach, 2 Cal.5th 918 (2017)).

Failure to conduct a legally sufficient EIR that fully incorporates these regional impacts could expose the City to litigation under CEQA.

3. Violation of Constitutional Rights and Loss of Qualified Immunity for Public Officials

If the City proceeds with this annexation in a manner that willfully disregards voter-approved land use controls, it risks violating the constitutional rights of residents and landowners who previously relied on these restrictions to guide development.

Under 42 U.S.C. § 1983, public officials can be held personally liable if they knowingly violate federally protected rights under the guise of government action (Monell v. Department of Social Services, 436 U.S. 658 (1978)). Courts have consistently ruled that elected officials cannot shield themselves from liability when they:

- Conspire to violate legal protections in favor of private interests.
- Act outside the scope of their lawful authority.
- Disregard established legal obligations, such as CEQA and voter-mandated restrictions.

If this annexation proceeds in its current form, the City could face legal challenges that may hold individual decision-makers accountable for engaging in a pattern of official misconduct.

Environmental and Infrastructure Concerns

1. Roadway and Traffic Impacts

The proposed industrial project will significantly increase heavy truck traffic, placing an undue burden on local roadways and interchanges. The original county plan required developers to contribute to freeway expansion and major road improvements—this annexation attempts to evade those obligations, unfairly shifting costs to the public.

2. Air Quality and Health Impacts

The project's industrial activities will generate diesel emissions, particulate matter, and other pollutants that can have serious health consequences for local residents. CEQA mandates a comprehensive air quality impact study, particularly given the increased focus on environmental justice issues affecting disadvantaged communities(California Gov. Code § 65040.12).

3. Water and Stormwater Management

The region already faces severe drought conditions and groundwater overdraft. Industrial projects of this scale must demonstrate that they will not deplete water resources or increase runoff beyond sustainable levels. A full hydrological impact assessment must be conducted.

Concerns previously raised to Stanislaus County

As previously submitted to Stanislaus County on October 08, 2024 during its PEIR scoping period for the same or similar project(s), parcel(s), and scope, my prior comments outlined numerous concerns regarding environmental impacts, infrastructure funding, and procedural deficiencies in the approval process. These concerns remain unresolved and are highly relevant to the City of Modesto's current review. For ease of reference, a copy of my previously submitted letter to the County is attached as Attachment A.

Policy and Legal Recommendations

Given these serious legal and procedural deficiencies, I request that the City of Modesto:

1. Provide a transparent explanation for how this annexation complies with prior voter-approved land use restrictions and infrastructure requirements.
2. Conduct a full CEQA-compliant Environmental Impact Report, including a cumulative impacts analysis.
3. Ensure compliance with state and federal law, avoiding any actions that could result in personal liability for public officials under 42 U.S.C. § 1983.
4. Include public participation in all future discussions regarding this annexation.

Conclusion

The City of Modesto must carefully consider the legal, financial, and environmental implications of proceeding with this annexation. Failing to comply with CEQA, voter-approved land use controls, and infrastructure funding obligations could expose the City to costly litigation and legal challenges.

More importantly, allowing this project to proceed without the required environmental and infrastructure safeguards would set a dangerous precedent of bypassing democratic land use planning in favor of selective exemptions for developers. I urge the City to halt the annexation process until all legal and environmental concerns are adequately addressed.

Attachments:
Attachment A – Public Comment Letter Submitted to Stanislaus County for the PEIR Process on October 8, 2024.

Please include this letter in the official record for the Scannell Industrial Project EIR.

Sincerely,

Leonard Powell

Attachment A – Public Comment Letter Submitted to Stanislaus County for the PEIR Process on Oct 8, 2024

COMMENTS ON THE PROGRAM ENVIRONMENTAL IMPACT REPORT NO. PLN2024 - 0083 - SALIDA COMMUNITY PLAN AMENDMENT AREA

Prepared by Leonard Powell J,D. Former Stanislaus County public official, Certified Code Enforcement Officer (both State of California and International Code Council), and 37-year Salida resident.

Submitted on October 8, 2024

PURPOSE

These comments are submitted during the Scoping Period for Program Environmental Impact Report No. PLN2024-0083 (PEIR) regarding the Salida Community Plan Amendment Area (SCPAA). They address concerns about the potential direct, indirect, and cumulative environmental impacts of development within the Amendment Area. The goal of these comments is to ensure that the PEIR includes feasible mitigation measures or alternatives that reduce or avoid significant environmental impacts. Notably, while some issues raised here may seem outside the typical scope of a traditional CEQA review, they are relevant due to the comprehensive nature of the Salida Community Plan and the cumulative environmental effects that will be at issue with each project within the SCPAA and overall project.

INTRODUCTION

This PEIR must account for the persistent efforts by the Stanislaus County Planning Department, Planning Commission, and Board of Supervisors to circumvent laws governing land use, development, environmental protection, and elections concerning development proposals in the SCPAA. Two notable projects—PLN2019-0079 (Cal Sierra Financial, Inc.) and PLN2023-0044 (Scannell Development Project)—highlight this concerning pattern of behavior.

COMMUNITY VOICE AND ENVIRONMENTAL REVIEW

It is important to acknowledge that this PEIR process was not initiated by elected or appointed County officials but by Stanislaus County citizens. The public's demand for environmental review stems from the voter-approved Salida Area Planning, Road Improvement, Economic Development, and Farmland Protection Initiative (the "Salida Initiative"), which carries the full weight of state law and was ratified by the County Board of Supervisors.

ENSURING PUBLIC TRUST AND ACCOUNTABILITY.

The PEIR must be prepared with full transparency and rigor to maintain public trust. Any

effort to downplay the Initiative's requirements would undermine the legitimacy of this process and the confidence of the community in the County's commitment to the law.

PROTECTING THE SALIDA INITIATIVE: CONCERNS OVER PEIR ADEQUACY AND COUNTY COMPLIANCE

The Salida Initiative is a unique, citizen-driven framework, unlike any other land-use statute, developed with the express purpose of protecting certain local interests. Its legal contours are precise and must be adhered to. As such, the staff preparing the PEIR are expected to rigorously follow both the Salida Initiative and CEQA for guidance. This makes the task significantly more complex and outside the scope of routine Environmental Impact Report (EIR) preparation.

There are widespread concerns that the PEIR may not adequately comply with the Salida Initiative, which was specifically crafted to protect local interests. The Initiative's provisions are legally binding and must be meticulously followed in this PEIR process. Furthermore, the County's history of undermining the Initiative raises legitimate concerns that this PEIR could be manipulated to push through developments that conflict with voter mandates.

RIGOROUS SALIDA INITIATIVE ASSESSMENT REQUIRED

Efforts to weaken or bypass the Salida Initiative are part of an alarming trend of noncompliance with state law. It is essential for the PEIR to include thorough oversight and follow the Initiative's legal framework to ensure future projects comply fully with the law. This will prevent unlawful development that could harm the community and erode the integrity of the Salida Initiative.

ENSURING PEIR COMPLIANCE WITH STATE LAW AND CIVIL LIABILITY RISKS UNDER 42 U.S.C. SECTION 1983

The Salida Initiative was adopted through a citizen-led voter initiative, governed by California Election Code Section 9125. This legal framework makes it clear that no amendments or repeals to the Initiative can occur without a public vote, ensuring that only voters can alter its provisions. Noncompliance with the Initiative would violate state law, particularly California Elections Code Section 9125, and open the door to potential civil liability under 42 U.S.C. Section 1983 for violating constitutional rights.

Under Section 1983, public officials, agents, consultants, and contractors involved in the PEIR process who act under color of state law to violate an individual's constitutional rights may face personal civil liability. Importantly, the usual immunities granted to officials—such as qualified immunity or legislative immunity—do not protect individuals in cases where they are found to have violated clearly established constitutional or legal

rights. Section 1983 is designed to ensure accountability for public officials who act outside the bounds of the law, especially when their actions infringe on rights that are well-defined by legal precedent.

Given the binding nature of the Salida Initiative and the limitations it places on development, any deviation from its mandates could be seen as a violation of these rights, exposing public officials and consultants to litigation risks. This includes instances where development is allowed outside the Initiative's text or where attempts are made to amend the Initiative without voter approval. Such actions would not only breach state law but could also violate community members' civil rights, subjecting those involved to personal liability under both state and federal law.

All parties involved in the PEIR process must ensure full compliance with the Salida Initiative to uphold the integrity of the law and protect against civil rights violations. A thorough and compliant PEIR is essential to developing the SCPAA in a manner that benefits the community while remaining consistent with the laws governing the Initiative.

ENSURING COMPREHENSIVE PEIR REVIEW: ADDRESSING DEVELOPMENT, INFRASTRUCTURE, AND COMPLIANCE WITH THE SALIDA INITIATIVE

To fulfill its mandate, this PEIR must fully engage with the Salida Initiative's comprehensive framework and its impacts on land use, planning, and development within the SCPAA. The preparation of this PEIR must thoroughly examine all 80+ pages of the Salida Initiative, which has is submitted along with this document as an electronic PDF and is incorporated by reference. The PEIR analysis must include, address, and require the following required mitigation measures:

- Analyzing the Salida Initiative's Provisions: A thorough examination of the Initiative's specific requirements and goals to understand the potential impact on future development.
- Assessing Development Obligations: Identifying ALL obligations that individual development projects will face under the Initiative, ensuring they align with its objectives.
- Evaluating Implementation Strategies: Exploring the necessary financing, administrative structures, and procedures to effectively implement the Salida Initiative's mandates.
- Addressing Potential Challenges: Anticipating potential gaps, shortfalls, or oversights during the implementation process, ensuring seamless compliance.
- Development Plan & Infrastructure Requirements: Each project must submit a Development Plan that includes:

    - Master Infrastructure Plan: Outlining utilities, roads, drainage systems, wastewater treatment, and water supply required for the project.
    - Phasing Plan: Demonstrating how infrastructure will be phased in over time to align with the scale and timing of the development.
    - Financing Plan: Detailing how infrastructure will be financed, ensuring it is available before and during construction.
    - Environmental Mitigation Measures: Addressing mitigation strategies in line with both the PEIR findings and Salida Initiative.
- Infrastructure Financing & Developer Contributions: Ensure developers contribute more than their fair share to infrastructure benefiting both residential and non-residential uses (Residential Applicants' Subsidy), especially for job-generating business parks and industrial land uses. Projects must also account for reimbursement mechanisms where infrastructure serves larger developments.
- Farmland Mitigation and Conservation Easements: For each acre of farmland converted to residential use, developers must purchase one acre of conservation easements to protect equivalent-quality farmland within Stanislaus County.
- Significant Capital Outlay for Conservation: The financial burden of acquiring conservation easements, particularly for high-quality agricultural land, must be considered in the financial planning for each project.
- Infrastructure Burden Analysis: Each project must submit an analysis calculating financial contributions towards infrastructure. Projects unable to meet these contributions must be denied or conditioned until sufficient funding is secured.
- Permanent Land Use Restrictions: Zoning and general plan designations under the Salida Initiative carry long-term implications, and any changes must strictly adhere to the Initiative's guidelines.
- Water Supply Assessments: Projects must identify sufficient water supplies before any development is approved.
- Funding for EIRs: Developers must cover the costs of the PEIR and all related/subsequent EIRs to ensure environmental impacts are properly evaluated.
- Mitigation Measures Implementation: Developers must propose and implement mitigation measures to address project impacts identified in the PEIR and pending EIRs.
- Infrastructure Contributions: Developers must provide funding for transportation improvements, public facilities, and parks as outlined in the Salida Initiative.
- Compliance with Zoning Regulations: All projects must strictly adhere to zoning regulations governing the SCPAA.
- Development Agreements: Developers must enter into binding agreements that include land dedication, infrastructure funding, and mitigation measures.

- Collaboration with County Authorities: Developers must work cooperatively with the County to ensure comprehensive and reliable planning and enforcement of the Initiative's mandates.
- Impact on Schools: All projects must demonstrate a net positive impact on local schools as required by the Salida Initiative.
- Funding for Salida Incorporation Studies: Developers must contribute to studies regarding the potential incorporation of Salida.
- Natural Resource Protection: Developers must implement measures to preserve biological resources, protect water quality, reduce air pollution, conserve water, and minimize agricultural land conversion.
- Public Services Maintenance: Ensuring continued provision of high-quality public services must be a priority.
- Strict Enforcement of Salida Initiative Requirements: All development applications must require adherence to the Initiative's requirements, with no deviation.
- County Staff Support: County staff must provide developers with the necessary support to navigate the complex requirements of the Salida Initiative. This must be active assistance, not merely identifying it and leaving it up to the applicant to decipher.
- Monitoring and Compliance: County staff must regularly monitor developers' progress and compliance with both the Initiative and CEQA.
- Public Concerns: County staff must remain responsive to public concerns and address any arising issues objectively.
- Legal Compliance: County staff must prioritize compliance with state law and the Salida Initiative's provisions.
- Prevention of Manipulation: The County must resist any attempts to manipulate the PEIR or EIR process to undermine the Salida Initiative's requirements.
- Development Costs: County staff must ensure all developer obligations are met to fund the requirements of the Salida Initiative, with no allowances for influence to override such mandates.

Additionally, County staff must ensure that each development application contributes to:

- The construction of new infrastructure, including an east-west expressway.
- Improvements to roads, public facilities, and parks.
- Adequate water supply for the development area.

Finally, each applicant must also:

- Create jobs and promote economic development.
- Develop recreational areas, parks, and open spaces.

- Provide diverse housing opportunities.
- Promote non-motorized transportation options.
- Maintain public services and adhere to zoning and community plan regulations.
- Contribute to the establishment of new riverfront parks and community facilities.
- Ensure a net positive impact on local schools and other public services.

  The Salida Initiative presents a robust framework, and it is imperative that this PEIR rigorously and comprehensively analyzes every aspect to ensure compliance, public accountability, and long-term success in land use and development planning.

Pacific Gas and Electric Company

Plan Review Team
Land Management

PGEPlanReview@pge.com

March 20, 2025

Tristan Osborn
City of Modesto

Ref: Gas and Electric Transmission and Distribution

Dear Tristan Osborn,

Thank you for submitting the Scannell Industrial project plans for our review. PG&E will review the submitted plans in relationship to any existing Gas and Electric facilities within the project area. If the proposed project is adjacent/or within PG&E owned property and/or easements, we will be working with you to ensure compatible uses and activities near our facilities.

Attached you will find information and requirements as it relates to Gas facilities (Attachment 1) and Electric facilities (Attachment 2). Please review these in detail, as it is critical to ensure your safety and to protect PG&E's facilities and its existing rights.

Below is additional information for your review:

1. This plan review process does not replace the application process for PG&E gas or electric service your project may require. For these requests, please continue to work with PG&E Service Planning: https://www.pge.com/en/account/service-requests/building-and-renovation.html.

2. If the project being submitted is part of a larger project, please include the entire scope of your project, and not just a portion of it. PG&E's facilities are to be incorporated within any CEQA document. PG&E needs to verify that the CEQA document will identify any required future PG&E services.

3. An engineering deposit may be required to review plans for a project depending on the size, scope, and location of the project and as it relates to any rearrangement or new installation of PG&E facilities.

Any proposed uses within the PG&E fee strip and/or easement, may include a California Public Utility Commission (CPUC) Section 851 filing. This requires the CPUC to render approval for a conveyance of rights for specific uses on PG&E's fee strip or easement. PG&E will advise if the necessity to incorporate a CPUC Section 851filing is required.

This letter does not constitute PG&E's consent to use any portion of its easement for any purpose not previously conveyed. PG&E will provide a project specific response as required.

Sincerely,

Plan Review Team
Land Management

Attachment 1 – Gas Facilities

There could be gas transmission pipelines in this area which would be considered critical facilities for PG&E and a high priority subsurface installation under California law. Care must be taken to ensure safety and accessibility. So, please ensure that if PG&E approves work near gas transmission pipelines it is done in adherence with the below stipulations. Additionally, the following link provides additional information regarding legal requirements under California excavation laws: https://www.usanorth811.org/images/pdfs/CA-LAW-2018.pdf

1. Standby Inspection: A PG&E Gas Transmission Standby Inspector must be present during any demolition or construction activity that comes within 10 feet of the gas pipeline. This includes all grading, trenching, substructure depth verifications (potholes), asphalt or concrete demolition/removal, removal of trees, signs, light poles, etc. This inspection can be coordinated through the Underground Service Alert (USA) service at 811. A minimum notice of 48 hours is required. Ensure the USA markings and notifications are maintained throughout the duration of your work.

2. Access: At any time, PG&E may need to access, excavate, and perform work on the gas pipeline. Any construction equipment, materials, or spoils may need to be removed upon notice. Any temporary construction fencing installed within PG&E's easement would also need to be capable of being removed at any time upon notice. Any plans to cut temporary slopes exceeding a 1:4 grade within 10 feet of a gas transmission pipeline need to be approved by PG&E Pipeline Services in writing PRIOR to performing the work.

3. Wheel Loads: To prevent damage to the buried gas pipeline, there are weight limits that must be enforced whenever any equipment gets within 10 feet of traversing the pipe.

Ensure a list of the axle weights of all equipment being used is available for PG&E's Standby Inspector. To confirm the depth of cover, the pipeline may need to be potholed by hand in a few areas.

Due to the complex variability of tracked equipment, vibratory compaction equipment, and cranes, PG&E must evaluate those items on a case-by-case basis prior to use over the gas pipeline (provide a list of any proposed equipment of this type noting model numbers and specific attachments).

No equipment may be set up over the gas pipeline while operating. Ensure crane outriggers are at least 10 feet from the centerline of the gas pipeline. Transport trucks must not be parked over the gas pipeline while being loaded or unloaded.

4. Grading: PG&E requires a minimum of 36 inches of cover over gas pipelines (or existing grade if less) and a maximum of 7 feet of cover at all locations. The graded surface cannot exceed a cross slope of 1:4.

5. Excavating: Any digging within 2 feet of a gas pipeline must be dug by hand. Note that while the minimum clearance is only 24 inches, any excavation work within 24 inches of the edge of a pipeline must be done with hand tools. So to avoid having to dig a trench entirely with hand tools, the edge of the trench must be over 24 inches away. (Doing the math for a 24 inch wide trench being dug along a 36 inch pipeline, the centerline of the trench would need to be at least 54 inches [24/2 + 24 + 36/2 = 54] away, or be entirely dug by hand.)

Water jetting to assist vacuum excavating must be limited to 1000 psig and directed at a 40° angle to the pipe. All pile driving must be kept a minimum of 3 feet away.

Any plans to expose and support a PG&E gas transmission pipeline across an open excavation need to be approved by PG&E Pipeline Services in writing PRIOR to performing the work.

6. Boring/Trenchless Installations: PG&E Pipeline Services must review and approve all plans to bore across or parallel to (within 10 feet) a gas transmission pipeline. There are stringent criteria to pothole the gas transmission facility at regular intervals for all parallel bore installations.

For bore paths that cross gas transmission pipelines perpendicularly, the pipeline must be potholed a minimum of 2 feet in the horizontal direction of the bore path and a minimum of 24 inches in the vertical direction from the bottom of the pipe with minimum clearances measured from the edge of the pipe in both directions. Standby personnel must watch the locator trace (and every ream pass) the path of the bore as it approaches the pipeline and visually monitor the pothole (with the exposed transmission pipe) as the bore traverses the pipeline to ensure adequate clearance with the pipeline. The pothole width must account for the inaccuracy of the locating equipment.

7. Substructures: All utility crossings of a gas pipeline should be made as close to perpendicular as feasible (90° +/- 15°). All utility lines crossing the gas pipeline must have a minimum of 24 inches of separation from the gas pipeline. Parallel utilities, pole bases, water line 'kicker blocks', storm drain inlets, water meters, valves, back pressure devices or other utility substructures are not allowed in the PG&E gas pipeline easement.

If previously retired PG&E facilities are in conflict with proposed substructures, PG&E must verify they are safe prior to removal. This includes verification testing of the contents of the facilities, as well as environmental testing of the coating and internal surfaces. Timelines for PG&E completion of this verification will vary depending on the type and location of facilities in conflict.

8. Structures: No structures are to be built within the PG&E gas pipeline easement. This includes but is not limited to buildings, retaining walls, fences, decks, patios, carports, septic tanks, storage sheds, tanks, loading ramps, or any structure that could limit PG&E's ability to access its facilities.

9. Fencing: Permanent fencing is not allowed within PG&E easements except for perpendicular crossings which must include a 16 foot wide gate for vehicular access. Gates will be secured with PG&E corporation locks.

10. Landscaping: Landscaping must be designed to allow PG&E to access the pipeline for maintenance and not interfere with pipeline coatings or other cathodic protection systems. No trees, shrubs, brush, vines, and other vegetation may be planted within the easement area. Only those plants, ground covers, grasses, flowers, and low-growing plants that grow unsupported to a maximum of four feet (4') in height at maturity may be planted within the easement area.

11. Cathodic Protection: PG&E pipelines are protected from corrosion with an "Impressed Current" cathodic protection system. Any proposed facilities, such as metal conduit, pipes,

service lines, ground rods, anodes, wires, etc. that might affect the pipeline cathodic protection system must be reviewed and approved by PG&E Corrosion Engineering.

12. Pipeline Marker Signs: PG&E needs to maintain pipeline marker signs for gas transmission pipelines in order to ensure public awareness of the presence of the pipelines. With prior written approval from PG&E Pipeline Services, an existing PG&E pipeline marker sign that is in direct conflict with proposed developments may be temporarily relocated to accommodate construction work. The pipeline marker must be moved back once construction is complete.

13. PG&E is also the provider of distribution facilities throughout many of the areas within the state of California. Therefore, any plans that impact PG&E's facilities must be reviewed and approved by PG&E to ensure that no impact occurs which may endanger the safe operation of its facilities.

Attachment 2 – Electric Facilities

It is PG&E's policy to permit certain uses on a case by case basis within its electric transmission fee strip(s) and/or easement(s) provided such uses and manner in which they are exercised, will not interfere with PG&E's rights or endanger its facilities. Some examples/restrictions are as follows:

1. Buildings and Other Structures: No buildings or other structures including the foot print and eave of any buildings, swimming pools, wells or similar structures will be permitted within fee strip(s) and/or easement(s) areas. PG&E's transmission easement shall be designated on subdivision/parcel maps as "**RESTRICTED USE AREA – NO BUILDING."**

2. Grading: Cuts, trenches or excavations may not be made within 25 feet of our towers. Developers must submit grading plans and site development plans (including geotechnical reports if applicable), signed and dated, for PG&E's review. PG&E engineers must review grade changes in the vicinity of our towers. No fills will be allowed which would impair ground-to-conductor clearances. Towers shall not be left on mounds without adequate road access to base of tower or structure.

3. Fences: Walls, fences, and other structures must be installed at locations that do not affect the safe operation of PG&'s facilities. Heavy equipment access to our facilities must be maintained at all times. Metal fences are to be grounded to PG&E specifications. No wall, fence or other like structure is to be installed within 10 feet of tower footings and unrestricted access must be maintained from a tower structure to the nearest street. Walls, fences and other structures proposed along or within the fee strip(s) and/or easement(s) will require PG&E review; submit plans to PG&E Centralized Review Team for review and comment.

4. Landscaping: Vegetation may be allowed; subject to review of plans. On overhead electric transmission fee strip(s) and/or easement(s), plant only low-growing shrubs under the wire zone and only grasses within the area directly below the tower. Along the border of the transmission line right-of-way, plant only small trees no taller than 10 feet in height at maturity. PG&E must have access to its facilities at all times, including access by heavy equipment. No planting is to occur within the footprint of the tower legs. Greenbelts are encouraged.

5. Reservoirs, Sumps, Drainage Basins, and Ponds: Prohibited within PG&E's fee strip(s) and/or easement(s) for electric transmission lines.

6. Automobile Parking: Short term parking of movable passenger vehicles and light trucks (pickups, vans, etc.) is allowed. The lighting within these parking areas will need to be reviewed by PG&E; approval will be on a case by case basis. Heavy equipment access to PG&E facilities is to be maintained at all times. Parking is to clear PG&E structures by at least 10 feet. Protection of PG&E facilities from vehicular traffic is to be provided at developer's expense AND to PG&E specifications. Blocked-up vehicles are not allowed. Carports, canopies, or awnings are not allowed.

7. Storage of Flammable, Explosive or Corrosive Materials: There shall be no storage of fuel or combustibles and no fueling of vehicles within PG&E's easement. No trash bins or incinerators are allowed.

8. Streets and Roads: Access to facilities must be maintained at all times. Street lights may be allowed in the fee strip(s) and/or easement(s) but in all cases must be reviewed by PG&E for

proper clearance. Roads and utilities should cross the transmission easement as nearly at right angles as possible. Road intersections will not be allowed within the transmission easement.

9. Pipelines: Pipelines may be allowed provided crossings are held to a minimum and to be as nearly perpendicular as possible. Pipelines within 25 feet of PG&E structures require review by PG&E. Sprinklers systems may be allowed; subject to review. Leach fields and septic tanks are not allowed. Construction plans must be submitted to PG&E for review and approval prior to the commencement of any construction.

10. Signs: Signs are not allowed except in rare cases subject to individual review by PG&E.

11. Recreation Areas: Playgrounds, parks, tennis courts, basketball courts, barbecue and light trucks (pickups, vans, etc.) may be allowed; subject to review of plans. Heavy equipment access to PG&E facilities is to be maintained at all times. Parking is to clear PG&E structures by at least 10 feet. Protection of PG&E facilities from vehicular traffic is to be provided at developer's expense AND to PG&E specifications.

12. Construction Activity: Since construction activity will take place near PG&E's overhead electric lines, please be advised it is the contractor's responsibility to be aware of, and observe the minimum clearances for both workers and equipment operating near high voltage electric lines set out in the High-Voltage Electrical Safety Orders of the California Division of Industrial Safety (https://www.dir.ca.gov/Title8/sb5g2.html), as well as any other safety regulations. Contractors shall comply with California Public Utilities Commission General Order 95 (http://www.cpuc.ca.gov/gos/GO95/go_95_startup_page.html) and all other safety rules. No construction may occur within 25 feet of PG&E's towers. All excavation activities may only commence after 811 protocols has been followed.

Contractor shall ensure the protection of PG&E's towers and poles from vehicular damage by (installing protective barriers) Plans for protection barriers must be approved by PG&E prior to construction.

13. PG&E is also the owner of distribution facilities throughout many of the areas within the state of California. Therefore, any plans that impact PG&E's facilities must be reviewed and approved by PG&E to ensure that no impact occurs that may endanger the safe and reliable operation of its facilities.

NOTICE OF PREPARATION

TO: State Clearinghouse
State Responsible Agencies
State Trustee Agencies
Other Public Agencies
Interested Organizations

FROM: Tristan Osborn | Planning Manager
City of Modesto | Planning Division
1010 10th St.,
Modesto, CA 95354
209-577-5267
tosborn@modestogov.com

SUBJECT: Notice of Preparation – Environmental Impact Report for the Scannell Industrial Project

Notice is hereby given that the City of Modesto is the lead agency for the preparation of an Environmental Impact Report (EIR) to consider the Scannell Industrial Project. The proposed Project will result in the construction of between 2,000,000 and 2,500,000 square feet of warehouse, distribution, and manufacturing space. In addition, a small 2–3-acre retail site is proposed at the corner of Dale Road and Kiernan Avenue (SR 219) to provide retail service to the project. The proposed Project includes a Tentative Map that would create eight parcels for the industrial and retail buildings. A detailed Project Description can be reviewed at the City or by accessing the City's website: https://www.modestogov.com/1559/California-Environmental-Quality-Act-AB-

The City of Modesto is interested in the input and/or comments of public agencies and the public as to the scope and content of the environmental information that is germane to the agencies' statutory responsibilities in connection with the proposed Project. Responsible/trustee agencies will need to use the EIR prepared by the City of Modesto when considering applicable permits, or other approvals for the proposed project. Due to the time limits mandated by State law, your response must be sent and received by the City of Modesto not later than 30 days following the publication of this Notice of Preparation. The 30-day review period begins February 21, 2025 and ends on March 27, 2025. If we do not receive a response from your agency or organization, we will presume that your agency or organization has no response to make. A responsible agency, trustee agency, or other public agency may request a meeting with the City or its representatives in accordance with Section 15082(c) of the CEQA Guidelines. Please send your response to Tristan Osborn | Planning Manager at the City of Modesto | Planning Division, 1010 10th Street, Modesto, CA 95354. If you have any questions, please contact Modesto Planning at 209-577-5267 or via email at: planning@modestogov.com.

SCOPING MEETING: A virtual scoping meeting for this project will be held on March 20, 2025 from 3:00 p.m. to 4:00 p.m.. You may attend the meeting by going to https://modestogov.zoom.us/j/6152421565?omn=88291759833 clicking "join."

PROBABLE ENVIRONMENTAL EFFECTS AND SCOPE OF THE EIR: All environmental topics identified in Appendix G of the State CEQA Guidelines will be analyzed within the EIR, including: Aesthetics, Agricultural and Forestry Resources, Air Quality, Biological Resources, Cultural Resources, Energy, Geology/Soils, Greenhouse Gases/Climate Change, Hazards and Hazardous Materials, Hydrology/Water Quality, Land Use/Planning, Mineral Resources, Noise, Population/Housing, Public Services, Recreation, Transportation/Circulation, Tribal Resources, Utilities and Service Systems, Wildfire, Cumulative Impacts, and Growth Inducing Impacts. An Initial Study has not been prepared for the proposed Project.

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Pacific Gas and Electric Plan Review Team
6111 Bollinger Canyon Rd., 3rd Floor
Mail Stop Y3370A
San Ramon, CA 94583

Land

94583$5186 C042

To: Modesto Planning Department
c/o Tristan Osborn, planning@modestogov.com

March 24, 2025

RE: Scannell Industrial

Dear Mr. Osborn,

I participated in the virtual meeting on the proposed Scannell Industrial Development that your department held on Thursday, March 20, 2025. The information presented at that meeting and the Project Description/NOP gave rise to several points I would like included in the Draft EIR.

1. Project Setting shows that the existing site uses are agricultural. As I understand, the agricultural land north of Kiernan **is largely prime farmland with good sources of irrigation**.
My concern is that California loses 40,000 to 50,000 acres of farmland annually. Since much of our local economy is based on agriculture, the loss of 145 acres add to that annual loss, and to lose prime farmland with good irrigation sources is a waste of resources.

In addition to the loss of farmland, the siting is adjacent to Gregori High School. With the project operating 24 hours a day, seven days a week, there is a high potential for disrupting activities at Gregori. Even before the project is operational, the preparation of the site would create lots of dust, increased traffic from heavy equipment and potentially very poor air quality from diesel trucks and heavy equipment. These conditions could also affect the air quality at Kaiser Permanente Modesto Medical Center.

2. Project Goals and Objectives: The principal objective of the proposed Project is to develop … provide for local employment opportunities.

a. According to the Tracy Warehouses - Final San Joaquin County Industrial Market Study - October. 2, 2023, “A typical warehouse/distribution center has a **fairly low job density**. One of the main objectives of many jurisdictions that are courting new warehouse and distribution projects is the potential for new job creation. Warehouse/distribution centers offer a range of occupational opportunities; however, **most of the jobs will likely fall fairly near the existing median wage for all workers** in San Joaquin County… While the various economic benefits of warehouse/distribution centers are significant in the abstract, **the net community benefits may vary depending on a number of factors, such as costs for public services, the impact of new workers on housing demand and demand for other community services and amenities, impacts of trucks on roadways and other environmental factors, and so forth.** How these factors and many others balance with economic benefits must be considered in making long-term industrial land use policy….**Among non-**

residential land uses, warehouse/distribution centers have among the lowest employment densities (e.g., jobs per building area). This means that for a given facility size, these types of developments tend to support a limited number of jobs.
These data indicate that the **majority of workers in warehouse/distribution facilities are paid relatively low wages**…

b. Sales tax revenue: …warehouse/distribution centers may or may not generate local sales taxes, depending on their function…proposed legislation may impact the way that sales taxes generated through online retailing are distributed, with revenue being allocated based on the delivery address, versus the location of the distribution facility. This would have the effect of redistributing sales tax generation away from communities that host warehouse and distribution hubs, therefore removing one of the main incentives that jurisdictions have to approve new warehouse and distribution projects. Another concern regarding economic development from a warehouse/distribution center is Is the glut of other warehouse/distribution centers in Northern San Joaquin Valley. The chart below shows warehouse vacancies in San Joaquin County (2023 data). With the the availability of already built centers and the large number of square feet, Modesto/Stanislaus County would have a distinct disadvantage to building additional warehouses and adding to this glut. Current concerns about tariffs add to a questionable need for more square feet of centers. See chart below.

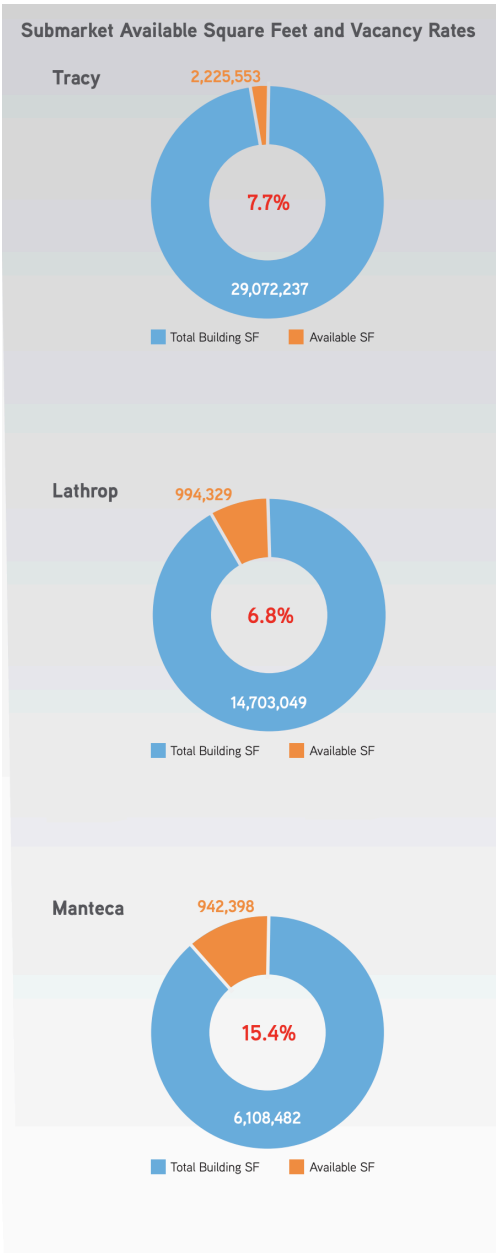
c. Other considerations: …Other communities are also questioning the **environmental justice implications of warehouse/distribution center development** because it is often sited on relatively low-cost land in proximity to lower-income households and communities of color, **subjecting residents to increased noise and light pollution, traffic congestion, and particulate emissions.** How these factors and many others balance with economic benefits must be considered in making longterm industrial land use policy.

d. How would this development affect the jobs/housing balance when in general housing in Stanislaus county costs more than the median income can afford, and according to the study this project “These data indicate that the majority of workers in warehouse/distribution facilities are paid relatively low wages.” What is the availability of low income housing in Salida?

e. How difficult will it be to design efficient transportation access and ensure that onsite transportation systems can facilitate industrial traffic via designated truck routes? (NOP) I have included a map of the proposed site’s access to Highway 99, which already has congestion and potential bottlenecks. Idling trucks will increase the potential for poor air quality. Even with Kiernan built out to six lanes access problems can remain. See map below.

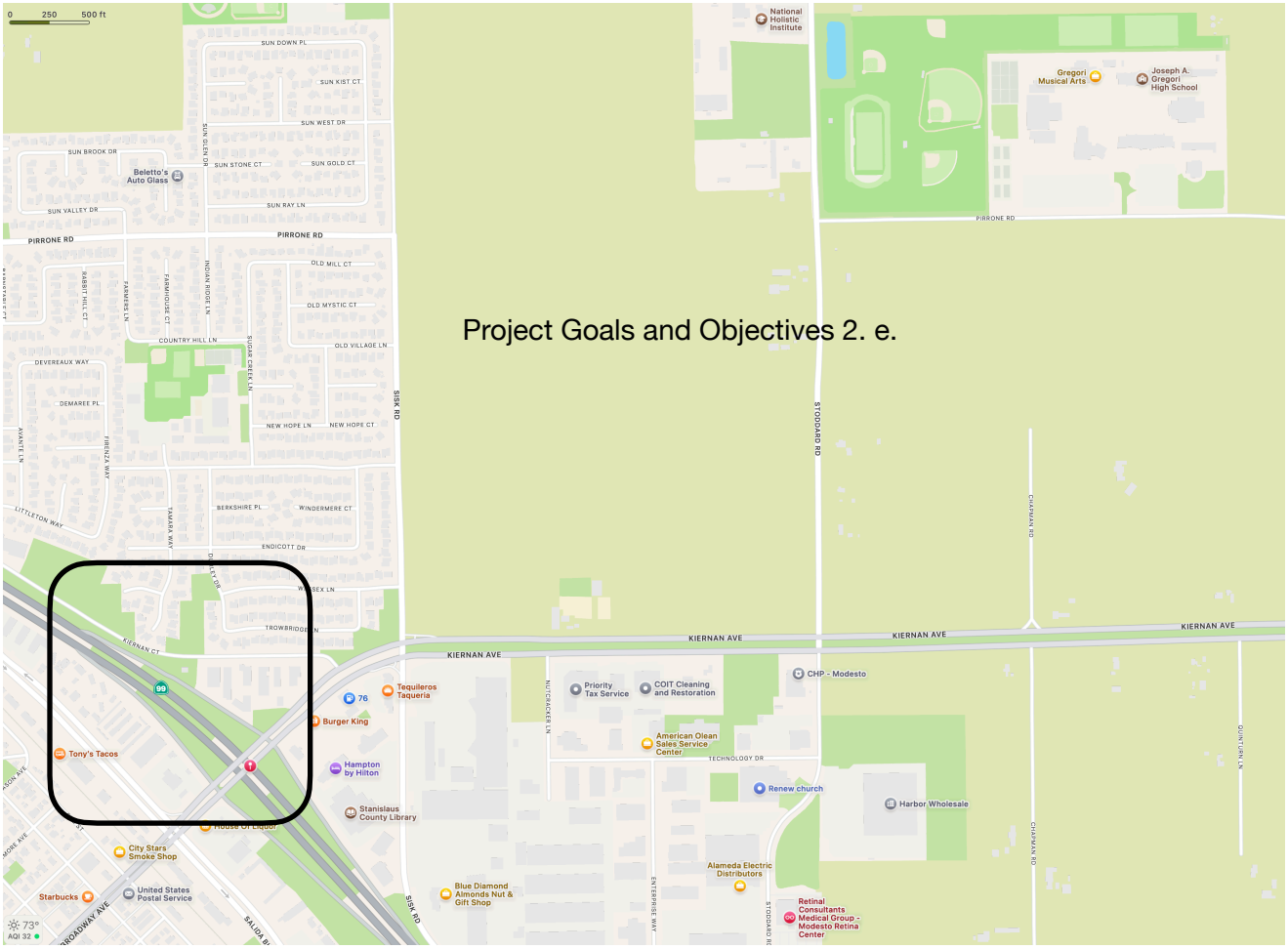
3. Project Characteristics: “As the project develops, the timing, size, and number of phases may change based on market conditions.” (NOP) The Central Valley has experienced a boom in warehouses/distribution centers, predominantly in Tracy, Stockton, and Manteca. In Tracy the projects are sited on the East and West of the city, and in Manteca they are sited South of Highway 120. Both Tracy

and Manteca offer access to Interstate 5, a preferred location because I-5 was built to accommodate this level of truck traffic. Highway 99, however, is already congested with trucks and adding more trucks will create traffic hazards, increased noise and decreased air quality, and was not built to handle this level of traffic.



Warehouse vacancy rates in San Joaquin County
Project Characteristics 3.

Additional questions and concerns:



1. What is the likelihood that Modesto public utility users would see an increase in utility rates?
2. Other projects built on productive farmland have faced public challenges and ballot initiatives to limit development.
3. Will there be a study of the soil quality?
4. Is it likely that Modesto City Schools and Gregori High School will ask for mitigation because of the project's proximity to Gregori?
5. How likely is it that further annexation will be sought if the project expands?
6. How do you mitigate for higher temperatures caused by covering 145 acres with concrete, asphalt and buildings?
7. How many truck trips with this project generate?
8. Do you expect objections from the Salida MAC, Stanislaus County, and other agencies or organizations?

Thank you for including my comment letter in the DEIR. I look forward to reading the completed DEIR and to opportunities for further public input.

Anita Young
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(209) 985-9680

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

March 25, 2025

Tristan Osborn
City of Modesto
Planning Division
1010 10th St.
Modesto, CA 95354

Project: Notice of Preparation – Environmental Impact Report for the Scannell Industrial Project

District CEQA Reference No: 20250215

Dear Mr. Osborn:

The San Joaquin Valley Air Pollution Control District (District) has reviewed the Notice of Preparation (NOP) of an Environmental Impact Report (EIR) from the City of Modesto (City) for the proposed industrial development project. Per the NOP, the project consists of seven buildings comprising 2,000,000+ square feet of warehouse, distribution, and manufacturing space, along with up to 3 aces of retail development (Project). The Project is located at 3243 Kiernan Avenue, at the northwest corner of Kiernan Avenue and Dale Road intersection in Salida, CA.

The District offers the following comments at this time regarding the Project:

1) Project Related Emissions

At the federal level under the National Ambient Air Quality Standards (NAAQS), the District is designated as extreme nonattainment for the 8-hour ozone standards and serious nonattainment for the particulate matter less than 2.5 microns in size (PM2.5) standards. At the state level under California Ambient Air Quality Standards (CAAQS), the District is designated as nonattainment for the 8-hour ozone, PM10, and PM2.5 standards.

The District's initial review of the Project concludes that emissions resulting from construction and/or operation of the Project may exceed any of the following significance thresholds as identified in the District's Guidance for Assessing and Mitigating Air Quality Impacts: https://ww2.valleyair.org/media/g4nl3p0g/gamaqi.pdf.

Samir Sheikh
Executive Director/Air Pollution Control Officer

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4800 Enterprise Way
Modesto, CA 95356-8718
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Central Region (Main Office)
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The District recommends that a more detailed preliminary review of the Project be conducted for the Project's construction and operational emissions.

1a) Construction Emissions

The District recommends, to reduce impacts from construction-related diesel exhaust emissions, the Project should utilize the cleanest available off-road construction equipment.

1b) Operational Emissions

Operational (ongoing) air emissions from mobile sources and stationary sources should be analyzed separately. For reference, the District's significance thresholds are identified in the District's Guidance for Assessing and Mitigating Air Quality Impacts: https://ww2.valleyair.org/media/g4nl3p0g/gamaqi.pdf.

Recommended Mitigation Measure: At a minimum, project related impacts on air quality should be reduced to levels below the District's significance thresholds through incorporation of design elements such as the use of cleaner Heavy Heavy-Duty (HHD) trucks and vehicles, measures that reduce Vehicle Miles Traveled (VMTs), and measures that increase energy efficiency. More information on transportation mitigation measures can be found at: https://ww2.valleyair.org/media/ob0pweru/clean-air-measures.pdf

1c) Project Trip Length for HHD Truck Travel

The City's environmental review should adequately characterize and justify an appropriate trip length distance for off-site HHD truck travel to and from the Project site. Based on the following factors: 1) the Project consists of a warehouse/distribution center that is expected to generate a high volume of HHD truck trips, and 2) HHD trucks generally travel further distances for distribution. The District recommends the environmental review include a discussion characterizing an appropriate trip length distance for HHD truck travel, and reflect such appropriate distance supported by project-specific factors.

1d) Recommended Model for Quantifying Air Emissions

Project-related criteria pollutant emissions from construction and operational sources should be identified and quantified. Emissions analysis should be performed using the California Emission Estimator Model (CalEEMod), which uses the most recent CARB-approved version of relevant emissions models and emission factors. CalEEMod is available to the public and can be downloaded from the CalEEMod website at: www.caleemod.com.

2) Health Risk Screening/Assessment

The City should evaluate the risk associated with the Project for sensitive receptors (residences, businesses, hospitals, day-care facilities, health care facilities, etc.) in the area and mitigate any potentially significant risk to help limit exposure of sensitive receptors to emissions.

To determine potential health impacts on surrounding receptors (residences, businesses, hospitals, day-care facilities, health care facilities, etc.) a Prioritization and/or a Health Risk Assessment (HRA) should be performed for the Project. These health risk determinations should quantify and characterize potential Toxic Air Contaminants (TACs) identified by the Office of Environmental Health Hazard Assessment/California Air Resources Board (OEHHA/CARB) that pose a present or potential hazard to human health.

Health risk analyses should include all potential air emissions from the project, which include emissions from construction of the project, including multi-year construction, as well as ongoing operational activities of the project. Note, two common sources of TACs can be attributed to diesel exhaust emitted from heavy-duty off-road earth moving equipment during construction, and from ongoing operation of heavy-duty on-road trucks.

Prioritization (Screening Health Risk Assessment):
A "Prioritization" is the recommended method for a conservative screening-level health risk assessment. The Prioritization should be performed using the California Air Pollution Control Officers Association's (CAPCOA) methodology. Please contact the District for assistance with performing a Prioritization analysis.

The District recommends that a more refined analysis, in the form of an HRA, be performed for any project resulting in a Prioritization score of 10 or greater. This is because the prioritization results are a conservative health risk representation, while the detailed HRA provides a more accurate health risk evaluation.

Health Risk Assessment:
Prior to performing an HRA, it is strongly recommended that land use agencies/ project proponents develop and submit for District review a health risk modeling protocol that outlines the sources and methodologies that will be used to perform the HRA.

A development project would be considered to have a potentially significant health risk if the HRA demonstrates that the health impacts would exceed the District's established risk thresholds, which can be found here: https://ww2.valleyair.org/permitting/ceqa/.

A project with a significant health risk would trigger all feasible mitigation measures. The District strongly recommends that development projects that result in a significant health risk not be approved by the land use agency.

The District is available to review HRA protocols and analyses. For HRA submittals please provide the following information electronically to the District for review:

- HRA (AERMOD) modeling files
- HARP2 files
- Summary of emissions source locations, emissions rates, and emission factor calculations and methodologies.

For assistance, please contact the District's Technical Services Department by:

- E-Mailing inquiries to: hramodeler@valleyair.org
- Calling (559) 230-5900

Recommended Measure: Development projects resulting in TAC emissions should be located an adequate distance from residential areas and other sensitive receptors to prevent the creation of a significant health risk in accordance to CARB's Air Quality and Land Use Handbook: A Community Health Perspective located at https://ww2.arb.ca.gov/our-work/programs/resource-center/strategy-development/land-use-resources.

3) Ambient Air Quality Analysis

An Ambient Air Quality Analysis (AAQA) uses air dispersion modeling to determine if emissions increases from a project will cause or contribute to a violation of State or National Ambient Air Quality Standards. The District recommends an AAQA be performed for the Project if emissions exceed 100 pounds per day of any pollutant.

An AAQA uses air dispersion modeling to determine if emission increase from a project will cause or contribute to a violation of State or National Ambien Air Quality Standards. An acceptable analysis would include emissions from both project-specific permitted and non-permitted equipment and activities. The District recommends consultation with District staff to determine the appropriate model and input data to use in the analysis.

Specific information for assessing significance, including screening tools and modeling guidance, is available online at the District's website: https://ww2.valleyair.org/permitting/ceqa/.

4) Voluntary Emission Reduction Agreement

Criteria pollutant emissions may result in emissions exceeding the District's significance thresholds, potentially resulting in a significant impact on air quality. When a project is expected to have a significant impact, the District recommends the EIR also include a discussion on the feasibility of implementing a Voluntary Emission Reduction Agreement (VERA) for this Project.

A VERA is a mitigation measure by which the project proponent provides pound-for-pound mitigation of emissions increases through a process that develops, funds, and implements emission reduction projects, with the District serving a role of administrator of the emissions reduction projects and verifier of the successful mitigation effort. To implement a VERA, the project proponent and the District enter into a contractual agreement in which the project proponent agrees to mitigate project specific emissions by providing funds for the District's incentives programs. The funds are disbursed by the District in the form of grants for projects that achieve emission reductions. Thus, project-related impacts on air quality can be mitigated. Types of emission reduction projects that have been funded in the past include electrification of stationary internal combustion engines (such as agricultural irrigation pumps), replacing old heavy-duty trucks with new, cleaner, more efficient heavy-duty trucks, and replacement of agricultural equipment with the latest generation technologies.

In implementing a VERA, the District verifies the actual emission reductions that have been achieved as a result of completed grant contracts, monitors the emission reduction projects, and ensures the enforceability of achieved reductions. After the project is mitigated, the District certifies to the Lead Agency that the mitigation is completed, providing the Lead Agency with an enforceable mitigation measure demonstrating that project-related emissions have been mitigated. To assist the Lead Agency and project proponent in ensuring that the environmental document is compliant with CEQA, the District recommends the environmental document includes an assessment of the feasibility of implementing a VERA.

5) Industrial/Warehouse Emission Reduction Strategies

The District recommends the City incorporate emission reduction strategies that can reduce potential harmful health impacts, such as those listed below:

- Require HHD truck routing patterns that limit exposure of residential communities and sensitive receptors to emissions (see comment 6)
- Require minimization of heavy-duty truck idling (see comment 8)
- Require solid screen buffering trees, solid decorative walls, and/or other natural ground landscaping techniques are implemented along the property line of adjacent sensitive receptors

- Orient loading docks away from sensitive receptors unless physically impossible
- Require loading docks a minimum of 500 feet away from the property line of the nearest truck loading bay opening, unless dock is exclusively used for electric trucks
- Incorporate signage and “pavement markings” to clearly identify on-site circulation patterns to minimize unnecessary on-site vehicle travel
- Require truck entries be located on streets of a higher commercial classification
- Locate and require truck entry, exit, and internal circulation away from sensitive receptors
- Prohibit Heavy-Duty diesel truck drive aisles from being used on sides of the building that are directly adjacent to a sensitive receptor property line
- Require a separate entrance for heavy-duty trucks accessible via a truck route, arterial road, major thoroughfare, or a local road that predominantly serves commercial oriented uses
- Require projects be designed to provide the necessary infrastructure to support use of zero-emissions on-road vehicles and off-road equipment (see comment 12)
- Require all building roofs are solar-ready
- Require all portions of roof tops that are not covered with solar panels are constructed to have light colored roofing material with a solar reflective index of greater than 78
- Ensure rooftop solar panels are installed and operated to supply 100% of the power needed to operate all non-refrigerated portions of the development project
- Install solar photovoltaic systems and associated battery storage on the project site
- Require power sources at loading docks for all refrigerated trucks have “plugin” capacity, which will eliminate prolonged idling while loading and unloading goods
- Incorporate bicycle racks and electric bike plug-ins
- Require the use of low volatile organic compounds (VOC) architectural and industrial maintenance coatings
- Designate an area during construction to charge electric powered construction vehicles and equipment, if temporary power is available
- Prohibit the use of non-emergency diesel-powered generators during construction
- Inform the project proponent of the incentive programs (e.g., Carl Moyer Program and Voucher Incentive Program) offered to reduce air emissions from the Project
- Ensure all landscaping be drought tolerant

6) Truck Routing

Truck routing involves the assessment of which roads Heavy Heavy-Duty (HHD) trucks take to and from their destination, and the emissions impact that the HHD trucks may have on residential communities and sensitive receptors. The Project has seven (7) buildings each with the capacity to conduct HHD truck travel in their operations.

The District recommends the City evaluate HHD truck routing patterns for the Project, with the aim of limiting exposure of residential communities and sensitive receptors to emissions. This evaluation would consider the current truck routes, the quantity and type of each truck (e.g., Medium Heavy-Duty, HHD, etc.), the destination and origin of each trip, traffic volume correlation with the time of day or the day of the week, overall Vehicle Miles Traveled (VMT), and associated exhaust emissions. The truck routing evaluation would also identify alternative truck routes and their impacts on VMT and air quality.

7) Cleanest Available Heavy-Duty Trucks

The San Joaquin Valley will not be able to attain stringent health-based federal air quality standards without significant reductions in emissions from HHD trucks, the single largest source of NOx emissions in the San Joaquin Valley. Accordingly, to meet federal air quality attainment standards, the District's ozone and particulate matter attainment plans rely on a significant and rapid transition of HHD fleets to zero or near-zero emissions technologies.

For development projects which typically generate a high volume of HHD truck traffic (e.g., "high-cube" warehouses or distribution centers), there are HHD trucks traveling to-and-from the project location at longer distribution trip length distances. Since the Project may exceed the District significance thresholds, the District recommends that the following measures be considered by the City to reduce Project-related operational emissions:

- *Recommended Measure*: Fleets associated with operational activities utilize the cleanest available HHD trucks, including zero and near-zero technologies.

- *Recommended Measure*: All on-site service equipment (cargo handling, yard hostlers, forklifts, pallet jacks, etc.) utilize zero-emissions technologies.

8) Reduce Idling of Heavy-Duty Trucks

The goal of this strategy is to limit the potential for localized PM2.5 and toxic air contaminant impacts associated with the idling of Heavy-Duty trucks. The diesel exhaust from idling has the potential to impose significant adverse health and environmental impacts.

Since the Project is expected to result in HHD truck trips, the District recommends the EIR include measures to ensure compliance of the state anti-idling regulation (13 CCR § 2485 and 13 CCR § 2480) and discuss the importance of limiting the amount of idling, especially near sensitive receptors. In addition, the District recommends the City consider the feasibility of implementing a more stringent 3-minute idling restriction and requiring appropriate signage and enforcement of idling restrictions.

9) Electric On-Site Off-Road and On-Road Equipment

Since the development project may include Heavy Industrial and Light Industrial uses, the Project may have the potential to result in increased use of off-road equipment (e.g., forklifts) and on-road equipment (e.g., mobile yard trucks with the ability to move materials). The District recommends that the EIR include requirements for project proponents to utilize electric or zero emission off-road and on-road equipment.

10) Vegetative Barriers and Urban Greening

There are residential units located north, east, and west of the Project, as well as a high school located northwest of the Project. The District suggests the City consider the feasibility of incorporating vegetative barriers and urban greening as a measure to further reduce air pollution exposure on sensitive receptors (e.g., residential units).

While various emission control techniques and programs exist to reduce air quality emissions from mobile and stationary sources, vegetative barriers have been shown to be an additional measure to potentially reduce a population's exposure to air pollution through the interception of airborne particles and the update of gaseous pollutants. Examples of vegetative barriers include, but are not limited to the following: trees, bushes, shrubs, or a mix of these. Generally, a higher and thicker vegetative barrier with full coverage will result in greater reductions in downwind pollutant concentrations. In the same manner, urban greening is also a way to help improve air quality and public health in addition to enhancing the overall beautification of a community with drought tolerant, low-maintenance greenery.

11) On-Site Solar Deployment

It is the policy of the State of California that renewable energy resources and zero-carbon resources supply 100% of retail sales of electricity to California end-use customers by December 31, 2045. While various emission control techniques and programs exist to reduce air quality emissions from mobile and stationary sources, the production of solar energy is contributing to improving air quality and public health. The District suggests that the City consider incorporating solar power systems as an emission reduction strategy for the Project.

12) Electric Infrastructure

The District recommends that the City require all nonresidential buildings be designed to provide electric infrastructure to support the use of on-road zero emissions vehicles, such as Medium-Heavy Duty trucks and HHD trucks associated with a warehouse.

To support and accelerate the installation of electric vehicle charging equipment and development of required infrastructure, the District offers incentives to public agencies, businesses, and property owners of multi-unit dwellings to install electric charging infrastructure (Level 2 and 3 chargers). The purpose of the District's Charge Up! Incentive program is to promote clean air alternative-fuel technologies and the use of low or zero-emission vehicles. The District recommends that the City and project proponents install electric vehicle chargers at project sites, and at strategic locations.

Please visit https://ww2.valleyair.org/grants/charge-up for more information.

13) Nuisance Odors

While offensive odors rarely cause any physical harm, they can be unpleasant, leading to considerable distress among the public and often resulting in citizen complaints.

The City should consider all available pertinent information to determine if the Project could have a significant impact related to nuisance odors. Nuisance odors may be assessed qualitatively taking into consideration the proposed business or industry type and its potential to create odors, as well as proximity to off-site receptors that potentially would be exposed to objectionable odors. The intensity of an odor source's operations and its proximity to receptors influences the potential significance of malodorous emissions. Any project with the potential to frequently expose members of the public to objectionable odors should be deemed to have a significant impact.

According to the District Guidance for Assessing and Mitigating air Quality Impacts (GAMAQI), a significant odor impact is defined as more than one confirmed complaint per year averaged over a three-year period, or three unconfirmed complaints per year averaged over a three-year period. An unconfirmed complaint means that either the odor or air contaminant release could not be detected, or the source of the odor could not be determined.

The District is available to assist the City with information regarding specific facilities and categories of facilities, and associated odor complaint records.

14) District Rules and Regulations

The District issues permits for many types of air pollution sources, and regulates some activities that do not require permits. A project subject to District rules and regulations would reduce its impacts on air quality through compliance with the District's regulatory framework. In general, a regulation is a collection of individual rules, each of which deals with a specific topic. As an example, Regulation II (Permits) includes District Rule 2010 (Permits Required), Rule 2201 (New and Modified Stationary Source Review), Rule 2520 (Federally Mandated Operating Permits), and several other rules pertaining to District permitting requirements and processes.

The list of rules below is neither exhaustive nor exclusive. Current District rules can be found online at: https://ww2.valleyair.org/rules-and-planning/current-district-rules-and-regulations. To identify other District rules or regulations that apply to future projects, or to obtain information about District permit requirements, the project proponents are strongly encouraged to contact the District's Small Business Assistance (SBA) Office at (209) 557-6446.

14a) District Rules 2010 and 2201 - Air Quality Permitting for Stationary Sources

Stationary Source emissions include any building, structure, facility, or installation which emits or may emit any affected pollutant directly or as a fugitive emission. District Rule 2010 (Permits Required) requires operators of emission sources to obtain an Authority to Construct (ATC) and Permit to Operate (PTO) from the District. District Rule 2201 (New and Modified Stationary Source Review) requires that new and modified stationary sources of emissions mitigate their emissions using Best Available Control Technology (BACT).

This Project may be subject to District Rule 2010 (Permits Required) and Rule 2201 (New and Modified Stationary Source Review) and may require District permits. Prior to construction, the Project proponent should submit to the District an application for an ATC. For further information or assistance, the project proponent may contact the District's SBA Office at (209) 557-6446.

14b) District Rule 9510 - Indirect Source Review (ISR)

The Project is subject to District Rule 9510 because it will receive a project-level discretionary approval from a public agency and will equal or exceed 100,000 square feet of heavy industrial space.

The purpose of District Rule 9510 is to reduce the growth in both NOx and PM emissions associated with development and transportation projects from mobile

and area sources; specifically, the emissions associated with the construction and subsequent operation of development projects. The ISR Rule requires developers to mitigate their NOx and PM emissions by incorporating clean air design elements into their projects. Should the proposed development project clean air design elements be insufficient to meet the required emission reductions, developers must pay a fee that ultimately funds incentive projects to achieve off-site emissions reductions.

Per Section 5.0 of the ISR Rule, an Air Impact Assessment (AIA) application is required to be submitted no later than applying for project-level approval from a public agency. As of the date of this letter, the District has not received an AIA application for this Project. Please inform the project proponent to immediately submit an AIA application to the District to comply with District Rule 9510 so that proper mitigation and clean air design under ISR can be incorporated into the Project's design. One AIA application should be submitted for the entire Project.

Information about how to comply with District Rule 9510 can be found online at: https://ww2.valleyair.org/permitting/indirect-source-review-rule-overview

The AIA application form can be found online at: https://ww2.valleyair.org/permitting/indirect-source-review-rule-overview/forms-and-applications/

14c) District Rule 9410 (Employer Based Trip Reduction)

The Project may be subject to District Rule 9410 (Employer Based Trip Reduction) if the project would result in employment of 100 or more "eligible" employees. District Rule 9410 requires employers with 100 or more "eligible" employees at a worksite to establish an Employer Trip Reduction Implementation Plan (eTRIP) that encourages employees to reduce single-occupancy vehicle trips, thus reducing pollutant emissions associated with work commutes. Under an eTRIP plan, employers have the flexibility to select the options that work best for their worksites and their employees.

Information about District Rule 9410 can be found online at: https://ww2.valleyair.org/compliance/rule-9410-employer-based-trip-reduction/.

For additional information, you can contact the District by phone at 559-230-6000 or by e-mail at etrip@valleyair.org

14d) District Rule 4601 (Architectural Coatings)

The Project may be subject to District Rule 4601 since it may utilize architectural coatings. Architectural coatings are paints, varnishes, sealers, or

stains that are applied to structures, portable buildings, pavements or curbs. The purpose of this rule is to limit VOC emissions from architectural coatings. In addition, this rule specifies architectural coatings storage, cleanup and labeling requirements. Additional information on how to comply with District Rule 4601 requirements can be found online at: https://ww2.valleyair.org/media/tkgjeusd/rule-4601.pdf

14e) District Regulation VIII (Fugitive PM10 Prohibitions)

The project proponent may be required to submit a Construction Notification Form or submit and receive approval of a Dust Control Plan prior to commencing any earthmoving activities as described in Regulation VIII, specifically Rule 8021 – *Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities.*

Should the project result in at least 1-acre in size, the project proponent shall provide written notification to the District at least 48 hours prior to the project proponents intent to commence any earthmoving activities pursuant to District Rule 8021 (Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities). Also, should the project result in the disturbance of 5-acres or more, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials, the project proponent shall submit to the District a Dust Control Plan pursuant to District Rule 8021 (Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities). For additional information regarding the written notification or Dust Control Plan requirements, please contact District Compliance staff at (559) 230-5950.

The application for both the Construction Notification and Dust Control Plan can be found online at: https://ww2.valleyair.org/media/fm3jrbsq/dcp-form.docx

Information about District Regulation VIII can be found online at: https://ww2.valleyair.org/dustcontrol

14f) Other District Rules and Regulations

The Project may also be subject to the following District rules: Rule 4102 (Nuisance) and Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations).

15) District Comment Letter

The District recommends that a copy of the District's comments be provided to the Project proponent.

If you have any questions or require further information, please contact Michael Corder by e-mail at Michael.Corder@valleyair.org or by phone at (559) 230-5818.

Sincerely,



For Mark Montelongo
Director of Policy and Government Affairs

Dr. Sara Noguchi
Superintendent

Board of Education

Abel Maestas
President

Homero Mejia
Vice President

Chad Brown
Board Member

Jolene Daly
Board Member

Adolfo Lopez
Board Member

Cindy Marks
Board Member

John Ervin III
Board Member

Modesto City Schools
426 Locust Street
Modesto, CA 95351
209.574.1500
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March 25, 2025

Tristan Osborn, Planning Manager
City of Modesto/Planning Division
Tenth Street Place/Third Floor
P.O. Box 642
Modesto, CA 95353

Project: Response to Notice of Preparation – Environmental Impact Report for the Scannell Industrial Project APN #003-019-026, Salida, CA

Dear Mr. Osborn,

Thank you for the opportunity to provide a response to the Notice of Preparation (NOP) for the proposed Scannell Industrial Project Environmental Impact Report (the Proposed Project) provided to Modesto City Schools (the District). Modesto City Schools is a non-unified school district comprised of the 9-12 Modesto High School District and the K-8 Modesto City Elementary School District.

The District understands the Proposed Project is currently in the Salida Community Plan boundaries (unincorporated Stanislaus County), but that the City of Modesto is acting as lead agency with project goals and objectives to include annexation of the Proposed Project site into the City of Modesto.

The District also understands the Proposed Project to currently be 145 acres of generally agricultural uses located just south and east of Joseph A. Gregori High School.

Joseph A. Gregori High School, Salida/Modesto:

Joseph A. Gregori High School (Gregori HS) is an 80 acre high-school site with a football stadium owned by the District since 2006 and operational since 2010. Current enrollment at Gregori HS is approximately 2400 students. Students attending Gregori HS come from an enrollment boundary that covers all the community of Salida, and north Modesto, including incorporated and unincorporated areas from the Stanislaus River north and west, south to Standiford Avenue in the City of Modesto and east to the City of Riverbank.

Gregori HS's location and ultimate construction was in response to the rapid housing construction that occurred in the unincorporated community of Salida and north Modesto beginning in late 1988 through approximately 2010. A Salida area high school was contemplated in local planning documents including the Salida Community Plan as early as 1988 when housing construction first began in the unincorporated community of Salida.

Prior to the construction of Gregori HS, students from Salida and north Modesto were bused to several other Modesto High School District schools including Modesto High School, Beyer High School and Davis High School

General Comments:

1. Water Service (Hydrology and Water Quality)

The District would like to highlight Item #4 Project Goals and Objectives from the NOP, which includes, *"Install infrastructure improvements, including water, sewer, power and stormwater systems that meet city standards, and integrate with existing utility network without diminishing services to existing residents."*

The NOP identifies Utilities and Planned Infrastructure Improvements for the Proposed Project to include water service. Specifically, the NOP says, *"The Modesto Water Master Plan identifies a 12" waterline that would extend from Kiernan Avenue to Pirrone Road via Dale Road. The proposed Project would require the 12" waterline extension and would be required to loop the system consistent with the City's standards."*

The City of Modesto currently serves the community of Salida with municipal water, to include residential, commercial and industrial uses.

The September 2004 Draft Environmental Impact Report for the Gregori HS project analyzed various domestic water supply scenarios. The District requested consideration for municipal water service from the City of Modesto given that the Gregori HS project was a direct public service impact resulting from the residential construction in the area. Many other projects were under development and consideration in this north Modesto/Salida area at the time and those project studies were all consulted as part of the Gregori HS EIR.

These studies included the Salida River Ranch Development Hydrology Report (Residential/Commercial development proposal for Salida Community Plan Area that did not develop), and the Water Supply Assessment for Kaiser Permanente Medical Center (not in City of Modesto city limits at the time). The Kaiser Permanente Medical Center and surrounding properties where ultimately annexed to the City of Modesto and developed with municipal water services. Gregori HS, also in the community of Salida, however, is not served by the City of Modesto municipal water service. Gregori HS developed and operates its own Non-Community, Non-Transient Public Water System (NCNT)).

The proposed water line for the Proposed Project appears to loop at the northern Project boundary on Pirrone Road. The construction and expansion of municipal water service for the Proposed Project provides an opportunity for the City of Modesto to create "equitable access to City services and infrastructure", currently provided to the Salida Community to now include Gregori HS.

The District is therefore requesting the Environmental Impact Assessment of annexation of the Proposed Project site into the City of Modesto also include consideration of municipal water service to the Gregori HS site, from the proposed 12" sewer line extension to be constructed for the Proposed Project. The District understands that a LAFCo Plan for Services and amendments to the City's Municipal Service Review, among other partner agency actions would need to occur for City infrastructure expansion and equitable access to City services be provided to Gregori HS.

2. Traffic (Transportation) and Circulation

The NOP identifies access to the Project site to be provided at Dale Road and at Kiernan Avenue. The NOP also identifies landscaping improvements along the Project site frontages including Pirrone Road, directly fronting Gregori HS.

The District requests that the traffic and circulation studies for the Proposed Project include consultation with the District, specifically for peak period school traffic impacts on Pirrone Road and the Dale and Pirrone Road intersection.

For history and context, the District would like to highlight that traffic and circulation improvements in the area near the Proposed Project were constructed and paid for by the District as part of the traffic mitigation of the construction of Gregori HS. Some of these improvements included: the construction of Pirrone Road from Stoddard Road east to Dale Road, and fair share contributions to traffic signals at Pirrone and Stoddard, Pirrone and Gregori HS entrance and Stoddard and SR 219. The District also paid additional funds to Stanislaus County for regional traffic mitigation measures.

3. Aesthetics and Safety

The District requests that the Proposed Project's site planning consider aesthetics given public school uses to the north of the site, to include perimeter secure fencing for the planned commercial and industrial uses.

Summary:

The District understands the history and complexities that exist in the community of Salida and north Modesto specific to the Salida Community Plan. The District's development of Gregori HS in the community of Salida for the students of Salida and the students in the north portion of the City of Modesto was in direct response to the cumulative impact of new residential development that occurred over the course of 20 years.

The City of Modesto, Stanislaus County, LAFCo, Salida Fire District, Salida Sanitary District, Salida Union School District, Stanislaus Union School District, Modesto City Schools and many other local agencies are required to serve this portion of the community where the Proposed Project is under consideration. Years of cooperation, mutual aid, joint powers authorities and other

agreements have functioned to this end, along with many occasions of differences of how the community of Salida and north Modesto should be served by local agencies.

Modesto City Schools respectfully offers any assistance and collaboration that will be helpful to our partner public agencies as the specific impacts of this project are considered and solutions planned.

Please feel free to reach out to me with any questions.

Sincerely,

Duane Wolterstorff
Director II, Business Services
Modesto City Schools
1311 Woodland Ave., Suite C
Modesto, CA 95351-1221
(209) 492-5002
Wolterstorff.d@monet.k12.ca.us

c: Tim Zearly, Chief Business Official Modesto City Schools
Jessica Hill, Director Community Development Department, City of Modesto

NOTICE OF PREPARATION

TO: State Clearinghouse
State Responsible Agencies
State Trustee Agencies
Other Public Agencies
Interested Organizations

FROM: Tristan Osborn | Planning Manager
City of Modesto | Planning Division
1010 10th St.,
Modesto, CA 95354
209-577-5267
tosborn@modestogov.com

SUBJECT: Notice of Preparation – Environmental Impact Report for the Scannell Industrial Project

Notice is hereby given that the City of Modesto is the lead agency for the preparation of an Environmental Impact Report (EIR) to consider the Scannell Industrial Project. The proposed Project will result in the construction of between 2,000,000 and 2,500,000 square feet of warehouse, distribution, and manufacturing space. In addition, a small 2–3-acre retail site is proposed at the corner of Dale Road and Kiernan Avenue (SR 219) to provide retail service to the project. The proposed Project includes a Tentative Map that would create eight parcels for the industrial and retail buildings. A detailed Project Description can be reviewed at the City or by accessing the City's website: https://www.modestogov.com/1559/California-Environmental-Quality-Act-AB-

The City of Modesto is interested in the input and/or comments of public agencies and the public as to the scope and content of the environmental information that is germane to the agencies' statutory responsibilities in connection with the proposed Project. Responsible/trustee agencies will need to use the EIR prepared by the City of Modesto when considering applicable permits, or other approvals for the proposed project. Due to the time limits mandated by State law, your response must be sent and received by the City of Modesto not later than 30 days following the publication of this Notice of Preparation. The 30-day review period begins February 21, 2025 and ends on March 27, 2025. If we do not receive a response from your agency or organization, we will presume that your agency or organization has no response to make. A responsible agency, trustee agency, or other public agency may request a meeting with the City or its representatives in accordance with Section 15082(c) of the CEQA Guidelines. Please send your response to Tristan Osborn | Planning Manager at the City of Modesto | Planning Division, 1010 10th Street, Modesto, CA 95354. If you have any questions, please contact Modesto Planning at 209-577-5267 or via email at: planning@modestogov.com.

SCOPING MEETING: A virtual scoping meeting for this project will be held on March 20, 2025 from 3:00 p.m. to 4:00 p.m.. You may attend the meeting by going to https://modestogov.zoom.us/j/6152421565?omn=88291759833 clicking "join."

PROBABLE ENVIRONMENTAL EFFECTS AND SCOPE OF THE EIR: All environmental topics identified in Appendix G of the State CEQA Guidelines will be analyzed within the EIR, including: Aesthetics, Agricultural and Forestry Resources, Air Quality, Biological Resources, Cultural Resources, Energy, Geology/Soils, Greenhouse Gases/Climate Change, Hazards and Hazardous Materials, Hydrology/Water Quality, Land Use/Planning, Mineral Resources, Noise, Population/Housing, Public Services, Recreation, Transportation/Circulation, Tribal Resources, Utilities and Service Systems, Wildfire, Cumulative Impacts, and Growth Inducing Impacts. An Initial Study has not been prepared for the proposed Project.

1 PROJECT LOCATION

The Scannell Industrial Project (proposed Project) is comprised of approximately 145 acres located at the northwest corner of Kiernan Avenue and Dale Road intersection, within the unincorporated Community of Salida. The Project site is located within the Stanislaus County Salida Community Plan (SCP) and is zoned for development as Salida Community Plan Industrial/Business Park (SCP-IBP) and Salida Community Plan Planned Industrial (SCP-PI). The area is also within the City of Modesto General Plan Planning Area with a designation of Salida Community Plan (SCP).

Figures 1 and 2 show the Project's regional location and vicinity.

2 PROJECT SETTING

EXISTING SITE CONDITIONS

The Project site and surrounding properties are generally in agricultural use. There are also light industrial developments east and west of the project site, along Kiernan Avenue. Joseph A. Gregori High School is located northwest of the site and the Kaiser Permanente Modesto Medical Center and similar business park uses are located immediately south, within the City of Modesto. The Project site is located on the Assessor's Parcel Number (APN) 003-019-026 as displayed on Figure 3.

SITE TOPOGRAPHY

The Project site is relatively flat and ranges in elevation from approximately 75 to 82 feet above mean sea level.

EXISTING SITE USES

Figure 4 shows aerial imagery of the current existing site uses within the Project site. As shown, the Project site is comprised of active agricultural fields and orchards to the northern and southern portions of the Project site, respectively.

EXISTING SURROUNDING USES

The Project site and surrounding properties are generally in agricultural use. The Project site is primarily bounded by lands within the unincorporated county to the north, east and west. Lands within the City of Modesto are located to the south. Uses within the surrounding area include the following:

- North – Agricultural lands, Joseph A. Gregori High School.
- East – Agricultural lands, industrial developments, along Kiernan Avenue.
- South – Kaiser Permanente Modesto Medical Center and similar business park uses, within the City of Modesto.
- West – Agricultural lands, industrial developments.

3 GENERAL PLAN LAND USE AND ZONING DESIGNATIONS

EXISTING GENERAL PLAN LAND USE DESIGNATIONS

CITY OF MODESTO

The Modesto General Plan Land Use Map designates the Project site as the Salida Community Plan (SCP) Area. The Modesto General Plan notes that if the Salida Comprehensive planning district (or any portion thereof) is annexed to the City of Modesto, that the City does not propose to change any land use designations from those adopted by Stanislaus County.

STANISLAUS COUNTY

The Stanislaus County General Plan Land Use Map designates the Project site as Salida Community Plan Business Park (SCP-IBP) and Salida Community Plan, Planned Industrial (SCP-PI). A description of each Stanislaus County land use designation is described in further detail below.

- **Salida Community Plan Business Park (SCP-IBP):** The Business Park designation is intended to accommodate development of a full range of uses, including modern, employment-intensive uses. Principal development and employment generating uses allowed within this designation include research, product development, professional office, commercial, and business services.
- **Salida Community Plan Planned Industrial (SCP-PI):** The Planned Industrial zoning designation is intended to help alleviate the existing jobs-housing imbalance in the County by promoting development of employment-generating industrial/business park uses in the area roughly bound by Ladd Road, Dale Road, Pelandale Expressway, and Sisk Road.

Figure 5a and 5b depicts the Stanislaus County and City of Modesto General Plan land use designations for the Project site and the surrounding areas.

EXISTING ZONING DESIGNATIONS

CITY OF MODESTO

The Project site is located outside the Modesto city limits and the City of Modesto has not zoned the Project site.

STANISLAUS COUNTY

The Stanislaus County Zoning Ordinance (Chapter 21.66 of the County Code) designates the project site for Salida Community Plan (SCP) zoning District. The SCP District is intended to implement the General Plan's stated vision for the development of the Salida Community Plan Amendment Area. There are nine sub-zoning districts for the SCP District, of which the Project site is Salida Community Plan, Industrial/ Business Park (SCP-IBP) and Salida Community Plan, Planned Industrial (SCP-PI). Figure 6a and Figure 6b depicts the Stanislaus County and City of Modesto zoning districts for the Project site and the surrounding areas.

SURROUNDING GENERAL PLAN DESIGNATIONS

Within Stanislaus County, lands to the north and west of the Project site are designated Salida Community Plan Business Park (SCP-IBP) and Salida Community Plan Planned Industrial (SCP-PI); lands to the east are designated Agriculture (AG); and lands to the south are designated Salida Community Plan Business Park (SCP-IBP). As mentioned, the City of Modesto designates the lands to the north and west of the Project site as Salida Community Plan Area.

4 PROJECT GOALS AND OBJECTIVES

Consistent with the California Environmental Quality Act (CEQA), Guidelines Section 15124(b), a clear statement of objectives and the underlying purpose of the proposed Project shall be discussed. The principal objective of the proposed Project is to implement and achieve the goals and objectives of the General Plan through the approval and subsequent implementation of the Scannell Industrial Project (the proposed Project).

The principal objective of the proposed Project is to develop a multiple phase and well-planned industrial project with the potential for warehouse, distribution, and manufacturing uses with onsite commercial retail that will attract businesses to the City of Modesto and provide for local employment opportunities.

The City has identified several additional project goals and objectives that inform the Project purpose. These additional Project goals and objectives are as follows:

- Establish land use and zoning that is consistent with and facilitates the vision for new growth and development in the Salida Community Plan (SCP). This includes emphasizing Industrial uses planned in the eastern portion of the SCP adjacent to the City of Modesto limits.
- Design an industrial facility that could attract a variety of end users, including a transload facility, short-term storage facility, light industrial, and/or manufacturing uses.
- Incorporate a commercial use within the industrial area to provide opportunities for onsite employees to have access to retail services. Locate the commercial use such that it also enhances accessibility for passerby traffic to maximize the success of the commercial businesses.
- Strengthen the local economic base through job creation; development related investment; increased income opportunities; and increased property, and sales taxes through the development of the industrial and commercial uses.
- Provide local and regional employment opportunities that take advantage of the area's high level of accessibility, and help create a jobs/housing balance.
- Install infrastructure improvements, including water, sewer, power, and stormwater systems that meet city standards, and integrate with existing utility network without diminishing services to existing residents.
- Develop a multi-phase plan that could be constructed over an estimated 10-year building horizon, and align infrastructure improvements to the infrastructure needs of each phase.
- Design the facilities with efficient transportation access and circulation within site plan, including accessible loading bays, and logistics management. Ensure that offsite transportation systems can facilitate industrial traffic via designated truck routes.

5 PROJECT CHARACTERISTICS AND DESCRIPTION

PROJECT CHARACTERISTICS

The proposed Project will result in the construction of between 2,000,000 and 2,500,000 square feet of warehouse, distribution, and manufacturing space. In addition, a small 2–3-acre retail site is proposed at the corner of Dale Road and Kiernan Avenue (SR 219) to provide retail service to the project. The proposed Project includes a Tentative Map that would create eight parcels for the industrial and retail buildings. Figure 7 provides an illustration of the proposed buildings and parcel lines. Figure 8 provides an illustration of the utility plan.

The applicant proposes to construct seven industrial buildings. The warehouse buildings would be single-story, with a maximum height of 45 feet. The size of each building (in square feet) is summarized in Table 2, below. For the purpose of analysis, future uses are anticipated to be evenly split between manufacturing, warehouse, and distribution uses. The end user is not known currently, but cold storage is anticipated to occupy between 0-20% of the total space.

TABLE 2: SUMMARY OF PROPOSED OFFICE AND WAREHOUSE BUILDINGS

	BUILDING 1	*BUILDING 2*	*BUILDING 3*	*BUILDING 4*	*BUILDING 5*	*BUILDING 6*	*BUILDING 7*
Site Area (sf)	1,145,488	1,116,754	753,947	988,633	627,181	601,557	316,397
Building Area (sf) Office/Warehouse	20,000/ 531,640	20,000/ 510,160	20,000/ 322,700	20,000/ 435,230	20,000/ 240,010	20,000/ 240,010	10,000/ 93,480
Parking Provided Standard/Trailer	290/200	275/200	401/105	265/178	357/ 89	358/89	225/0

SOURCE: CITY OF MODESTO, 2024.

The projected project phasing is currently expected to be four (4) phases of development over approximately ten (10) years. Each phase would include removal of existing almond trees or ground crops (based on current farming practices). Improvements to serve each phase could include, but would not be limited to, any required off-site street improvements and extension of utilities, site grading, construction of underground utilities on-site (water, sewer and dry utilities), storm drainage and storm drainage retention, paving, landscaping, lighting, and the construction of buildings. As the project develops, the timing, size, and number of phases may change based on market conditions.

The project would operate continuously, and the site would be active 24 hours a day, seven days a week. It is estimated that the warehouse facilities would provide approximately 1,000 employment opportunities, based on the employment generation assumptions in the Salida Community Plan.

The 2–3-acre retail site does not have a proposed end use, but a variety of commercial retail uses allowed under the City's commercial land use and zoning standards could occupy the retail site. Based on the size of the parcel, it is expected that the end user would be a local serving retail as opposed to regional shopping, and examples of such uses include a gas station, and possibly a small restaurant use.

CITY OF MODESTO GENERAL PLAN AMENDMENT

The proposed Project includes an amendment to the City of Modesto General Plan to designate the site Industrial (I), while maintaining the SCP as a land use overlay designation. Ultimately the General Plan land use designation on the Project site would be SCP-I. This designation would allow uses consistent with uses anticipated under the Salida Community Plan.

- **Salida Community Plan (SCP) Overlay.** An overlay designation for areas located within the Salida Community Plan area.
    - **Industrial (I)**. To allow industrial uses in the Modesto Urban Area consistent with the SCP. This designation provides for the full range of industrial uses, including but not limited to manufacturing, food processing, trucking, packing, and recycling, as well as those enterprises which may want to combine office and production aspects of their business in the same complex. The guiding intensity is a Floor Area Ratio of approximately 0.50.

Figure 9 shows the proposed General Plan land use.

PRE-ZONING

The Project site is in unincorporated Stanislaus County and outside the City of Modesto city limits. The Project site is not zoned under the Modesto Zoning Ordinance. The proposed Project would pre-zone the Project site to Heavy Industrial (M-2), as described below. The proposed prezoning will ensure that land uses on the Project site align with the long-term vision for development of Salida Community Plan area.

- **M-2 Heavy Industrial (M-2)**. The M-2 Zone is intended to provide suitable sites for a wide range of industrial, manufacturing, business park and other similar uses that are further from non-industrial and potentially incompatible uses.

Figure 10 shows the proposed pre-zoning.

CIRCULATION IMPROVEMENTS

Pirrone Road is a two-lane road constructed on the north boundary of the Project site, Dale Road is a two-lane road on the east boundary of the Project site, and Kiernan Avenue is a four-lane divided State Highway on the south boundary of the Project site. Kiernan Avenue is planned to be widened to six lanes in the future. The intersection of Dale Road with Kiernan Avenue is signalized.

Access to the Project site would be provided at two locations; main project access will be to Dale Road with a right-in/right-out access to Kiernan Avenue. Each of these access points allow for emergency vehicle access. As part of the Project, Dale Road, Pirrone Road, and Kiernan Avenue along the Project site's frontages would be improved with landscaping, as required by the City of Modesto.

The site plan includes various standard parking and trailer stalls as noted in table 2, which would be provided within the interior of the site between buildings. The trailer parking stalls would be in the center of the site, primarily adjacent to docking doors of each building; while the standard parking stalls would primarily be located along the Project site boundaries.

UTILITIES AND PLANNED INFRASTRUCTURE IMPROVEMENTS

The construction of infrastructure improvements will be required to accommodate development of the proposed Project. The proposed Project would connect to existing City infrastructure to provide water, sewer, and storm drainage utilities. Dry utility infrastructure (i.e. electrical, gas, telephone, cable) would also be installed to provide utility services to the Project. All infrastructure would be developed to the City of Modesto standards.

Water Service

Upon annexation, the Project would be added to the City of Modesto's future service area. An existing water line and anticipated point of connection is in Dale Road just south of Kiernan Avenue. The Modesto Water Master Plan identifies a 12" waterline that would extend from Kiernan Avenue to Pirrone Road via Dale Road. The proposed Project would require the 12" waterline extension, and would be required to loop the system consistent with the City's standards.

Sewer Service

The project site is located within the City of Modesto's future sewer service area (City of Modesto Wastewater Collection System Master Plan, 2017). The nearest sewer point of connection is at the 12" line located on Dale Road, south of Kiernan Avenue. That 12" line connects to a 27" sewer line at the intersection of Dale Road and Healthcare Way. This 12" sewer line will be extended north in Dale Road across Kiernan Avenue to serve the project.

Storm Drain

This Project site is in an area that is not served by existing public storm drain systems and will therefore need to retain all storm water on site. The proposed site plan includes an approximately 6.75-acre storm drainage basin. The final sizing could increase or decrease based a variety of engineering design factors that control storm drainage.

SOI AMENDMENT AND ANNEXATION

The Project site is currently located within Stanislaus County and within the City of Modesto's General Plan Planning Area, but outside the City's Sphere of Influence (SOI). The proposed Project includes an SOI amendment to incorporate the site into the City's SOI. Concurrent with the SOI amendment, the proposed Project proposes an annexation of the 145-acre site into the City of Modesto. This process will include the preparation of a LAFCo Plan for Services to address infrastructure, utilities, and public services, as well as an amendment to the City's Municipal Service Review (MSR) to ensure that the SOI boundary is reflected in the MSR. The annexation and related approvals will ultimately require review and approval by the Stanislaus County LAFCo. Figure 11 shows the proposed annexation and SOI amendment.

6 USES OF THE EIR AND REQUIRED AGENCY APPROVALS

This EIR may be used for the following project approvals and permits associated with adoption and implementation of the proposed Project.

CITY OF MODESTO

The City of Modesto will be the Lead Agency for the proposed Project, pursuant to the State Guidelines for Implementation of CEQA, Section 15050. Actions that would be required from the City include, but are not limited to the following:

- Certification of the Environmental Impact Report (EIR);
- Adoption of the Findings of Fact, Statement of Overriding Considerations (if necessary), and Mitigation Monitoring and Reporting Program (MMRP);
- Approval of City of Modesto General Plan Amendment to Salida Community Plan-Industrial (SCP-I);
- Approval of City of Modesto Prezoning to Heavy Industrial (M-2);
- Approval of Recommendation to LAFCo for an Amendment to the City's SOI to include the Project site;
- Approval of Recommendation to LAFCo for Annexation of the Project site into the City of Modesto;
- Approval of an Amendment to the City of Modesto Municipal Service Review (MSR);
- Approval of Development Plan Review for building design, landscaping, and other site features;
- Issuance of grading, encroachment, and building permits as necessary for Project construction.

OTHER GOVERNMENTAL AGENCY APPROVALS

The following agencies are considered "Responsible Agencies" and will need to rely on this EIR to issue permits or approve certain aspects of the proposed Project. A "Responsible Agency" is any public agency, other than the lead agency, which has the responsibility for approving the project where more than one public agency is involved. Other governmental agencies that may require approval include, but are not limited to, the following:

- Central Valley Regional Water Quality Control Board (CVRWQCB) – Storm Water Pollution Prevention Plan (SWPPP) NOI pursuant to the Clean Water Act;
- San Joaquin Valley Air Pollution Control District (SJVAPCD) – Construction-related permits;
- San Joaquin Valley Air Pollution Control District (SJVAPCD) – As an industrial development, the Project may be subject to Indirect Source Review (ISR);
- San Joaquin Valley Air Pollution Control District (SJVAPCD) – As an industrial development, the Project may be subject to Authority to Construct depending on the industrial user;
- Stanislaus County Local Agency Formation Commission (LAFCO)- Approval of SOI Amendment, Annexation, MSR Amendment, and Plan for Services;
- Modesto Fire Department – Plan check of the site plan and roadway improvements for adequate emergency vehicle access and fire flow capabilities; Plan check of all building plans for Early Suppression, Fast Response (ESFR) fire sprinkler system.

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March 27, 2025

Via Email and Overnight Delivery
Tristan Osborn, Planning Manager
City of Modesto Planning Division
1010 10th Street,
Modesto, CA 95354
Email: tosborn@modestogov.com; planning@modestogov.com

Re: Comments on the Notice of Preparation of Environmental Impact Report for Scannell Industrial Project (SCH No. 2025020776)

Dear Mr. Osborn:

We are writing on behalf of Stanislaus County Residents for Responsible Development ("Stanislaus Residents") to provide comments on the Notice of Preparation ("NOP") of a Draft Environmental Impact Report ("DEIR") by the City of Modesto ("City") for the Scannell Industrial Project (SCH No. 2025020776) ("Project"), proposed by Scannell Properties ("Applicant").

The Project proposes the construction of between 2,000,000 and 2,500,000 square feet of warehouse, distribution, and manufacturing space on an approximately 145 acre site.[1] The warehouse buildings would be single-story, with a maximum height of 45 feet.[2] In addition, a small 2-3 acre retail site is proposed at the corner of Dale Road and Kiernan Avenue (SR 219) to provide retail service to the Project.[3] The Project would operate continuously, and the site would be active 24 hours a day, seven days a week.[4] The proposed Project includes a Tentative Map that would create eight parcels for the industrial and retail buildings[5]; an amendment to the City of Modesto General Plan to designate the site Industrial, while maintaining the Salida Community Plan as a land use overlay designation[6];

[1] City of Modesto, Scannell Project Description, p. 4, available at: https://www.modestogov.com/DocumentCenter/View/23503/Scannell-Project-Description.
[2] *Id.*
[3] *Id.*
[4] *Id.*
[5] *Id.*
[6] *Id.* at p. 5.

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and pre-zoning of the Project site to Heavy Industrial (M-2).[7] The Project also requires several regional, state and federal permits from responsible agencies, including, *inter alia,* the Stanislaus County LAFCO, Central Valley Regional Water Quality Control Board, and the San Joaquin Valley Air Pollution Control District.[8] The Project is located at the northwest corner of Kiernan Avenue and Dale Road intersection, within the unincorporated Community of Salida (APN 003-019-026).[9]

Stanislaus Residents urges the City to comply with California Environmental Quality Act ("CEQA")[10] throughout the Project's environmental review and entitlement process. We also urge the City to engage in a broad, community-inclusive public process as part of the Project's land use approval process.

I. STATEMENT OF INTEREST

Stanislaus Residents is an unincorporated association of individuals and labor organizations that may be adversely affected by the potential public impacts associated with Project development. Stanislaus Residents includes the International Brotherhood of Electrical Workers Local 684, Plumbers & Steamfitters Local 442, Sheet Metal Workers Local 104, Ironworkers Local 378, their members and their families; and other individuals that live and/or work in the City of Modesto and Stanislaus County. Stanislaus Residents has a strong interest in enforcing the State's environmental laws that encourage sustainable development and ensure a safe working environment for its members.

Individual members of Stanislaus Residents live, work, recreate, and raise their families in the City of Modesto, in Stanislaus County, and in the surrounding communities. Accordingly, they would be directly affected by the Project's environmental and health and safety impacts. Individual members may also work on the Project itself. They will be first in line to be exposed to any health and safety hazards that exist on site.

In addition, Stanislaus Residents has an interest in enforcing environmental laws that encourage sustainable development and ensure a safe working environment for its members. Environmentally detrimental projects can jeopardize future jobs by making it more difficult and more expensive for businesses and industries to expand in the region, and by making the area less desirable for new businesses and new residents. Indeed, continued environmental degradation can,

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[7] *Id.*
[8] *Id.* at p. 7.
[9] *Id.* at p. 1.
[10] Public Resources Code § 21000 et seq.

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and has, caused construction moratoriums and other restrictions on growth that, in turn, reduce future employment opportunities.

II. THE CITY MUST COMPLY WITH CEQA

Stanislaus Residents hereby requests and urges the City to fully comply with CEQA in all aspects of the Project, including but not limited to, preparation, public circulation, and consideration of the DEIR, Final EIR, and any other CEQA documents prepared for the Project. The City must also provide legally adequate responses to any and all comments submitted by responsible agencies, members of the public, or others on the Draft EIR, and must consider all comments received prior to Project approval as part of the City's consideration of applications for licenses, permits, or any other entitlements sought for the Project.

CEQA has two basic purposes. First, CEQA is designed to inform decision makers and the public about the potential, significant environmental effects of a project.[11] CEQA requires that an agency analyze potentially significant environmental impacts in an EIR.[12] The EIR should not rely on scientifically outdated information to assess the significance of impacts, and should result from "extensive research and information gathering," including consultation with state and federal agencies, local officials, and the interested public.[13] To be adequate, the EIR should evidence the lead agency's good faith effort at full disclosure.[14] The EIR has been described as "an environmental 'alarm bell' whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return."[15] "Thus, the EIR protects not only the environment but also informed self-government."[16]

Second, CEQA directs public agencies to avoid or reduce environmental damage when possible by requiring alternatives or mitigation measures.[17] The EIR serves to provide public agencies and the public in general with information about the effect that a proposed project is likely to have on the environment and to "identify ways that environmental damage can be avoided or significantly

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[11] CEQA Guidelines, § 15002, subd. (a)(1).
[12] *See* Pub. Resources Code, § 21000; CEQA Guidelines, § 15002.
[13] *Berkeley Keep Jets Over the Bay Comm. v. Board of Port Comm.* ("*Berkeley Jets*") (2001) 91 Cal.App.4th 1344, 1367.; *Schaeffer Land Trust v. San Jose City Council* (1989) 215 Cal.App.3d 612, 620.
[14] CEQA Guidelines, § 15151; *see also Laurel Heights Improvement Assn. v. Regents of University of California* ("*Laurel Heights I*") (1988) 47 Cal.3d 376, 406.
[15] *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810.
[16] *Citizens of Goleta Valley v. Bd. of Supervisors* (1990) 52 Cal.3d 553, 564 (citations omitted).
[17] CEQA Guidelines, § 15002, subd. (a)(2)-(3); *Berkeley Jets, supra,* 91 Cal.App.4th at 1354.

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reduced."[18] If a project has a significant effect on the environment, the agency may approve the project only upon a finding that it has "eliminated or substantially lessened all significant effects on the environment where feasible," and that any unavoidable significant effects on the environment are "acceptable due to overriding concerns" specified in CEQA section 21081.[19]

Stanislaus Residents expressly reserves the right to submit additional comments on the Project in conjunction with both the Draft EIR and Final EIR for the Project or any other future actions taken with regard to the Project.[20]

III. THE DEIR MUST ANALYZE IMPACTS FROM ALL REASONABLY FORESEEABLE WAREHOUSE USES

The Project proposes to construct seven speculative industrial buildings between 2,000,000 and 2,500,000 square feet.[21] The future uses are anticipated to be evenly split between manufacturing, warehouse, and distribution uses with up to 20% of the total space used for cold storage.[22] CEQA requires the City to analyze the impacts of *all* reasonably foreseeable uses of the Project site.[23] This means any use that is authorized by the entitlements and permits that are the subject of the DEIR. Without this analysis, the Project's impacts related to transportation, air quality, greenhouse gases, health impacts, and noise could be underestimated.

For example, Project construction is likely to involve the use of diesel-powered construction equipment. Warehouse and distribution uses can generate truck traffic and related diesel emissions. To comply with CEQA, the City must fully analyze, disclose and mitigate the Project's construction and operational air emissions impacts with respect to air quality, greenhouse gases, and health risks to nearby sensitive receptors.

Cold storage warehouses can generate greater environmental impacts than other warehouse uses. Cold storage has higher emissions and energy impacts due to the low temperatures required for transport refrigeration units ("TRUs") and on-site storage. TRUs are refrigeration systems usually powered by integral diesel

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[18] CEQA Guidelines, § 15002, subd. (a)(2).
[19] *Id.*, subd. (b)(2)(A)-(B).
[20] Gov. Code § 65009(b); PRC § 21177(a); *Bakersfield Citizens for Local Control v. Bakersfield* ("*Bakersfield*") (2004) 124 Cal. App. 4th 1184, 1199-1203; *see Galante Vineyards v. Monterey Water Dist.* (1997) 60 Cal. App. 4th 1109, 1121.
[21] City of Modesto, Scannell Project Description, p. 4, available at: https://www.modestogov.com/DocumentCenter/View/23503/Scannell-Project-Description.
[22] *Id.*
[23] *Maintain Our Desert Environment v. Town of Apple Valley*, 124 Cal.App.4th 430, 445.

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engines.[24] TRUs can emit pollutants like diesel particulate matter, fine particulate matter, oxides of nitrogen, and greenhouse gasses while in transit and during stationary operation at refrigerated warehouses or distribution centers, grocery stores, seaport facilities, intermodal railyards, and other locations of operation.[25] Cold storage warehouses also utilize backup generators, which commonly rely on fuels such as natural gas or diesel, and can impact air quality through their emissions. The City must also fully analyze, disclose and mitigate the Project's transportation and noise impacts from construction and from the Project's warehouse and distribution operations.

The City must ensure that the DEIR analyzes *all* reasonably foreseeable uses of the Project to ensure that environmental impacts are identified, disclosed, and mitigated as required by CEQA.

IV. CONCLUSION

Stanislaus Residents urges the City to comply with its duties under CEQA and other State and local laws to ensure that the Project fully complies with CEQA and all applicable land use laws. Stanislaus Residents also urges the City to engage in a comprehensive and transparent analysis of the Project's reasonably foreseeable warehouse, distribution, and manufacturing end uses.

Thank you for considering our comments. Please place this comment letter in the record of proceedings for this matter.

Sincerely,

Alaura McGuire

Alaura McGuire

ARM:acp

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[24] California Air Resources Board, 2022 TRU Technology Assessment, p. 1, available at: https://ww2.arb.ca.gov/sites/default/files/2022-10/CARB%202022%20TRU%20Technology%20Assessment%2010-14-22.pdf (last visited 3/27/25).
[25] California Air Resources Board, 2022 TRU Technology Assessment, p. 10.

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March 27, 2025

VIA EMAIL
Tristan Osborn, Planning Manager
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Planning@modestogov.com
tosborn@modestogov.com

Re: Environmental Impact Report for the Scannell Industrial Project;
Funding for Fire and Emergency Response by Salida Fire Protection District

Dear Mr. Osborn,

Thank you for the opportunity for members of the public and interested agencies to provide preliminary comments on the Scannell Industrial Project ("Scannell Project") during the City of Modesto's March 20, 2025 scoping meeting.

As you may recall, my office serves as District Counsel to the Salida Fire Protection District ("Salida FPD"). This communication follows up on the oral comments that I provided during the March 20, 2025 scoping session.

Consistent with Appendix G of the State CEQA Guidelines, the environmental analysis pertaining to the Scannell Project must include a review of the project's impacts on public services and wildfire risks, among other topics. Recent wildfires of historic proportions, such as those in Los Angeles and Ventura counties, highlight the need for fire agencies to keep pace with new development, so that the life and property of local residents and businesses can be adequately protected.

The Scannell Project is located within Salida FPD's service area. While Modesto has indicated that it intends to annex the project site into the city, Modesto has not opined on whether it intends to pursue the *detachment* of the project site from Salida FPD during the anticipated LAFCO proceedings. This was a question I asked during the scoping session, and Modesto's response was, essentially, that the process was still in its infancy and that Modesto had no information to provide at the time on that issue.

That said, two recent development projects within Modesto may be illustrative: the

Woodglen Project and the Founder's Point East Project. Both of those large-scale development projects are both located within Salida FPD *and* the City of Modesto. As you know, this is because those locations were annexed into Modesto consistent with LAFCO proceedings, but were *not* detached from Salida FPD for purposes of fire and emergency response.

Accordingly, Salida FPD is financially responsible for the provision of fire and emergency response services to the Founders Point and Woodglen Projects, as well as the situs of the Scannell Industrial Project. Emergency response services are currently rendered to those locations via a fire services agreement between Salida FPD and the Modesto Fire Department. Again, however, the services are paid for by Salida FPD from its own funding resources, which are limited to authorized property taxes, assessments, and other financing mechanisms.

A key component of Salida FPD's funding is its Community Facilities District (the "CFD"), which is essential to funding fire protection and emergency response services within Salida FPD's service area.

Accordingly, and as stated orally during the public scoping session, Salida FPD requests that the environmental review and processing of the Scannell Project specifically address the potential impacts on fire and emergency response services, and account for how adequate funding for those services will continue – particularly given the size and scope of the project once it has been fully built and is in full operation.

One option for doing so is to, as a condition of approval, require that the project applicant enter the property into the CFD so that the development pays its proportionate share of its impacts on fire and emergency response services. As mentioned, when a community develops, new development creates an ever-increasing need for adequate staffing and equipping of first responders. If new development does not contribute its fair share, then it is essentially being subsidized by pre-existing taxpayers, and also burdens local agencies with trying to keep pace with the new development and heightened fire risks.

Alternatively, another option would be for Modesto to collaborate with Salida to ensure that the Scannell Project (and other development occurring within Salida's jurisdictional bounds) adequately accounts for the new development's impacts on fire protection and emergency response services. This could be accomplished by a variety of means, such as engaging in a separate funding mechanism that ensures adequate funding for first responders. Regardless, such an analysis must take place during the processing and CEQA review of the Scannell Project.

Again, recent wildfires of historic proportions highlight the need for fire agencies to keep pace with new development. Salida FPD partners with local land use authorities to ensure that conditions of approval are placed on building permits so that new development either (1) joins the CFD and pay the accompanying annual taxes, or (2) alternative funding mechanisms are established to offset the impacts that the new development has on Salida FPD's limited resources.

Formation of the Salida CFD

The Fire Protection District Act of 1987 and the Mello-Roos Community Facilities District Act authorizes fire districts, like Salida, to enact a CFD to offset costs of services. (See, Health and Safety Code section 13912). The Mello-Roos Act provides a "method of financing certain public facilities and services, especially in developing areas and areas undergoing rehabilitation." (Gov. Code section 53311.5).

Consistent with that authority, On August 18, 2010, Salida's CFD was enacted by Ordinance No. 2010-01. Since 2010, all new development involving the issuance of building permits is required to join the CFD and pay accompanying taxes.

As a component of establishing the CFD, Salida retained governmental consulting experts Capitol Public Finance Group, which conducted a "nexus study" evidencing that the tax rates established by the CFD were legally supported as being congruent to the reasonably estimated costs on fire and emergency response services that new development imposes on the Salida community.

The CFD taxes are vital to funding fire protection and emergency response within Salida Fire. CFD taxes directly offset the cost that new development imposes on fire protection resources and help maintain the current level of emergency response services provided by Salida as the community develops.

If new development fails to comply with funding mechanisms intended to offset the costs imposed on new development (i.e., the need for more firefighters, fire apparatus, equipment, and facilities) it effectively shifts the costs of the fire protection services it receives to other Salida taxpayers, who are effectively subsidizing the cost of those services.

The Modesto General Plan Requires Cooperation with Salida

California courts acknowledge that fire protection is one of the most essential and basic functions of local government. (*City of Richmond v. Commission on State Mandates* (1998) 64 Cal.App.4th 1190, 1195-1196; *Verreos v. City and County of San Francisco* (1976) 63 Cal.App.3d 86, 107).

Like other cities (and counties), a General Plan serves as the municipal "constitution" for land use and development, and all building permits by a municipality must be consistent with its General Plan. (*Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 570). Virtually *any* local decision affecting land use must be consistent with the adopted General Plan. (*Id.*) Specifically, land use permits (including building permits) must be consistent with zoning ordinances; and that the latter must in turn be consistent with the overall general plan. (*Land Waste Management v. Contra Costa County Bd. of Supervisors* (1990) 222 Cal.App.3d 950, 958-59, fn. 3; Gov. Code § 65680).

The Modesto General Plan establishes policies that require Modesto to cooperate with Salida FPD (and other surrounding fire agencies) in providing adequate fire protection services. For example:

- **Modesto General Plan Chapter VI – Community Facilities and Services**
  G Fire Protection

  1 Overview
  The mission of the City of Modesto Fire Department is to "proudly serve, protect *and partner with the community for a safer Modesto*." This commitment is intended to safeguard the general economy and welfare of Modesto. Figure VI-E-1, Fire Stations, depicts the general location of fire stations within the General Plan boundary. The policies in this section conform to Section 65302(g) of the Government Code as that section of the Code relates to urban fires.
  […]
  Goal VI.K: Provide responsive fire and life safety protection to the community through control of hostile fire, fire prevention, emergency medical services, emergency preparedness, and mitigation of hazardous materials incidents.
  […]
  Policy VI.K.12: *Coordinate with affected fire protection districts* when an annexation to the City is proposed, and before it has been finalized, regarding fire protection and other emergency services.
  […]
  Policy VI.K.13: *Negotiate with affected fire protection districts* when an annexation to the City is contemplated and before it has been effected to determine whether the boundary change may result in the erosion of fire protection or other emergency services. Any resulting agreements must be approved by City Council and the governing board of the fire protection district prior to City Council approval of the annexation. Options range from the consolidation of the fire protection district into Modesto City Fire to revenue sharing.

  (*See*, General Plan at VI-16 and VI-17; emphasis added)

- **Modesto General Plan Chapter VII - Environmental Resources, Open Space and Conservation**

  Policies for Fire Hazards:
  M. c. (4) Encourage funding sources that help to maintain adequate on-going fire services for both existing and new development.

  (*See*, General Plan at VII-33)

- **Modesto General Plan Chapter VIII (General Plan Implementation)**

  P. PUBLIC FACILITIES FINANCING PLANS
  The City's role in implementing a financing strategy is crucial to the planning and provision of public facility and service needs. There are a number of options available to local government to finance public facilities such as streets, sewers, water, drainage, schools, parks, *fire* and police stations, and public utilities. *Examples of these options currently used or contemplated by the City of Modesto include, but are not limited to, the following: Mello-Roos Community Facilities Districts*, Landscaping and Lighting Districts, Capital Facilities Fees Programs, Assessment Districts, Area of Benefit procedures, and a Long Range Financial Plan. *California law limits developments' required contributions for the construction of public facilities to a proportional fair-share based on a clear nexus. Therefore, the City is responsible for its fair-share of public facility and infrastructure costs to address current needs*. The ultimate implementation of the City of Modesto's strategy is contingent upon the City's ability to provide and maintain its facilities in a timely fashion.

  (*See*, General Plan at VIII-4; emphasis added)

Accordingly, these General Plan policies require Modesto to cooperate with Salida FPD, since Salida FPD is ultimately financially responsible for ensuring adequate emergency response services to the area.

Future Hearings and Public Notices

Salida FPD requests that it be sent *all* public notices related to the Scannell Project, including but not limited to all public meetings of the Modesto City Council, Planning Commission, and public scoping sessions. Salida FPD also requests notice of all public notices and determinations related to the Scannell Project. We request that such notices be sent to the mailing address that Modesto has on file for Salida FPD, *as well as* the email addresses: dschwarz@lawross.com and wross@lawross.com

We appreciate your attention to this matter. If you have any questions, please contact me at 650-843-8080 or dschwarz@lawross.com.

David Schwarz
Deputy District Counsel
Salida Fire Protection District

cc: Members of the Salida FPD Board of Directors
Danielle Denczek, District Administrative Manager

From: Planning Mailbox
To: Tristan Osborn; Katharine Martin
Cc: Amber Dick
Subject: FW: Scannel Warehouse Project
Date: Thursday, March 27, 2025 3:44:01 PM

Public comment on Scannel

From: Garry Pearson <garrypearson@sbcglobal.net>
Sent: Thursday, March 27, 2025 2:51 PM
To: Planning Mailbox <planning@modestogov.com>; BALLARDJ@stancounty.com
Subject: Scannel Warehouse Project

External Email: Please use caution when clicking links and/or opening attachments.

Good Afternoon,

I am Garry Pearson, Resident of Riverbank Ca.

I am commenting on the proposed Scannel project for development of the area for future warehouses along Kiernan ave in north modesto.

I categorically oppose this development for the following reasons:

1. Increase in Traffic congestion including trucks of all sizes
2. Increase in Car congestion of all types
3. Increase in Car and truck pollution along the Kiernan corridor
4. The DEIR does not detail the impacts on the Biological impacts to the area
5. The project removes 'Prime Ag Land' and the state of California has specific policy on removing of
   of Prime Ag Land and the replacement of lost prime Ag Land.
6. The City of Salida residents did not approve this development!....
7. The City of Modesto would need to change its 'Sphere of Influence' and provide water,sewer and
   related utilities to the site. does the City of Modesto really desire to change its 'Sphere of Influence'
8. Does the city of Modesto really want more folks from the bay area to move to this community?
9. Kiernan ave already has a large 'Empty' warehouse on Tully and Kiernan road that is not been
   occupied or leased

Inline image

Thank you for considering my reasons on this matter and my opposition to this project

Best Regards,

Garry Pearson, resident of Riverbank

Docusign Envelope ID: EF40A7DB-7B08-4CC1-801D-8EF516AA04DE

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Central Region
1234 East Shaw Avenue
Fresno, California 93710
(559) 243-4005
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

March 27, 2025

Tristan Osborn, Planning Manager
City of Modesto Planning Division
1010 10th Street
Modesto, California 95354
(209) 577-5267
tosborn@modestogov.com

Subject: Notice of Preparation (NOP)
The Scannell Industrial Project (Project)
State Clearinghouse No. 2025020776

Dear Tristan Osborn:

The California Department of Fish and Wildlife (CDFW) received a Notice of Preparation (NOP) from the City of Modesto for the Project pursuant to the California Environmental Quality Act (CEQA) and CEQA Guidelines.[1]

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish and wildlife. Likewise, CDFW appreciates the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may be required to carry out or approve through the exercise of its own regulatory authority under the Fish and Game Code.

CDFW ROLE

CDFW is California's **Trustee Agency** for fish and wildlife resources and holds those resources in trust by statute for all the people of the State. (Fish & G. Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a)). CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. (*Id.*, § 1802). Similarly, for purposes of CEQA, CDFW is charged by law to provide, as available, biological

[1] CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

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expertise during public agency environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources.

CDFW is also submitting comments as a **Responsible Agency** under CEQA. (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381) CDFW expects that it may need to exercise regulatory authority as provided by the Fish and Game Code. As proposed, for example, the Project may be subject to CDFW's lake and streambed alteration regulatory authority. (Fish & G. Code, § 1600 et seq.) Likewise, to the extent implementation of the Project as proposed may result in "take" as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.), the project proponent may seek related take authorization as provided by the Fish and Game Code.

Unlisted Species: Species of plants and animals need not be officially listed as Endangered, Rare, or Threatened (E, R, or T) on any State or Federal list to be considered E, R, or T under CEQA. If a species can be shown to meet the criteria for E, R, or T, as specified in the CEQA Guidelines section 15380, CDFW recommends it be fully considered in the environmental analysis for the Project.

Nesting Birds: CDFW has jurisdiction over actions with potential to result in the disturbance or destruction of active nest sites or the unauthorized take of birds. Fish and Game Code sections that protect birds, their eggs and nests include sections 3503 (regarding unlawful take, possession, or needless destruction of the nest or eggs of any bird), 3503.5 (regarding the take, possession, or destruction of any birds-of-prey or their nests or eggs), and 3513 (regarding unlawful take of any migratory nongame bird).

PROJECT DESCRIPTION SUMMARY

Proponent: City of Modesto

Objective: The proposed Project includes the construction of between 2,000,000 and 2,500,000 square feet of warehouse, distribution, and manufacturing space. In addition, a small 2–3-acre retail site is proposed to provide retail service to the Project.

Location: The Project site is comprised of approximately 145 acres located at the northwest corner of Kiernan Avenue, State Route (SR) 219 and Dale Road intersection, within the unincorporated Community of Salida. The Project is located on Assessor's Parcel Number (APN) 003-019-026.

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COMMENTS AND RECOMMENDATIONS

CDFW offers the comments and recommendations below to assist the City of Modesto in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on fish and wildlife (biological) resources. Editorial comments or other suggestions may also be included to improve the DEIR prepared for this Project.

The NOP states, "The Project site and surrounding properties are generally in agricultural use. There are also light industrial developments east and west of the project site, along Kiernan Avenue. Joseph A. Gregori High School is located northwest of the site and the Kaiser Permanente Modesto Medical Center and similar business park uses are located immediately south, within the City of Modesto." Based on aerial imagery, the Project site and its surroundings is comprised of row crops, orchards, and residential and developed areas. A retaining pond is also present west of the Project site. Based on a review of the California Natural Diversity Database (CNDDB) (CDFW 2025), the Project is within the geographic range of several special-status animal species including, but not limited to: the State threatened Swainson's hawk (*Buteo swainsoni*) and tricolored blackbird *(Agelaius tricolor)*, and the State candidate western burrowing owl (*Athene cunicularia hypugaea*) and Crotch's bumble bee (*Bombus crotchii*).

Swainson's Hawk

The Project site is within the known geographic range of Swainson's hawk (SWHA) and there is a historical occurrence documented within three miles of the Project site (CDFW 2025). SWHA are known to breed within the Central Valley of California and prefer to nest near and forage in alfalfa, fallow fields, field crops, and grassland habitats with a sufficient source of small mammals (CDFG 1994). Based on aerial imagery and the information provided in the NOP, most of the Project site contains agricultural lands suitable for SWHA foraging. In addition, there are trees located along the eastern boundary of the Project site that may provide suitable perching and nesting habitat.

Therefore, CDFW recommends surveys for SWHA be conducted as part of the biological technical studies conducted in support of the DEIR by a qualified biologist following the survey methods developed by the Swainson's Hawk Technical Advisory Committee (SWHA TAC 2000). In addition to conducting SWHA surveys, CDFW recommends the DEIR include the following measures:

> **Recommended Mitigation Measure 1: SWHA Surveys Prior to Construction**
> Depending on the time between the initial survey efforts conducted in support of the DEIR and Project construction, CDFW recommends that additional surveys,

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following the survey methodology developed by the SWHA Technical Advisory Committee, be repeated the survey season immediately prior to construction.

Recommended Mitigation Measure 2: SWHA Avoidance Buffer
If Project-specific activities will take place during the SWHA nesting season (i.e., March 1 through September 15), and active SWHA nests are present, CDFW recommends a minimum ½-mile no-disturbance buffer be delineated and maintained around each nest, regardless of whether it was detected by surveys or observed incidentally. These buffers would remain in place until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival, to prevent nest abandonment and other take of SWHA as a result of Project activities.

Recommended Mitigation Measure 3: SWHA Take Authorization
CDFW also recommends that in the event an active SWHA nest is detected, and a ½-mile no-disturbance buffer is not feasible, consultation with CDFW is warranted to discuss how to implement the Project and avoid take. If take cannot be avoided, take authorization through the acquisition of an Incidental Take Permit (ITP), pursuant to Fish and Game Code section 2081 subdivision (b) is necessary to comply with CESA.

Recommended Mitigation Measure 4: SWHA Foraging Habitat Mitigation
Finally, CDFW recommends compensation for the loss of SWHA foraging habitat as described in CDFW's "Staff Report Regarding Mitigation for Impacts to Swainson's Hawks" (CDFG 1994) to reduce impacts to foraging habitat to less than significant. The Staff Report recommends that mitigation for habitat loss occur within a minimum distance of 10 miles from known nest sites. CDFW has the following recommendations based on the Staff Report:

- For projects within 1 mile of an active nest tree, a minimum of 1 acre of habitat management (HM) land for each acre of development is advised.

- For projects within 5 miles of an active nest but greater than 1 mile, a minimum of ¾ acre of HM land for each acre of development is advised.

- For projects within 10 miles of an active nest tree but greater than 5 miles from an active nest tree, a minimum of ½ acre of HM land for each acre of development is advised.

Tricolored Blackbird

The Project site is within the known geographic range of tricolored blackbird (TRBL) and a historical occurrence was documented within approximately five miles of the Project

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site (CDFW 2025). TRBL breed within the vicinity of fresh water, primarily in marshy areas. Important sites for nesting colonies include heavy growths of cattails, tules, thistles, willows, blackberries, mustard, nettles, and salt cedar (Grinnell and Miller 1944). TRBL are also known to breed in alfalfa, wheat, and other low agricultural crop fields, and these fields are becoming an increasingly important nesting habitat type, particularly in the San Joaquin Valley (Beedy et al. 2023). Based on aerial imagery and the information provided, there are agricultural fields within the Project site and vicinity that may contain habitat suitable for TRBL nesting and foraging.

CDFW recommends that a qualified biologist conduct a habitat assessment for TRBL as part of the biological technical studies conducted in support of the DEIR. If potentially suitable habitat is identified, consultation with CDFW is recommended for guidance on focused survey methods and mitigation measures such avoidance, minimization, and mitigation. If take cannot be avoided, take authorization through the acquisition of an ITP, pursuant to Fish and Game Code section 2081 subdivision (b) is necessary to comply with CESA.

Western Burrowing Owl

The California Fish and Game Commission (FGC) approved western burrowing owl (BUOW) as a candidate for potential listing as a protected species under CESA on October 10, 2024, and published these findings in the California Regulatory Notice Register (Notice Register) on October 25, 2024. As such, BUOW is now a candidate under CESA and receives the same legal protection afforded to an endangered or threatened species (Fish & G. Code, §§ 2074.2 & 2085).

The Project site is within the known geographic range of BUOW and a historical occurrence has been documented withing approximately five miles of the Project site (CDFW 2025). BUOW inhabit open grasslands containing small mammal burrows, a requisite habitat feature used for nesting and cover. Based on aerial imagery, it appears that suitable BUOW burrowing and foraging habitat may be present within the Project site and vicinity.

As BUOW have the potential to be present within the Project site or vicinity, CDFW recommends assessing presence/absence of BUOW by having a qualified biologist conduct surveys following the 2012 Staff Report on Burrowing Owl Mitigation (CDFG 2012) as part of the biological studies conducted in support of the DEIR. If surveys indicate the presence or potential presence of BUOW, consultation with the CDFW is recommended for guidance on mitigation measures such as avoidance, minimization, and mitigation. If take cannot be avoided, take authorization through the acquisition of an ITP, pursuant to Fish and Game Code section 2081 subdivision (b) is necessary to comply with CESA.

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Crotch's Bumble Bee

The Project site is within the known geographical range of Crotch's bumble bee (CBB) and a historical occurrence has been documented within two miles of the Project site (CDFW 2025). CBB are known to inhabit areas of grasslands and scrub that contain requisite habitat elements for nesting, such as small mammal burrows and bunch/thatched grasses, and these habitat elements may be present within the Project site. As such, CDFW recommends a qualified biologist conduct a habitat assessment as part of the biological studies conducted in support of the DEIR to determine if the Project site and the immediate surrounding vicinity contain habitat suitable to support CBB. Potential nesting sites, which include all small mammal burrows, perennial bunch grasses, thatched annual grasses, brush piles, old bird nests, dead trees, and hollow logs would need to be documented as part of the assessment. If potentially suitable habitat is identified, CDFW recommends that a qualified biologist conduct focused surveys for CBB, and their requisite habitat features following the methodology outlined in the Survey Considerations for California Endangered Species Act Candidate Bumble Bee Species (CDFW 2023). If surveys indicate the presence or potential presence of CBB, consultation with the CDFW is recommended for guidance on the development of mitigation measures such as take avoidance, minimization, and mitigation. If take cannot be avoided, take authorization through the acquisition of an ITP, pursuant to Fish and Game Code section 2081 subdivision (b) is necessary to comply with CESA.

Editorial Comments and/or Suggestions

Nesting birds: CDFW encourages that all ground-disturbing activities occur during the bird non-nesting season; however, if ground-disturbing or vegetation-disturbing activities must occur during the breeding season (February 15 through September 15), developers are responsible for ensuring that implementation of their project does not result in a violation of the Migratory Bird Treaty Act or relevant Fish and Game Codes as referenced above.

CDFW recommends that a qualified biologist conduct pre-activity surveys for active nests no more than 10 days prior to the start of ground or vegetation disturbance to maximize the probability that nests that could potentially be impacted are detected. CDFW also recommends that surveys cover a sufficient area around the Project site to identify nests and determine their status. A sufficient area means any area potentially affected by the Project. In addition to direct impacts (i.e., nest destruction), noise, vibration, and movement of workers or equipment could also affect nests. CDFW recommends that a qualified biologist conduct a survey to establish a behavioral baseline of all identified nests. Once construction begins, CDFW recommends having a qualified biologist continuously monitor nests to detect behavioral changes resulting from the Project. If behavioral changes occur, CDFW recommends halting the work

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causing that change and consulting with CDFW for additional avoidance and minimization measures.

If continuous monitoring of identified nests by a qualified biologist is not feasible, CDFW recommends a minimum no-disturbance buffer of 250 feet around active nests of non-listed bird species and a 500-foot no-disturbance buffer around active nests of non-listed raptors. These buffers are advised to remain in place until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or on-site parental care for survival. Variance from these no-disturbance buffers is possible when there is compelling biological or ecological reason to do so, such as when the construction areas would be concealed from a nest site by topography. CDFW recommends that a qualified biologist advise and support any variance from these buffers and notify CDFW in advance of implementing a variance.

Cumulative Impacts: CDFW recommends that a cumulative impact analysis be conducted for all biological resources that will either be significantly or potentially significantly impacted by implementation of the Project. Including those whose impacts are determined to be less than significant with mitigation incorporated or for those resources that are rare or in poor or declining health and will be impacted by the Project, even if those impacts are relatively small (i.e., less than significant). CDFW recommends cumulative impacts be analyzed using an acceptable methodology to evaluate the impacts of past, present, and reasonably foreseeable future projects on resources and be focused specifically on the resource, not the Project. An appropriate resource study area identified and utilized for this analysis is advised. CDFW staff is available for consultation in support of cumulative impacts analyses as a trustee and responsible agency under CEQA.

California Natural Diversity Database: Please note that the CNDDB is populated by voluntary submissions of species detections. As a result, species may be present in locations not depicted in the CNDDB but where there is suitable habitat and features capable of supporting species. A lack of an occurrence record, or lack of recent occurrence records, in the CNDDB does not mean that a species is not present. In order to adequately assess any potential Project-related impacts to biological resources, surveys conducted by a qualified biologist during the appropriate survey period(s) and using the appropriate protocol survey methodology are warranted in order to determine whether or not any special-status species are present.

ENVIRONMENTAL DATA

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database which may be used to make subsequent or supplemental environmental determinations. (Pub. Resources Code,

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§ 21003, subd. (e).) Accordingly, please report any special-status species and natural communities detected during Project surveys to the California Natural Diversity Database. The CNDDB field survey form can be filled out and submitted online at the following link: https://wildlife.ca.gov/Data/CNDDB/Submitting-Data. The types of information reported to CNDDB can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals.

FILING FEES

The Project, as proposed, would have an impact on fish and/or wildlife, and assessment of environmental document filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the environmental document filing fee is required in order for the underlying project approval to be operative, vested, and final. (Cal. Code Regs, tit. 14, § 753.5; Fish & G. Code, § 711.4; Pub. Resources Code, § 21089).

CONCLUSION

CDFW appreciates the opportunity to comment on the NOP to assist the City of Modesto in identifying and mitigating Project impacts on biological resources. A Mitigation and Monitoring Program (MMRP) (Attachment 1) is included to assist the City of Modesto with incorporating the recommended mitigation measures provided above. More information on survey and monitoring protocols for sensitive species can be found at CDFW's website (https://www.wildlife.ca.gov/Conservation/Survey-Protocols). Questions regarding this letter or further coordination should be directed to John Riedel, Environmental Scientist, at (559) 807-1453 or john.riedel@wildlife.ca.gov.

Sincerely,

DocuSigned by:
Julie Vance
FA83F09FE08945A...

Julie A. Vance
Regional Manager

ATTACHMENT

ec: State Clearinghouse
Governor's Office of Planning and Research
State.Clearinghouse@opr.ca.gov

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Attachment 1

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
RECOMMENDED MITIGATION MONITORING AND REPORTING PROGRAM (MMRP)

PROJECT: The Scannell Industrial Project

SCH No.: 2025020776

RECOMMENDED MITIGATION MEASURE	**STATUS/DATE/INITIALS**
Before Disturbing Soil or Vegetation	
Swainson's Hawk (SWHA)	
Recommended Mitigation Measure 1: SWHA surveys prior to construction	
Recommended Mitigation Measure 3: SWHA take authorization	
Recommended Mitigation Measure 4: SWHA foraging habitat mitigation	
During Construction	
Swainson's Hawk (SWHA)	
Recommended Mitigation Measure 2: SWHA avoidance buffer	

27 March 2025

Tristan Osborn
City of Modesto - Planning Division
1010 10h Street
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COMMENTS TO REQUEST FOR REVIEW FOR THE NOTICE OF PREPARATION FOR THE DRAFT ENVIRONMENTAL IMPACT REPORT, SCANNELL INDUSTRIAL PROJECT, SCH#2025020776, STANISLAUS COUNTY

Pursuant to the State Clearinghouse's 21 February 2025 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Notice of Preparation for the Draft Environmental Impact Report* for the Scannell Industrial Project, located in Stanislaus County.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

I. Regulatory Setting

Basin Plan

The Central Valley Water Board is required to formulate and adopt Basin Plans for all areas within the Central Valley region under Section 13240 of the Porter-Cologne Water Quality Control Act. Each Basin Plan must contain water quality objectives to ensure the reasonable protection of beneficial uses, as well as a program of implementation for achieving water quality objectives with the Basin Plans. Federal regulations require each state to adopt water quality standards to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act. In California, the beneficial uses, water quality objectives, and the Antidegradation Policy are the State's water quality standards. Water quality standards are also contained in the National Toxics Rule, 40 CFR Section 131.36, and the California Toxics Rule, 40 CFR Section 131.38.

The Basin Plan is subject to modification as necessary, considering applicable laws, policies, technologies, water quality conditions and priorities. The original Basin Plans were adopted in 1975, and have been updated and revised periodically as required, using Basin Plan amendments. Once the Central Valley Water Board has adopted a Basin Plan amendment in noticed public hearings, it must be approved by

the State Water Resources Control Board (State Water Board), Office of Administrative Law (OAL) and in some cases, the United States Environmental Protection Agency (USEPA). Basin Plan amendments only become effective after they have been approved by the OAL and in some cases, the USEPA. Every three (3) years, a review of the Basin Plan is completed that assesses the appropriateness of existing standards and evaluates and prioritizes Basin Planning issues. For more information on the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, please visit our website:
http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/

Antidegradation Considerations

All wastewater discharges must comply with the Antidegradation Policy (State Water Board Resolution 68-16) and the Antidegradation Implementation Policy contained in the Basin Plan. The Antidegradation Implementation Policy is available on page 74 at:
https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201805.pdf

In part it states:

Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.

This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives.

The antidegradation analysis is a mandatory element in the National Pollutant Discharge Elimination System and land discharge Waste Discharge Requirements (WDRs) permitting processes. The environmental review document should evaluate potential impacts to both surface and groundwater quality.

II. Permitting Requirements

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit), Construction General Permit Order No. 2009-0009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). For more information on the Construction General Permit, visit the State Water Resources Control Board website at:

http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml

Industrial Storm Water General Permit

Storm water discharges associated with industrial sites must comply with the regulations contained in the Industrial Storm Water General Permit Order No. 2014-0057-DWQ. For more information on the Industrial Storm Water General Permit, visit the Central Valley Water Board website at: http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/industrial_general_permits/index.shtml

Clean Water Act Section 404 Permit

If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the United States Army Corps of Engineers (USACE). If a Section 404 permit is required by the USACE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water drainage realignment, the applicant is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements. If you have any questions regarding the Clean Water Act Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACE at (916) 557-5250.

Clean Water Act Section 401 Permit – Water Quality Certification

If an USACE permit (e.g., Non-Reporting Nationwide Permit, Nationwide Permit, Letter of Permission, Individual Permit, Regional General Permit, Programmatic General Permit), or any other federal permit (e.g., Section 10 of the Rivers and Harbors Act or Section 9 from the United States Coast Guard), is required for this project due to the disturbance of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications. For more information on the Water Quality Certification, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/water_issues/water_quality_certification/

Waste Discharge Requirements – Discharges to Waters of the State

If USACE determines that only non-jurisdictional waters of the State (i.e., “non-federal” waters of the State) are present in the proposed project area, the proposed project may require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation. For more information on the Waste Discharges to Surface Water NPDES Program and WDR processes, visit the Central Valley Water Board website at:https://www.waterboards.ca.gov/centralvalley/water_issues/waste_to_surface_water/

Projects involving excavation or fill activities impacting less than 0.2 acre or 400 linear feet of non-jurisdictional waters of the state and projects involving dredging activities impacting less than 50 cubic yards of non-jurisdictional waters of the state may be eligible for coverage under the State Water Resources Control Board Water Quality Order No. 2004-0004-DWQ (General Order 2004-0004). For more information on the General Order 2004-0004, visit the State Water Resources Control Board website at:
https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2004/wqo/wqo2004-0004.pdf

Dewatering Permit

If the proposed project includes construction or groundwater dewatering to be discharged to land, the proponent may apply for coverage under State Water Board General Water Quality Order (Low Threat General Order) 2003-0003 or the Central Valley Water Board's Waiver of Report of Waste Discharge and Waste Discharge Requirements (Low Threat Waiver) R5-2018-0085. Small temporary construction dewatering projects are projects that discharge groundwater to land from excavation activities or dewatering of underground utility vaults. Dischargers seeking coverage under the General Order or Waiver must file a Notice of Intent with the Central Valley Water Board prior to beginning discharge.

For more information regarding the Low Threat General Order and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0003.pdf

For more information regarding the Low Threat Waiver and the application process, visit the Central Valley Water Board website at:
https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/waivers/r5-2018-0085.pdf

Limited Threat General NPDES Permit

If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are typically considered a low or limited threat to water quality and may be covered under the General Order for *Limited Threat Discharges to Surface Water* (Limited Threat General Order). A complete Notice of Intent must be submitted to the Central Valley Water Board to obtain coverage under the Limited Threat General Order. For more information regarding the Limited Threat General Order and the application process, visit the Central Valley Water Board website at:
https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2016-0076-01.pdf

NPDES Permit

If the proposed project discharges waste that could affect the quality of surface waters of the State, other than into a community sewer system, the proposed project will require coverage under a National Pollutant Discharge Elimination System

(NPDES) permit. A complete Report of Waste Discharge must be submitted with the Central Valley Water Board to obtain a NPDES Permit. For more information regarding the NPDES Permit and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/help/permit/

If you have questions regarding these comments, please contact me at (916) 464-4684 or Peter.Minkel2@waterboards.ca.gov.

Peter G. Minkel
Engineering Geologist

cc: State Clearinghouse unit, Governor's Office of Planning and Research, Sacramento

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March 27, 2025

Tristan Osborn, Planning Manager
City of Modesto - Planning Division
1010 10th Street, Suite 3300
Modesto, CA 95354

SUBJECT: COMMENTS REGARDING NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT – SCANNELL INDUSTRIAL PROJECT

Dear Mr. Osborn:

The Stanislaus Local Agency Formation Commission (LAFCO) appreciates the opportunity to provide comments on the City's Notice of Preparation of an Environmental Impact Report for the Scannell Industrial Project. LAFCO is considered as a Responsible Agency for the purposes of the California Environmental Quality Act (CEQA) and will rely on the environmental documents prepared by the City during review of the proposed sphere of influence amendment and annexation.

Among the purposes of LAFCO are discouraging urban sprawl, preserving open-space and prime agricultural lands, efficiently providing governmental services, and encouraging the orderly formation and development of local agencies (Government Code Section 56301). Based on this, LAFCO has particular interest in the following topics being fully discussed in the City's environmental documentation: growth-inducing impacts, the effect of the proposal on nearby communities and special districts (including the Salida Fire Protection District), direct and indirect effects to agricultural resources, availability of water supplies, and the ability to provide services.

Comprehensive Planning

The proposed sphere of influence amendment and annexation are located in an area known as the Salida Community Plan Amendment Area. The "Amendment Area" is in reference to a larger area outside of the pre-2007 Salida Community Plan that was approved by adoption of an initiative by the Stanislaus County Board of Supervisors. Due to the immediate adoption of the Amendment Area as part on an initiative, environmental review and comprehensive planning for the area, including an analysis of services, has not yet been completed. Stanislaus County recently issued a Notice of Preparation for a Program Environmental Impact Report for the Salida Community Plan Amendment Area. LAFCO's response requested an analysis of the provision of services for the area, including the potential expansion of Salida Sanitary District services, which currently provides wastewater collection, treatment, and disposal for the existing Salida community.

Chapter III of the City of Modesto General Plan states, "if the Salida Comprehensive planning district is annexed to the City of Modesto, the City does not propose to change any land use designations from those established by Stanislaus County. Therefore, the Salida Community Plan, as adopted by Stanislaus County, will continue to guide growth and development for this area, even upon annexation to the City." These statements rely on the Salida Community Plan as the "comprehensive

plan" for the area; however, as noted, the County is still in the process of preparing an Program Environmental Impact Report and the area has not yet been fully studied.

The City's General Plan policies encourage the use of Comprehensive Planning Districts (CPDs) and Specific Plans within these CPDs to ensure orderly, well-planned development. The Salida Community Plan area, including the proposed project site, are identified in the General Plan as being a CPD. Chapter VIII of the City's General Plan states, "Specific Plans are used by the City to implement the Comprehensive Planning Districts (CPDs)... A CPD shall consist of one or more Specific Plans." The General Plan describes the minimum planning area for new specific plans to be approximately 480 acres or otherwise determined adequate for "true comprehensive planning of new growth areas" (pg. III-18). The proposed sphere of influence expansion and annexation does not appear to implement these planning policies.

Sphere of Influence Policies

A sphere of influence is defined by Government Code §56425 as a plan for the probable physical boundaries and service area of a local agency as determined by LAFCO. The sphere of influence is intended to be a long-term growth boundary. For cities, a sphere of influence is typically amended in conjunction with a comprehensive planning document, such as a General Plan with associated updates to utility master plans. Stanislaus LAFCO also designates a "primary area" within the sphere of influence of cities to represent a more near-term growth area. The sphere of influence and primary area designations function as planning tools intended to carry out the Commission's role to promote logical and orderly development and guide timely changes of organization (annexations). Annexations are intended to accommodate development where growth is imminent and a city has demonstrated the need for additional territory after prioritizing development within current boundaries and current Sphere of Influence.

LAFCO is aware that the City is in the process of comprehensively updating its General Plan. As part of this process, various land use alternatives will be considered that may result in a future request to amend the City's overall Sphere of Influence. The current proposal—simultaneous sphere of influence expansion and annexation of a 145-acre parcel—skips ahead of the City's comprehensive General Plan update process and into a growth area that the City has not yet determined will be part of its preferred growth alternative. The NOP states that the project is expected to develop in four phases over 10 years and that an end user is not currently known. Considering the above, the City's environmental documentation should discuss the timing of this proposal as it relates to growth-inducing impacts.

City-County Meeting and Tax-Sharing Agreement

An expansion of a sphere of influence requires the City of Modesto to meet with the County to discuss the proposed sphere of influence and explore methods to reach agreement regarding boundaries, development standards, and zoning requirements within the sphere of influence in accordance with Government Code §56425(b). Evidence of this consultation and any resulting agreement must be provided as part of the application to LAFCO.

Additionally, pursuant to Revenue and Taxation Code §99(b)(6), the City must present resolutions adopted by the City and County whereby each agency agrees to an exchange of property tax revenues prior to an application for the proposal being deemed complete by LAFCO. While the City and County currently have a Master Property Tax Agreement executed in 2022, the project site was specifically excluded from the agreement. Thus, a separate agreement must be negotiated.

Agricultural Resources

One of LAFCO's main charges, as set forth by the Legislature, is to protect and promote agriculture. The project site is currently designated as Prime Farmland. LAFCO's adopted Agricultural Preservation Policy requires that any proposal which will have an impact to agricultural lands prepare a Plan for Agricultural Preservation ("Plan"). The Plan must include information regarding the proposals direct and indirect impacts to agricultural resources, the availability of lands within the City's existing city limits and sphere of influence, relevant General Plan policies, and the method or strategy proposed to minimize the loss of agricultural lands. The information provided in the Plan should be consistent with the environmental documentation prepared by the City.

Public Services

Pursuant to LAFCO policies, the proposal must show that the City has the necessary public services available to serve the annexation area. This analysis must include detailed evidence of current service levels, sufficient sewer capacity, sufficient quantities and quality of water, financing mechanisms, as well as the means to provide adequate levels of fire and police protection. This information can also be used to satisfy the requirement of LAFCO Policy and State law (Government Code §56653) for a "Plan for Services." The NOP also notes the LAFCO requirement for a Municipal Service Review. A Municipal Service Review must be completed prior to or in conjunction with an action to amend a Sphere of Influence (Government Code §56430(e)). The last Municipal Service Review prepared for the City was in 2004. A new Municipal Service Review will need to be drafted that includes information from utility master plans and any other updated information since that time, as well as to reflect the updated determinations in Government Code §56425 and 56430.

Impacts to Special Districts

The proposed sphere of influence expansion and annexation is located within the boundaries of the Salida Fire Protection District. LAFCO will consider the impacts to the District during review of the proposal. Commission policies generally support detachment from fire protection districts upon annexation to a city that provides fire services. The project description should identify whether detachment from the Salida Fire Protection District is proposed, whether any existing or new agreements are applicable, and a discussion of resulting impacts. While two prior annexations were approved by the Commission *without* detachment based on an agreement between the City and District, non-detachment has resulted in overlapping service boundaries, confusion regarding jurisdiction and disagreements regarding collection of fees. The City is encouraged to consult with the District to resolve any identified concerns prior to application to LAFCO.

If you have any questions regarding these comments, please contact our office at (209) 525-7660 or via email at LAFCO@stancounty.com.

Sincerely,

Sara Lytle-Pinhey

Sara Lytle-Pinhey
Executive Officer

cc: LAFCO Commissioners
Shaun Wahid, LAFCO Counsel

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March 27, 2025

Sent via email to planning@modestogov.com and tosborn@modestogov.com

Tristan Osborn
Planning Manager
City of Modesto - Planning Division
1010 10th Street
Modesto, CA 95354

RE: Environmental Referral – Notice of Preparation - Environmental Impact Report for the Scannell Industrial Project

Dear Tristan Osborn

The Stanislaus County (County) Environmental Review Committee (ERC) has reviewed the subject Notice of Participation.

In accordance with Government Code Section 56425, the County looks forward to meeting with the City of Modesto (City) to discuss the City's proposed Sphere of Influence (SOI) expansion and annexation of unincorporated lands. Consequently, the below comments represent the County's response to the City's Notice of Preparation of an Environmental Impact Report (EIR) for the Scannell Industrial Project (Project).

Comprehensive Analysis

In 2007, the County adopted the County of Stanislaus *Roadway Improvement, Economic Development and Salida Area Farmland Protection and Planning Initiative* (Initiative), now known as the Salida Community Plan Amendment Area (Amendment Area), which adopted a land use plan covering a 3,383-acre area, inclusive of the approximately 145-acre Project site. The Amendment Area supports a mix of uses, including 2,029 acres of employment uses, 1,110 acres of residential uses, regional and local parkland, a wastewater treatment plan, transportation improvements, and other uses.

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An environmental document should study the Project's effects on the environment in connection with past projects, current projects, and potential future projects to gain a complete understanding of the cumulative effects. The EIR undertaken by the City for the Project should undertake a comprehensive analysis of project-level and cumulative-level impacts associated with the proposed 145-acre Project and buildout of the surrounding area, which includes the Amendment Area.

The County Department of Planning & Community Development is currently in the process of preparing a Programmatic Environmental Impact Report (PEIR) to analyze the program-level environmental impacts associated with development of land uses, the backbone infrastructure (including sewer, water, and stormwater) and services (including fire protection, school services, and parks) needed to support the planned build-out of the Amendment Area in accordance with the land use designations established under the Initiative. Please note that the County's efforts to prepare a PEIR include a supplemental analysis of necessary backbone infrastructure and levels of service needed to serve the Amendment Area, including a fee assessment study to create and implement fee programs to establish fair-share contributions applicable to development within the Amendment Area. Additionally, an incorporation study assessing the feasibility for the Amendment Area to incorporate is being conducted by the County as a requirement of the Initiative.

In order for cumulative and project-level impacts of the Project to be adequately addressed, the City's EIR will need to comprehensively evaluate the Project's impacts on infrastructure and services identified as needed to serve the build-out of the Amendment Area. This includes assessing financial implications and the associated impacts on the feasibility of incorporation, service and infrastructure provision, and fair-share mitigation programs that will support the Amendment Area resulting from annexation of the 143-acre Project site into the City. Preceding with this Project independently at this time may be premature.

Land Use

The County has concerns that the proposed growth of the City's Sphere of Influence will annex land designated for development under an adopted Community Plan, which may not maintain a logical land use pattern. Consequently, implementation of the Project would extend utilities needed for development, creating growth inducing conditions for areas into the Amendment Area that have not yet been adequately studied, a process which is underway but not yet completed under the County's PEIR efforts.

Additionally, Gregori High School will be adjacent to the future Project. The environmental document should include a discussion of land use compatibility, as well as identification of any potential impacts between the two uses.

Agricultural Resources

The Project will include areas in the unincorporated County, zoned as General Agriculture (A-2) and is considered prime farmland by the State of California's Department of Conservation Farmland Mapping and Monitoring program. The Land Use and Agricultural Elements of the County's General Plan provides for goals, policies, and implementation measures to preserve prime agricultural farmland. While the County's General Plan recognized the eventual development of the Project site and the lands to the north and west, as part of the Amendment Area, the Project needs to consider any impacts to adjacent lands that remain in agricultural use.

Other Impacts

The EIR should also include a thorough project-level analysis and cumulative analysis of impacts to the following:

- Groundwater recharge as the Project is in a high groundwater recharge area;
- Transportation facilities, including Kiernan Avenue (State Route 219), the North County Corridor, Dale Road, Pirrone Road, Stoddard Road and future planned connections identified in the Amendment Area, and the Highway 99 Interchange, and identify appropriate mitigation to impacts of such facilities through improvements and fair share contribution towards off-setting impacts to these facilities;
- Air quality and greenhouse gas emissions from stationary and mobile sources;
- Public services; and
- Noise impacts.

The County appreciates the opportunity to review and provide comments for consideration in the Draft EIR. Please include the County in any future publications or referrals for the EIR or Project.

Sincerely,

Tina Rocha
Assistant Executive Officer

APPENDIX B

AQ-GHG-Energy-HRA

Scannell Industrial Construction Phase 1 Detailed Report

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1.1. Basic Project Information

Data Field	Value
Project Name	Scannell Industrial Construction Phase 1
Construction Start Date	4/1/2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.10
Precipitation (days)	25.4
Location	37.71459032487087, -121.05403056336084
County	Stanislaus
City	Unincorporated
Air District	San Joaquin Valley APCD
Air Basin	San Joaquin Valley
TAZ	2213
EDFZ	15
Electric Utility	Modesto Irrigation District
Gas Utility	Pacific Gas & Electric
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
Refrigerated Warehouse-No Rail	501	1000sqft	11.5	500,646	131,234	0.00	—	—
Parking Lot	3,619	1000sqft	83.1	0.00	0.00	—	—	—

Unrefrigerated Warehouse-No Rail	2,003	1000sqft	46.0	2,002,584	0.00	—	—	—
Strip Mall	121	1000sqft	2.79	121,450	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-13	Use Low-VOC Paints for Construction

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.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.24	28.0	66.5	0.09	1.17	10.9	11.4	1.08	2.66	3.74	—	20,307	20,307	0.47	1.72	50.6	20,881
Mit.	6.24	28.0	66.5	0.09	1.17	10.9	11.4	1.08	2.66	3.74	—	20,307	20,307	0.47	1.72	50.6	20,881
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	330	6.99	10.5	0.01	0.30	1.66	1.68	0.27	0.39	0.41	—	1,661	1,661	0.06	0.07	0.15	1,684
Mit.	86.9	6.99	10.5	0.01	0.30	1.66	1.68	0.27	0.39	0.41	—	1,661	1,661	0.06	0.07	0.15	1,684
% Reduced	74%	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	29.1	9.16	14.0	0.02	0.31	2.02	2.34	0.29	0.63	0.92	—	3,812	3,812	0.12	0.21	2.67	3,880

Mit.	9.07	9.16	14.0	0.02	0.31	2.02	2.34	0.29	0.63	0.92	—	3,812	3,812	0.12	0.21	2.67	3,880
% Reduced	69%	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.31	1.67	2.56	< 0.005	0.06	0.37	0.43	0.05	0.11	0.17	—	631	631	0.02	0.03	0.44	642
Mit.	1.65	1.67	2.56	< 0.005	0.06	0.37	0.43	0.05	0.11	0.17	—	631	631	0.02	0.03	0.44	642
% Reduced	69%	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	6.24	28.0	66.5	0.09	1.17	10.9	11.4	1.08	2.66	3.74	—	20,307	20,307	0.47	1.72	50.6	20,881
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	330	6.99	10.5	0.01	0.30	1.66	1.68	0.27	0.39	0.41	—	1,661	1,661	0.06	0.07	0.15	1,684
2028	330	1.39	8.15	< 0.005	0.02	1.66	1.68	0.01	0.39	0.40	—	1,631	1,631	0.05	0.07	0.14	1,654
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	29.1	9.16	14.0	0.02	0.31	2.02	2.34	0.29	0.63	0.92	—	3,812	3,812	0.12	0.21	2.67	3,880
2028	9.05	0.04	0.23	< 0.005	< 0.005	0.04	0.05	< 0.005	0.01	0.01	—	45.9	45.9	< 0.005	< 0.005	0.06	46.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	5.31	1.67	2.56	< 0.005	0.06	0.37	0.43	0.05	0.11	0.17	—	631	631	0.02	0.03	0.44	642
2028	1.65	0.01	0.04	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	7.61	7.61	< 0.005	< 0.005	0.01	7.71

2.3. Construction Emissions by Year, Mitigated

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

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	6.24	28.0	66.5	0.09	1.17	10.9	11.4	1.08	2.66	3.74	—	20,307	20,307	0.47	1.72	50.6	20,881
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	86.9	6.99	10.5	0.01	0.30	1.66	1.68	0.27	0.39	0.41	—	1,661	1,661	0.06	0.07	0.15	1,684
2028	86.8	1.39	8.15	< 0.005	0.02	1.66	1.68	0.01	0.39	0.40	—	1,631	1,631	0.05	0.07	0.14	1,654
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	9.07	9.16	14.0	0.02	0.31	2.02	2.34	0.29	0.63	0.92	—	3,812	3,812	0.12	0.21	2.67	3,880
2028	2.38	0.04	0.23	< 0.005	< 0.005	0.04	0.05	< 0.005	0.01	0.01	—	45.9	45.9	< 0.005	< 0.005	0.06	46.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.65	1.67	2.56	< 0.005	0.06	0.37	0.43	0.05	0.11	0.17	—	631	631	0.02	0.03	0.44	642
2028	0.43	0.01	0.04	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	7.61	7.61	< 0.005	< 0.005	0.01	7.71

3. Construction Emissions Details

3.1. Site Preparation (2027) - Unmitigated

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

Location	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	3.05	28.0	28.3	0.05	1.17	—	1.17	1.08	—	1.08	—	5,298	5,298	0.21	0.04	—	5,316
Dust From Material Movement	—	—	—	—	—	5.11	5.11	—	2.63	2.63	—	—	—	—	—	—	—
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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	1.69	1.70	< 0.005	0.07	—	0.07	0.06	—	0.06	—	319	319	0.01	< 0.005	—	320
Dust From Material Movement	—	—	—	—	—	0.31	0.31	—	0.16	0.16	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.31	0.31	< 0.005	0.01	—	0.01	0.01	—	0.01	—	52.9	52.9	< 0.005	< 0.005	—	53.0
Dust From Material Movement	—	—	—	—	—	0.06	0.06	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.04	0.79	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	137	137	< 0.005	0.01	0.47	139
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

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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.61	7.61	< 0.005	< 0.005	0.01	7.73
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
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.26	1.26	< 0.005	< 0.005	< 0.005	1.28
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
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

3.2. Site Preparation (2027) - Mitigated

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

Location	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	3.05	28.0	28.3	0.05	1.17	—	1.17	1.08	—	1.08	—	5,298	5,298	0.21	0.04	—	5,316
Dust From Material Movement	—	—	—	—	—	5.11	5.11	—	2.63	2.63	—	—	—	—	—	—	—
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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	1.69	1.70	< 0.005	0.07	—	0.07	0.06	—	0.06	—	319	319	0.01	< 0.005	—	320
Dust From Material Movement	—	—	—	—	—	0.31	0.31	—	0.16	0.16	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.31	0.31	< 0.005	0.01	—	0.01	0.01	—	0.01	—	52.9	52.9	< 0.005	< 0.005	—	53.0
Dust From Material Movement	—	—	—	—	—	0.06	0.06	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.04	0.79	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	137	137	< 0.005	0.01	0.47	139
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
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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.61	7.61	< 0.005	< 0.005	0.01	7.73
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
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

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.26	1.26	< 0.005	< 0.005	< 0.005	1.28
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
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

3.3. Grading (2027) - Unmitigated

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

Location	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	2.95	25.6	27.3	0.06	1.04	—	1.04	0.96	—	0.96	—	6,598	6,598	0.27	0.05	—	6,621
Dust From Material Movement	—	—	—	—	—	2.39	2.39	—	0.95	0.95	—	—	—	—	—	—	—
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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.44	3.85	4.11	0.01	0.16	—	0.16	0.14	—	0.14	—	994	994	0.04	0.01	—	998
Dust From Material Movement	—	—	—	—	—	0.36	0.36	—	0.14	0.14	—	—	—	—	—	—	—
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.08	0.70	0.75	< 0.005	0.03	—	0.03	0.03	—	0.03	—	165	165	0.01	< 0.005	—	165
Dust From Material Movement	—	—	—	—	—	0.07	0.07	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.05	0.90	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	157	157	< 0.005	0.01	0.54	159
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
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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.11	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	21.8	21.8	< 0.005	< 0.005	0.04	22.1
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
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.60	3.60	< 0.005	< 0.005	0.01	3.66
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
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

3.4. Grading (2027) - Mitigated

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

Location	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	2.95	25.6	27.3	0.06	1.04	—	1.04	0.96	—	0.96	—	6,598	6,598	0.27	0.05	—	6,621
Dust From Material Movement	—	—	—	—	—	2.39	2.39	—	0.95	0.95	—	—	—	—	—	—	—
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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.44	3.85	4.11	0.01	0.16	—	0.16	0.14	—	0.14	—	994	994	0.04	0.01	—	998
Dust From Material Movement	—	—	—	—	—	0.36	0.36	—	0.14	0.14	—	—	—	—	—	—	—
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.70	0.75	< 0.005	0.03	—	0.03	0.03	—	0.03	—	165	165	0.01	< 0.005	—	165
Dust From Material Movement	—	—	—	—	—	0.07	0.07	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.08	0.05	0.90	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	157	157	< 0.005	0.01	0.54	159
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
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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.11	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	21.8	21.8	< 0.005	< 0.005	0.04	22.1
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
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.60	3.60	< 0.005	< 0.005	0.01	3.66
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
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

3.5. 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	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.11	1.03	1.42	< 0.005	0.04	—	0.04	0.03	—	0.03	—	263	263	0.01	< 0.005	—	264
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.19	0.26	< 0.005	0.01	—	0.01	0.01	—	0.01	—	43.5	43.5	< 0.005	< 0.005	—	43.6
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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	4.44	2.56	49.2	0.00	0.00	8.31	8.31	0.00	1.95	1.95	—	8,554	8,554	0.17	0.33	29.6	8,687
Vendor	0.35	12.2	4.37	0.07	0.14	2.59	2.72	0.14	0.71	0.85	—	9,355	9,355	0.20	1.37	21.0	9,789
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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.44	0.32	4.29	0.00	0.00	0.90	0.90	0.00	0.21	0.21	—	862	862	0.02	0.04	1.40	876
Vendor	0.04	1.38	0.49	0.01	0.01	0.28	0.29	0.01	0.08	0.09	—	1,026	1,026	0.02	0.15	0.99	1,072
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.06	0.78	0.00	0.00	0.16	0.16	0.00	0.04	0.04	—	143	143	< 0.005	0.01	0.23	145
Vendor	0.01	0.25	0.09	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	170	170	< 0.005	0.02	0.16	177
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

3.6. Building Construction (2027) - Mitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	1.03	1.42	< 0.005	0.04	—	0.04	0.03	—	0.03	—	263	263	0.01	< 0.005	—	264
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.19	0.26	< 0.005	0.01	—	0.01	0.01	—	0.01	—	43.5	43.5	< 0.005	< 0.005	—	43.6
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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	4.44	2.56	49.2	0.00	0.00	8.31	8.31	0.00	1.95	1.95	—	8,554	8,554	0.17	0.33	29.6	8,687
Vendor	0.35	12.2	4.37	0.07	0.14	2.59	2.72	0.14	0.71	0.85	—	9,355	9,355	0.20	1.37	21.0	9,789
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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.44	0.32	4.29	0.00	0.00	0.90	0.90	0.00	0.21	0.21	—	862	862	0.02	0.04	1.40	876
Vendor	0.04	1.38	0.49	0.01	0.01	0.28	0.29	0.01	0.08	0.09	—	1,026	1,026	0.02	0.15	0.99	1,072
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.06	0.78	0.00	0.00	0.16	0.16	0.00	0.04	0.04	—	143	143	< 0.005	0.01	0.23	145
Vendor	0.01	0.25	0.09	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	170	170	< 0.005	0.02	0.16	177
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

3.7. Paving (2027) - Unmitigated

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

Location	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	0.74	6.94	9.95	0.01	0.30	—	0.30	0.27	—	0.27	—	1,511	1,511	0.06	0.01	—	1,516
Paving	5.44	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.74	6.94	9.95	0.01	0.30	—	0.30	0.27	—	0.27	—	1,511	1,511	0.06	0.01	—	1,516
Paving	5.44	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.08	0.76	1.09	< 0.005	0.03	—	0.03	0.03	—	0.03	—	166	166	0.01	< 0.005	—	166
Paving	0.60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.14	0.20	< 0.005	0.01	—	0.01	0.01	—	0.01	—	27.4	27.4	< 0.005	< 0.005	—	27.5
Paving	0.11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.04	0.68	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	118	118	< 0.005	< 0.005	0.41	120
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
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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.04	0.52	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	105	105	< 0.005	< 0.005	0.01	107
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
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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	< 0.005	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.9	11.9	< 0.005	< 0.005	0.02	12.1
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
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.96	1.96	< 0.005	< 0.005	< 0.005	2.00
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

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

3.8. Paving (2027) - Mitigated

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

Location	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	0.74	6.94	9.95	0.01	0.30	—	0.30	0.27	—	0.27	—	1,511	1,511	0.06	0.01	—	1,516
Paving	5.44	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.74	6.94	9.95	0.01	0.30	—	0.30	0.27	—	0.27	—	1,511	1,511	0.06	0.01	—	1,516
Paving	5.44	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.76	1.09	< 0.005	0.03	—	0.03	0.03	—	0.03	—	166	166	0.01	< 0.005	—	166
Paving	0.60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.14	0.20	< 0.005	0.01	—	0.01	0.01	—	0.01	—	27.4	27.4	< 0.005	< 0.005	—	27.5

Paving	0.11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.04	0.68	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	118	118	< 0.005	< 0.005	0.41	120
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
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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.04	0.52	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	105	105	< 0.005	< 0.005	0.01	107
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
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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	< 0.005	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.9	11.9	< 0.005	< 0.005	0.02	12.1
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
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.96	1.96	< 0.005	< 0.005	< 0.005	2.00
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
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

3.9. Architectural Coating (2027) - Unmitigated

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

Location	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	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	329	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.07	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.0	11.0	< 0.005	< 0.005	—	11.0
Architectural Coatings	27.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.82	1.82	< 0.005	< 0.005	—	1.82
Architectural Coatings	4.94	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.80	0.64	7.56	0.00	0.00	1.66	1.66	0.00	0.39	0.39	—	1,528	1,528	0.05	0.07	0.15	1,550
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
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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.05	0.64	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	129	129	< 0.005	0.01	0.21	131
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
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.12	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	21.4	21.4	< 0.005	< 0.005	0.03	21.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
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

3.10. Architectural Coating (2027) - Mitigated

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

Location	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	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	86.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.07	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.0	11.0	< 0.005	< 0.005	—	11.0
Architectural Coatings	7.07	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.82	1.82	< 0.005	< 0.005	—	1.82
Architectural Coatings	1.29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.80	0.64	7.56	0.00	0.00	1.66	1.66	0.00	0.39	0.39	—	1,528	1,528	0.05	0.07	0.15	1,550
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
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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.05	0.64	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	129	129	< 0.005	0.01	0.21	131
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
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

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.12	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	21.4	21.4	< 0.005	< 0.005	0.03	21.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
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

3.11. Architectural Coating (2028) - Unmitigated

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

Location	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	0.11	0.81	1.12	< 0.005	0.02	—	0.02	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	329	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.66	3.66	< 0.005	< 0.005	—	3.67
Architectural Coatings	9.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.61	0.61	< 0.005	< 0.005	—	0.61
Architectural Coatings	1.65	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.72	0.58	7.03	0.00	0.00	1.66	1.66	0.00	0.39	0.39	—	1,498	1,498	0.05	0.07	0.14	1,520
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
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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.01	0.20	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	42.3	42.3	< 0.005	< 0.005	0.06	42.9
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
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.00	7.00	< 0.005	< 0.005	0.01	7.11
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
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

3.12. Architectural Coating (2028) - Mitigated

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

Location	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	0.11	0.81	1.12	< 0.005	0.02	—	0.02	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	86.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.66	3.66	< 0.005	< 0.005	—	3.67
Architectural Coatings	2.36	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.61	0.61	< 0.005	< 0.005	—	0.61
Architectural Coatings	0.43	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.72	0.58	7.03	0.00	0.00	1.66	1.66	0.00	0.39	0.39	—	1,498	1,498	0.05	0.07	0.14	1,520
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
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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.01	0.20	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	42.3	42.3	< 0.005	< 0.005	0.06	42.9
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
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.00	7.00	< 0.005	< 0.005	0.01	7.11
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
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

4. Operations Emissions Details

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	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	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	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

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

Vegetation	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

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

Land Use	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

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

Species	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	4/15/2027	5/14/2027	5.00	22.0	—
Grading	Grading	5/15/2027	7/30/2027	5.00	55.0	—
Building Construction	Building Construction	8/1/2027	9/24/2027	5.00	40.0	—
Paving	Paving	9/25/2027	11/19/2027	5.00	40.0	—
Architectural Coating	Architectural Coating	11/20/2027	1/14/2028	5.00	40.0	—

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	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37

Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	10.8	LDA,LDT1,LDT2
Site Preparation	Vendor	—	7.17	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	20.0	10.8	LDA,LDT1,LDT2
Grading	Vendor	—	7.17	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	1,090	10.8	LDA,LDT1,LDT2
Building Construction	Vendor	430	7.17	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	10.8	LDA,LDT1,LDT2
Paving	Vendor	—	7.17	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	218	10.8	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	7.17	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	10.8	LDA,LDT1,LDT2
Site Preparation	Vendor	—	7.17	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	20.0	10.8	LDA,LDT1,LDT2
Grading	Vendor	—	7.17	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	1,090	10.8	LDA,LDT1,LDT2
Building Construction	Vendor	430	7.17	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	10.8	LDA,LDT1,LDT2
Paving	Vendor	—	7.17	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	218	10.8	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	7.17	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	0.00	0.00	3,937,020	1,312,340	217,130

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	—	—	33.0	0.00	—
Grading	—	—	165	0.00	—
Paving	0.00	0.00	0.00	0.00	83.1

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Refrigerated Warehouse-No Rail	0.00	0%
Parking Lot	83.1	100%
Unrefrigerated Warehouse-No Rail	0.00	0%
Strip Mall	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2027	0.00	478	0.03	< 0.005
2028	0.00	478	0.03	< 0.005

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

5.18.1.2. Mitigated

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

5.18.1.2. Mitigated

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)

5.18.2.2. Mitigated

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	21.4	annual days of extreme heat
Extreme Precipitation	1.80	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A

Wildfire	N/A	N/A	N/A	N/A
Flooding	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	N/A	N/A	N/A	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	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	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	N/A	N/A	N/A	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 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	65.7
AQ-PM	53.3
AQ-DPM	54.3
Drinking Water	99.8
Lead Risk Housing	20.3
Pesticides	96.3
Toxic Releases	61.9
Traffic	59.4
Effect Indicators	—
CleanUp Sites	61.8
Groundwater	56.9
Haz Waste Facilities/Generators	78.5
Impaired Water Bodies	58.7
Solid Waste	52.9
Sensitive Population	—
Asthma	40.7
Cardio-vascular	46.7
Low Birth Weights	34.8
Socioeconomic Factor Indicators	—
Education	56.0
Housing	13.6
Linguistic	27.3
Poverty	37.6
Unemployment	53.9

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	77.6337739
Employed	66.08494803
Median HI	70.47350186
Education	—
Bachelor's or higher	51.84139612
High school enrollment	3.284999358
Preschool enrollment	28.28179135
Transportation	—
Auto Access	67.17567047
Active commuting	33.28628256
Social	—
2-parent households	81.72719107
Voting	68.04824843
Neighborhood	—
Alcohol availability	82.16348005
Park access	34.18452457
Retail density	23.02065957
Supermarket access	16.19402027
Tree canopy	72.11600154
Housing	—
Homeownership	84.11394842
Housing habitability	85.60246375
Low-inc homeowner severe housing cost burden	86.86000257
Low-inc renter severe housing cost burden	83.45951495

Uncrowded housing	60.77248813
Health Outcomes	—
Insured adults	82.81791351
Arthritis	8.6
Asthma ER Admissions	54.7
High Blood Pressure	16.4
Cancer (excluding skin)	15.0
Asthma	55.1
Coronary Heart Disease	15.5
Chronic Obstructive Pulmonary Disease	23.6
Diagnosed Diabetes	41.8
Life Expectancy at Birth	62.7
Cognitively Disabled	74.6
Physically Disabled	28.8
Heart Attack ER Admissions	24.8
Mental Health Not Good	58.7
Chronic Kidney Disease	45.1
Obesity	47.2
Pedestrian Injuries	58.9
Physical Health Not Good	49.1
Stroke	34.3
Health Risk Behaviors	—
Binge Drinking	69.8
Current Smoker	51.2
No Leisure Time for Physical Activity	53.2
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0

Children	56.6
Elderly	55.1
English Speaking	62.2
Foreign-born	40.4
Outdoor Workers	29.9
Climate Change Adaptive Capacity	—
Impervious Surface Cover	72.8
Traffic Density	67.6
Traffic Access	0.0
Other Indices	—
Hardship	32.8
Other Decision Support	—
2016 Voting	72.1

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	61.0
Healthy Places Index Score for Project Location (b)	55.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	No demolition
Operations: Fleet Mix	Fleet mix adjusted to account for truck trips detailed within the Project traffic study. Other trips proportioned based on CalEEMod defaults.
Operations: Vehicle Data	Based on traffic study

Scannell Industrial Full Buildout 7-7-2025 Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Scannell Industrial Full Buildout 7-7-2025
Operational Year	2028
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.10
Precipitation (days)	25.4
Location	37.71459032487087, -121.05403056336084
County	Stanislaus
City	Unincorporated
Air District	San Joaquin Valley APCD
Air Basin	San Joaquin Valley
TAZ	2213
EDFZ	15
Electric Utility	Modesto Irrigation District
Gas Utility	Pacific Gas & Electric
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
Refrigerated Warehouse-No Rail	501	1000sqft	11.5	500,646	133,462	0.00	—	—
Parking Lot	3,619	1000sqft	83.1	0.00	0.00	—	—	—

Unrefrigerated Warehouse-No Rail	1,335	1000sqft	30.6	1,335,060	0.00	—	—	—
Gasoline/Service Station	9.00	Pump	0.03	1,271	0.00	—	—	—
Fast Food Restaurant with Drive Thru	8.00	1000sqft	0.18	8,000	0.00	—	—	—
Manufacturing	668	1000sqft	15.3	667,530	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-13	Use Low-VOC Paints for Construction
Area Sources	LL-1	Replace Gas Powered Landscape Equipment with Zero-Emission Landscape Equipment

2. Emissions Summary

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.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	131	148	836	2.46	2.93	177	180	2.78	45.1	47.9	2,542	295,326	297,869	267	22.0	14,209	325,327
Mit.	113	147	727	2.45	2.74	177	179	2.63	45.1	47.7	2,542	294,951	297,493	267	22.0	14,209	324,951
% Reduced	14%	1%	13%	< 0.5%	7%	—	< 0.5%	5%	—	< 0.5%	—	< 0.5%	< 0.5%	< 0.5%	< 0.5%	—	< 0.5%
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	109	162	583	2.31	2.74	177	179	2.63	45.1	47.7	2,542	280,462	283,004	268	22.6	13,546	309,974

Mit.	109	162	583	2.31	2.74	177	179	2.63	45.1	47.7	2,542	280,462	283,004	268	22.6	13,546	309,974
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	113	146	591	2.14	2.66	155	158	2.54	39.7	42.2	2,542	263,287	265,830	267	21.2	13,793	292,615
Mit.	104	145	537	2.14	2.56	155	158	2.47	39.7	42.1	2,542	263,102	265,645	267	21.2	13,793	292,430
% Reduced	8%	< 0.5%	9%	< 0.5%	4%	—	< 0.5%	3%	—	< 0.5%	—	< 0.5%	< 0.5%	< 0.5%	< 0.5%	—	< 0.5%
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	20.6	26.6	108	0.39	0.49	28.3	28.8	0.46	7.24	7.70	421	43,590	44,011	44.2	3.51	2,284	48,446
Mit.	19.0	26.5	98.1	0.39	0.47	28.3	28.8	0.45	7.24	7.69	421	43,560	43,981	44.2	3.51	2,284	48,415
% Reduced	8%	< 0.5%	9%	< 0.5%	4%	—	< 0.5%	3%	—	< 0.5%	—	< 0.5%	< 0.5%	< 0.5%	< 0.5%	—	< 0.5%

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	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	54.7	138	720	2.40	2.05	177	179	1.94	45.1	47.0	—	247,938	247,938	6.28	18.9	681	254,412
Area	75.5	0.92	109	0.01	0.19	—	0.19	0.15	—	0.15	—	449	449	0.02	< 0.005	—	451
Energy	0.50	9.06	7.61	0.05	0.69	—	0.69	0.69	—	0.69	—	44,947	44,947	3.90	0.38	—	45,156
Water	—	—	—	—	—	—	—	—	—	—	1,114	1,992	3,106	114	2.74	—	6,782
Waste	—	—	—	—	—	—	—	—	—	—	1,428	0.00	1,428	143	0.00	—	4,997
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13,529	13,529
Total	131	148	836	2.46	2.93	177	180	2.78	45.1	47.9	2,542	295,326	297,869	267	22.0	14,209	325,327

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	50.9	153	576	2.26	2.05	177	179	1.94	45.1	47.0	—	233,523	233,523	6.71	19.5	17.6	239,510
Area	57.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.50	9.06	7.61	0.05	0.69	—	0.69	0.69	—	0.69	—	44,947	44,947	3.90	0.38	—	45,156
Water	—	—	—	—	—	—	—	—	—	—	1,114	1,992	3,106	114	2.74	—	6,782
Waste	—	—	—	—	—	—	—	—	—	—	1,428	0.00	1,428	143	0.00	—	4,997
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13,529	13,529
Total	109	162	583	2.31	2.74	177	179	2.63	45.1	47.7	2,542	280,462	283,004	268	22.6	13,546	309,974
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	45.9	136	530	2.09	1.88	155	157	1.78	39.7	41.4	—	216,127	216,127	5.87	18.1	264	221,929
Area	66.4	0.45	53.9	< 0.005	0.10	—	0.10	0.07	—	0.07	—	222	222	0.01	< 0.005	—	222
Energy	0.50	9.06	7.61	0.05	0.69	—	0.69	0.69	—	0.69	—	44,947	44,947	3.90	0.38	—	45,156
Water	—	—	—	—	—	—	—	—	—	—	1,114	1,992	3,106	114	2.74	—	6,782
Waste	—	—	—	—	—	—	—	—	—	—	1,428	0.00	1,428	143	0.00	—	4,997
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13,529	13,529
Total	113	146	591	2.14	2.66	155	158	2.54	39.7	42.2	2,542	263,287	265,830	267	21.2	13,793	292,615
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	8.37	24.9	96.7	0.38	0.34	28.3	28.7	0.32	7.24	7.56	—	35,782	35,782	0.97	3.00	43.7	36,743
Area	12.1	0.08	9.83	< 0.005	0.02	—	0.02	0.01	—	0.01	—	36.7	36.7	< 0.005	< 0.005	—	36.8
Energy	0.09	1.65	1.39	0.01	0.13	—	0.13	0.13	—	0.13	—	7,441	7,441	0.65	0.06	—	7,476
Water	—	—	—	—	—	—	—	—	—	—	184	330	514	18.9	0.45	—	1,123
Waste	—	—	—	—	—	—	—	—	—	—	236	0.00	236	23.6	0.00	—	827
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2,240	2,240
Total	20.6	26.6	108	0.39	0.49	28.3	28.8	0.46	7.24	7.70	421	43,590	44,011	44.2	3.51	2,284	48,446

2.6. Operations Emissions by Sector, Mitigated

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

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	54.7	138	720	2.40	2.05	177	179	1.94	45.1	47.0	—	247,938	247,938	6.28	18.9	681	254,412
Area	57.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.50	9.06	7.61	0.05	0.69	—	0.69	0.69	—	0.69	—	45,020	45,020	3.90	0.38	—	45,231
Water	—	—	—	—	—	—	—	—	—	—	1,114	1,992	3,106	114	2.74	—	6,782
Waste	—	—	—	—	—	—	—	—	—	—	1,428	0.00	1,428	143	0.00	—	4,997
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13,529	13,529
Total	113	147	727	2.45	2.74	177	179	2.63	45.1	47.7	2,542	294,951	297,493	267	22.0	14,209	324,951
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	50.9	153	576	2.26	2.05	177	179	1.94	45.1	47.0	—	233,523	233,523	6.71	19.5	17.6	239,510
Area	57.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.50	9.06	7.61	0.05	0.69	—	0.69	0.69	—	0.69	—	44,947	44,947	3.90	0.38	—	45,156
Water	—	—	—	—	—	—	—	—	—	—	1,114	1,992	3,106	114	2.74	—	6,782
Waste	—	—	—	—	—	—	—	—	—	—	1,428	0.00	1,428	143	0.00	—	4,997
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13,529	13,529
Total	109	162	583	2.31	2.74	177	179	2.63	45.1	47.7	2,542	280,462	283,004	268	22.6	13,546	309,974
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	45.9	136	530	2.09	1.88	155	157	1.78	39.7	41.4	—	216,127	216,127	5.87	18.1	264	221,929
Area	57.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.50	9.06	7.61	0.05	0.69	—	0.69	0.69	—	0.69	—	44,983	44,983	3.90	0.38	—	45,193
Water	—	—	—	—	—	—	—	—	—	—	1,114	1,992	3,106	114	2.74	—	6,782
Waste	—	—	—	—	—	—	—	—	—	—	1,428	0.00	1,428	143	0.00	—	4,997
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13,529	13,529

Total	104	145	537	2.14	2.56	155	158	2.47	39.7	42.1	2,542	263,102	265,645	267	21.2	13,793	292,430
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	8.37	24.9	96.7	0.38	0.34	28.3	28.7	0.32	7.24	7.56	—	35,782	35,782	0.97	3.00	43.7	36,743
Area	10.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.09	1.65	1.39	0.01	0.13	—	0.13	0.13	—	0.13	—	7,447	7,447	0.65	0.06	—	7,482
Water	—	—	—	—	—	—	—	—	—	—	184	330	514	18.9	0.45	—	1,123
Waste	—	—	—	—	—	—	—	—	—	—	236	0.00	236	23.6	0.00	—	827
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2,240	2,240
Total	19.0	26.5	98.1	0.39	0.47	28.3	28.8	0.45	7.24	7.69	421	43,560	43,981	44.2	3.51	2,284	48,415

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	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	4.64	15.3	73.1	0.26	0.22	18.6	18.9	0.21	4.76	4.97	—	27,012	27,012	0.63	2.18	72.6	27,749
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
Unrefrigerated Warehouse-No Rail	17.9	59.1	282	1.01	0.87	72.0	72.8	0.82	18.4	19.2	—	104,311	104,311	2.44	8.40	281	107,156

Gasoline Station	7.98	6.79	60.9	0.14	0.11	12.4	12.5	0.11	3.15	3.26	—	14,252	14,252	0.55	0.67	44.6	14,509
Fast Food Restaurant with Drive Thru	9.46	8.06	72.3	0.17	0.14	14.7	14.8	0.13	3.74	3.87	—	16,910	16,910	0.66	0.79	53.0	17,215
Manufacturing	14.7	48.4	231	0.82	0.71	58.9	59.7	0.67	15.1	15.7	—	85,453	85,453	2.00	6.88	230	87,784
Total	54.7	138	720	2.40	2.05	177	179	1.94	45.1	47.0	—	247,938	247,938	6.28	18.9	681	254,412
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	4.39	16.9	57.5	0.25	0.22	18.6	18.9	0.21	4.76	4.97	—	25,519	25,519	0.66	2.23	1.88	26,202
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
Unrefrigerated Warehouse-No Rail	17.0	65.3	222	0.95	0.87	72.0	72.8	0.82	18.4	19.2	—	98,545	98,545	2.56	8.61	7.27	101,183
Gasoline /Service Station	7.17	7.77	52.3	0.13	0.12	12.4	12.5	0.11	3.15	3.26	—	13,139	13,139	0.63	0.72	1.16	13,370
Fast Food Restaurant with Drive Thru	8.51	9.22	62.1	0.15	0.14	14.7	14.8	0.13	3.74	3.87	—	15,589	15,589	0.75	0.85	1.37	15,863
Manufacturing	13.9	53.5	182	0.78	0.71	58.9	59.7	0.67	15.1	15.7	—	80,730	80,730	2.10	7.06	5.96	82,891
Total	50.9	153	576	2.26	2.05	177	179	1.94	45.1	47.0	—	233,523	233,523	6.71	19.5	17.6	239,510
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Refrigerated Warehouse-No Rail	0.80	2.97	10.9	0.05	0.04	3.35	3.39	0.04	0.86	0.89	—	4,288	4,288	0.11	0.37	5.19	4,404
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
Unrefrigerated Warehouse-No Rail	3.09	11.5	42.2	0.18	0.16	12.9	13.1	0.15	3.30	3.45	—	16,558	16,558	0.41	1.41	20.1	17,008
Gasoline/Service Station	0.95	0.67	4.79	0.01	0.01	0.88	0.89	0.01	0.23	0.23	—	909	909	0.06	0.06	1.27	929
Fast Food Restaurant with Drive Thru	1.14	0.83	5.97	0.01	0.01	1.14	1.15	0.01	0.29	0.30	—	1,164	1,164	0.07	0.07	1.63	1,188
Manufacturing	2.40	8.92	32.8	0.14	0.12	10.0	10.2	0.12	2.57	2.68	—	12,863	12,863	0.32	1.10	15.6	13,213
Total	8.37	24.9	96.7	0.38	0.34	28.3	28.7	0.32	7.24	7.56	—	35,782	35,782	0.97	3.00	43.7	36,743

4.1.2. Mitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	4.64	15.3	73.1	0.26	0.22	18.6	18.9	0.21	4.76	4.97	—	27,012	27,012	0.63	2.18	72.6	27,749
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

Unrefrige Warehouse-No Rail	17.9	59.1	282	1.01	0.87	72.0	72.8	0.82	18.4	19.2	—	104,311	104,311	2.44	8.40	281	107,156
Gasoline /Service Station	7.98	6.79	60.9	0.14	0.11	12.4	12.5	0.11	3.15	3.26	—	14,252	14,252	0.55	0.67	44.6	14,509
Fast Food Restaurant with Drive Thru	9.46	8.06	72.3	0.17	0.14	14.7	14.8	0.13	3.74	3.87	—	16,910	16,910	0.66	0.79	53.0	17,215
Manufacturing	14.7	48.4	231	0.82	0.71	58.9	59.7	0.67	15.1	15.7	—	85,453	85,453	2.00	6.88	230	87,784
Total	54.7	138	720	2.40	2.05	177	179	1.94	45.1	47.0	—	247,938	247,938	6.28	18.9	681	254,412
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	4.39	16.9	57.5	0.25	0.22	18.6	18.9	0.21	4.76	4.97	—	25,519	25,519	0.66	2.23	1.88	26,202
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
Unrefrigerated Warehouse-No Rail	17.0	65.3	222	0.95	0.87	72.0	72.8	0.82	18.4	19.2	—	98,545	98,545	2.56	8.61	7.27	101,183
Gasoline /Service Station	7.17	7.77	52.3	0.13	0.12	12.4	12.5	0.11	3.15	3.26	—	13,139	13,139	0.63	0.72	1.16	13,370
Fast Food Restaurant with Drive Thru	8.51	9.22	62.1	0.15	0.14	14.7	14.8	0.13	3.74	3.87	—	15,589	15,589	0.75	0.85	1.37	15,863

Manufacturing	13.9	53.5	182	0.78	0.71	58.9	59.7	0.67	15.1	15.7	—	80,730	80,730	2.10	7.06	5.96	82,891
Total	50.9	153	576	2.26	2.05	177	179	1.94	45.1	47.0	—	233,523	233,523	6.71	19.5	17.6	239,510
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	0.80	2.97	10.9	0.05	0.04	3.35	3.39	0.04	0.86	0.89	—	4,288	4,288	0.11	0.37	5.19	4,404
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
Unrefrigerated Warehouse-No Rail	3.09	11.5	42.2	0.18	0.16	12.9	13.1	0.15	3.30	3.45	—	16,558	16,558	0.41	1.41	20.1	17,008
Gasoline/Service Station	0.95	0.67	4.79	0.01	0.01	0.88	0.89	0.01	0.23	0.23	—	909	909	0.06	0.06	1.27	929
Fast Food Restaurant with Drive Thru	1.14	0.83	5.97	0.01	0.01	1.14	1.15	0.01	0.29	0.30	—	1,164	1,164	0.07	0.07	1.63	1,188
Manufacturing	2.40	8.92	32.8	0.14	0.12	10.0	10.2	0.12	2.57	2.68	—	12,863	12,863	0.32	1.10	15.6	13,213
Total	8.37	24.9	96.7	0.38	0.34	28.3	28.7	0.32	7.24	7.56	—	35,782	35,782	0.97	3.00	43.7	36,743

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

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	12,535	12,535	1.08	0.13	—	12,601
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	3,326	3,326	0.29	0.03	—	3,344
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	11,077	11,077	0.95	0.12	—	11,136
Gasoline/Service Station	—	—	—	—	—	—	—	—	—	—	—	13.2	13.2	< 0.005	< 0.005	—	13.3
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	254	254	0.02	< 0.005	—	255
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	6,925	6,925	0.60	0.07	—	6,962
Total	—	—	—	—	—	—	—	—	—	—	—	34,131	34,131	2.94	0.36	—	34,311
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	12,535	12,535	1.08	0.13	—	12,601
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	3,326	3,326	0.29	0.03	—	3,344

Unrefrigerated Warehou Rail	—	—	—	—	—	—	—	—	—	—	—	11,077	11,077	0.95	0.12	—	11,136
Gasoline /Service Station	—	—	—	—	—	—	—	—	—	—	—	13.2	13.2	< 0.005	< 0.005	—	13.3
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	254	254	0.02	< 0.005	—	255
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	6,925	6,925	0.60	0.07	—	6,962
Total	—	—	—	—	—	—	—	—	—	—	—	34,131	34,131	2.94	0.36	—	34,311
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	2,075	2,075	0.18	0.02	—	2,086
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	551	551	0.05	0.01	—	554
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	1,834	1,834	0.16	0.02	—	1,844
Gasoline /Service Station	—	—	—	—	—	—	—	—	—	—	—	2.18	2.18	< 0.005	< 0.005	—	2.19
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	42.0	42.0	< 0.005	< 0.005	—	42.2
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	1,147	1,147	0.10	0.01	—	1,153

Total	—	—	—	—	—	—	—	—	—	—	—	5,651	5,651	0.49	0.06	—	5,681

4.2.2. Electricity Emissions By Land Use - Mitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	12,550	12,550	1.08	0.13	—	12,616
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	3,326	3,326	0.29	0.03	—	3,344
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	11,117	11,117	0.96	0.12	—	11,175
Gasoline /Service Station	—	—	—	—	—	—	—	—	—	—	—	13.2	13.2	< 0.005	< 0.005	—	13.3
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	254	254	0.02	< 0.005	—	255
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	6,945	6,945	0.60	0.07	—	6,982
Total	—	—	—	—	—	—	—	—	—	—	—	34,205	34,205	2.95	0.36	—	34,385
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Refrigerated	—	—	—	—	—	—	—	—	—	—	—	12,535	12,535	1.08	0.13	—	12,601
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	3,326	3,326	0.29	0.03	—	3,344
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	11,077	11,077	0.95	0.12	—	11,136
Gasoline/Service Station	—	—	—	—	—	—	—	—	—	—	—	13.2	13.2	< 0.005	< 0.005	—	13.3
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	254	254	0.02	< 0.005	—	255
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	6,925	6,925	0.60	0.07	—	6,962
Total	—	—	—	—	—	—	—	—	—	—	—	34,131	34,131	2.94	0.36	—	34,311
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	2,077	2,077	0.18	0.02	—	2,087
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	551	551	0.05	0.01	—	554
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	1,837	1,837	0.16	0.02	—	1,847
Gasoline/Service Station	—	—	—	—	—	—	—	—	—	—	—	2.19	2.19	< 0.005	< 0.005	—	2.20

Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	42.0	42.0	< 0.005	< 0.005	—	42.2
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	1,148	1,148	0.10	0.01	—	1,154
Total	—	—	—	—	—	—	—	—	—	—	—	5,657	5,657	0.49	0.06	—	5,687

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	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	0.03	0.57	0.48	< 0.005	0.04	—	0.04	0.04	—	0.04	—	681	681	0.06	< 0.005	—	683
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
Unrefrigerated Warehouse-No Rail	0.09	1.67	1.40	0.01	0.13	—	0.13	0.13	—	0.13	—	1,994	1,994	0.18	< 0.005	—	2,000
Gasoline /Service Station	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.0	15.0	< 0.005	< 0.005	—	15.1
Fast Food Restaurant with Drive Thru	0.01	0.19	0.16	< 0.005	0.01	—	0.01	0.01	—	0.01	—	230	230	0.02	< 0.005	—	231

Manufact	0.36	6.62	5.56	0.04	0.50	—	0.50	0.50	—	0.50	—	7,894	7,894	0.70	0.01	—	7,916
Total	0.50	9.06	7.61	0.05	0.69	—	0.69	0.69	—	0.69	—	10,815	10,815	0.96	0.02	—	10,845
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	0.03	0.57	0.48	< 0.005	0.04	—	0.04	0.04	—	0.04	—	681	681	0.06	< 0.005	—	683
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
Unrefrigerated Warehouse-No Rail	0.09	1.67	1.40	0.01	0.13	—	0.13	0.13	—	0.13	—	1,994	1,994	0.18	< 0.005	—	2,000
Gasoline /Service Station	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.0	15.0	< 0.005	< 0.005	—	15.1
Fast Food Restaurant with Drive Thru	0.01	0.19	0.16	< 0.005	0.01	—	0.01	0.01	—	0.01	—	230	230	0.02	< 0.005	—	231
Manufacturing	0.36	6.62	5.56	0.04	0.50	—	0.50	0.50	—	0.50	—	7,894	7,894	0.70	0.01	—	7,916
Total	0.50	9.06	7.61	0.05	0.69	—	0.69	0.69	—	0.69	—	10,815	10,815	0.96	0.02	—	10,845
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	0.01	0.10	0.09	< 0.005	0.01	—	0.01	0.01	—	0.01	—	113	113	0.01	< 0.005	—	113
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

Unrefrigerated	0.02	0.31	0.26	< 0.005	0.02	—	0.02	0.02	—	0.02	—	330	330	0.03	< 0.005	—	331
Gasoline /Service Station	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.49	2.49	< 0.005	< 0.005	—	2.50
Fast Food Restaurant with Drive Thru	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	38.1	38.1	< 0.005	< 0.005	—	38.2
Manufacturing	0.07	1.21	1.01	0.01	0.09	—	0.09	0.09	—	0.09	—	1,307	1,307	0.12	< 0.005	—	1,311
Total	0.09	1.65	1.39	0.01	0.13	—	0.13	0.13	—	0.13	—	1,791	1,791	0.16	< 0.005	—	1,796

4.2.4. Natural Gas Emissions By Land Use - Mitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	0.03	0.57	0.48	< 0.005	0.04	—	0.04	0.04	—	0.04	—	681	681	0.06	< 0.005	—	683
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
Unrefrigerated Warehouse-No Rail	0.09	1.67	1.40	0.01	0.13	—	0.13	0.13	—	0.13	—	1,994	1,994	0.18	< 0.005	—	2,000
Gasoline /Service Station	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.0	15.0	< 0.005	< 0.005	—	15.1

Fast Food Restaurant with Drive Thru	0.01	0.19	0.16	< 0.005	0.01	—	0.01	0.01	—	0.01	—	230	230	0.02	< 0.005	—	231
Manufacturing	0.36	6.62	5.56	0.04	0.50	—	0.50	0.50	—	0.50	—	7,894	7,894	0.70	0.01	—	7,916
Total	0.50	9.06	7.61	0.05	0.69	—	0.69	0.69	—	0.69	—	10,815	10,815	0.96	0.02	—	10,845
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	0.03	0.57	0.48	< 0.005	0.04	—	0.04	0.04	—	0.04	—	681	681	0.06	< 0.005	—	683
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
Unrefrigerated Warehouse-No Rail	0.09	1.67	1.40	0.01	0.13	—	0.13	0.13	—	0.13	—	1,994	1,994	0.18	< 0.005	—	2,000
Gasoline/Service Station	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.0	15.0	< 0.005	< 0.005	—	15.1
Fast Food Restaurant with Drive Thru	0.01	0.19	0.16	< 0.005	0.01	—	0.01	0.01	—	0.01	—	230	230	0.02	< 0.005	—	231
Manufacturing	0.36	6.62	5.56	0.04	0.50	—	0.50	0.50	—	0.50	—	7,894	7,894	0.70	0.01	—	7,916
Total	0.50	9.06	7.61	0.05	0.69	—	0.69	0.69	—	0.69	—	10,815	10,815	0.96	0.02	—	10,845
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Refrigerated Warehouse-No	0.01	0.10	0.09	< 0.005	0.01	—	0.01	0.01	—	0.01	—	113	113	0.01	< 0.005	—	113
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
Unrefrigerated Warehouse-No Rail	0.02	0.31	0.26	< 0.005	0.02	—	0.02	0.02	—	0.02	—	330	330	0.03	< 0.005	—	331
Gasoline /Service Station	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.49	2.49	< 0.005	< 0.005	—	2.50
Fast Food Restaurant with Drive Thru	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	38.1	38.1	< 0.005	< 0.005	—	38.2
Manufacturing	0.07	1.21	1.01	0.01	0.09	—	0.09	0.09	—	0.09	—	1,307	1,307	0.12	< 0.005	—	1,311
Total	0.09	1.65	1.39	0.01	0.13	—	0.13	0.13	—	0.13	—	1,791	1,791	0.16	< 0.005	—	1,796

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	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	54.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architectural Coatings	3.47	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	17.9	0.92	109	0.01	0.19	—	0.19	0.15	—	0.15	—	449	449	0.02	< 0.005	—	451
Total	75.5	0.92	109	0.01	0.19	—	0.19	0.15	—	0.15	—	449	449	0.02	< 0.005	—	451
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	54.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	3.47	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	57.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	9.86	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.63	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	1.62	0.08	9.83	< 0.005	0.02	—	0.02	0.01	—	0.01	—	36.7	36.7	< 0.005	< 0.005	—	36.8
Total	12.1	0.08	9.83	< 0.005	0.02	—	0.02	0.01	—	0.01	—	36.7	36.7	< 0.005	< 0.005	—	36.8

4.3.2. Mitigated

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

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

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	54.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	3.47	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	57.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	54.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	3.47	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	57.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	9.86	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.63	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	10.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	222	399	621	22.8	0.54	—	1,353
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	592	1,056	1,648	60.8	1.45	—	3,599
Gasoline/Service Station	—	—	—	—	—	—	—	—	—	—	0.23	0.41	0.64	0.02	< 0.005	—	1.39
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	4.65	8.31	13.0	0.48	0.01	—	28.3
Manufacturing	—	—	—	—	—	—	—	—	—	—	296	528	824	30.4	0.73	—	1,800
Total	—	—	—	—	—	—	—	—	—	—	1,114	1,992	3,106	114	2.74	—	6,782
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	222	399	621	22.8	0.54	—	1,353
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

Unrefrigerated Warehou Rail	—	—	—	—	—	—	—	—	—	—	592	1,056	1,648	60.8	1.45	—	3,599
Gasoline /Service Station	—	—	—	—	—	—	—	—	—	—	0.23	0.41	0.64	0.02	< 0.005	—	1.39
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	4.65	8.31	13.0	0.48	0.01	—	28.3
Manufacturing	—	—	—	—	—	—	—	—	—	—	296	528	824	30.4	0.73	—	1,800
Total	—	—	—	—	—	—	—	—	—	—	1,114	1,992	3,106	114	2.74	—	6,782
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	36.7	66.1	103	3.77	0.09	—	224
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	97.9	175	273	10.1	0.24	—	596
Gasoline /Service Station	—	—	—	—	—	—	—	—	—	—	0.04	0.07	0.11	< 0.005	< 0.005	—	0.23
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	0.77	1.38	2.15	0.08	< 0.005	—	4.69
Manufacturing	—	—	—	—	—	—	—	—	—	—	49.0	87.4	136	5.03	0.12	—	298

Total	—	—	—	—	—	—	—	—	—	—	184	330	514	18.9	0.45	—	1,123

4.4.2. Mitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	222	399	621	22.8	0.54	—	1,353
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	592	1,056	1,648	60.8	1.45	—	3,599
Gasoline/Service Station	—	—	—	—	—	—	—	—	—	—	0.23	0.41	0.64	0.02	< 0.005	—	1.39
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	4.65	8.31	13.0	0.48	0.01	—	28.3
Manufacturing	—	—	—	—	—	—	—	—	—	—	296	528	824	30.4	0.73	—	1,800
Total	—	—	—	—	—	—	—	—	—	—	1,114	1,992	3,106	114	2.74	—	6,782
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Refrigerated	—	—	—	—	—	—	—	—	—	—	222	399	621	22.8	0.54	—	1,353
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	592	1,056	1,648	60.8	1.45	—	3,599
Gasoline/Service Station	—	—	—	—	—	—	—	—	—	—	0.23	0.41	0.64	0.02	< 0.005	—	1.39
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	4.65	8.31	13.0	0.48	0.01	—	28.3
Manufacturing	—	—	—	—	—	—	—	—	—	—	296	528	824	30.4	0.73	—	1,800
Total	—	—	—	—	—	—	—	—	—	—	1,114	1,992	3,106	114	2.74	—	6,782
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	36.7	66.1	103	3.77	0.09	—	224
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	97.9	175	273	10.1	0.24	—	596
Gasoline/Service Station	—	—	—	—	—	—	—	—	—	—	0.04	0.07	0.11	< 0.005	< 0.005	—	0.23

Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	0.77	1.38	2.15	0.08	< 0.005	—	4.69
Manufacturing	—	—	—	—	—	—	—	—	—	—	49.0	87.4	136	5.03	0.12	—	298
Total	—	—	—	—	—	—	—	—	—	—	184	330	514	18.9	0.45	—	1,123

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	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	254	0.00	254	25.3	0.00	—	887
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	676	0.00	676	67.6	0.00	—	2,366
Gasoline /Service Station	—	—	—	—	—	—	—	—	—	—	2.61	0.00	2.61	0.26	0.00	—	9.15

Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	49.7	0.00	49.7	4.96	0.00	—	174
Manufacturing	—	—	—	—	—	—	—	—	—	—	446	0.00	446	44.6	0.00	—	1,561
Total	—	—	—	—	—	—	—	—	—	—	1,428	0.00	1,428	143	0.00	—	4,997
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	254	0.00	254	25.3	0.00	—	887
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	676	0.00	676	67.6	0.00	—	2,366
Gasoline/Service Station	—	—	—	—	—	—	—	—	—	—	2.61	0.00	2.61	0.26	0.00	—	9.15
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	49.7	0.00	49.7	4.96	0.00	—	174
Manufacturing	—	—	—	—	—	—	—	—	—	—	446	0.00	446	44.6	0.00	—	1,561
Total	—	—	—	—	—	—	—	—	—	—	1,428	0.00	1,428	143	0.00	—	4,997
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Refrigerated Warehouse-No	—	—	—	—	—	—	—	—	—	—	42.0	0.00	42.0	4.20	0.00	—	147
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	112	0.00	112	11.2	0.00	—	392
Gasoline /Service Station	—	—	—	—	—	—	—	—	—	—	0.43	0.00	0.43	0.04	0.00	—	1.51
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	8.22	0.00	8.22	0.82	0.00	—	28.8
Manufacturing	—	—	—	—	—	—	—	—	—	—	73.9	0.00	73.9	7.38	0.00	—	258
Total	—	—	—	—	—	—	—	—	—	—	236	0.00	236	23.6	0.00	—	827

4.5.2. Mitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	254	0.00	254	25.3	0.00	—	887
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

Unrefrige Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	676	0.00	676	67.6	0.00	—	2,366
Gasoline /Service Station	—	—	—	—	—	—	—	—	—	—	2.61	0.00	2.61	0.26	0.00	—	9.15
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	49.7	0.00	49.7	4.96	0.00	—	174
Manufacturing	—	—	—	—	—	—	—	—	—	—	446	0.00	446	44.6	0.00	—	1,561
Total	—	—	—	—	—	—	—	—	—	—	1,428	0.00	1,428	143	0.00	—	4,997
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	254	0.00	254	25.3	0.00	—	887
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	676	0.00	676	67.6	0.00	—	2,366
Gasoline /Service Station	—	—	—	—	—	—	—	—	—	—	2.61	0.00	2.61	0.26	0.00	—	9.15
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	49.7	0.00	49.7	4.96	0.00	—	174

Manufacturing	—	—	—	—	—	—	—	—	—	—	446	0.00	446	44.6	0.00	—	1,561
Total	—	—	—	—	—	—	—	—	—	—	1,428	0.00	1,428	143	0.00	—	4,997
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	42.0	0.00	42.0	4.20	0.00	—	147
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	112	0.00	112	11.2	0.00	—	392
Gasoline/Service Station	—	—	—	—	—	—	—	—	—	—	0.43	0.00	0.43	0.04	0.00	—	1.51
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	8.22	0.00	8.22	0.82	0.00	—	28.8
Manufacturing	—	—	—	—	—	—	—	—	—	—	73.9	0.00	73.9	7.38	0.00	—	258
Total	—	—	—	—	—	—	—	—	—	—	236	0.00	236	23.6	0.00	—	827

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

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13,342	13,342
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.5	12.5
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	174	174
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13,529	13,529
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13,342	13,342
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.5	12.5
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	174	174
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13,529	13,529
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2,209	2,209

Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.07	2.07
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	28.8	28.8
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2,240	2,240

4.6.2. Mitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13,342	13,342
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.5	12.5
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	174	174
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13,529	13,529
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13,342	13,342

Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.5	12.5
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	174	174
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13,529	13,529
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2,209	2,209
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.07	2.07
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	28.8	28.8
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2,240	2,240

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	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7.2. Mitigated

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

Equipment Type	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	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8.2. Mitigated

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

Equipment Type	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	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

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

Equipment Type	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	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	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	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

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

Vegetation	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

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

Land Use	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

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

Species	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

5.9. 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
Refrigerated Warehouse-No Rail	1,061	1,061	1,061	387,400	25,621	25,621	25,621	9,351,832
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unrefrigerated Warehouse-No Rail	4,099	4,099	4,099	1,496,001	98,941	98,941	98,941	36,113,476
Gasoline/Service Station	1,555	2,034	1,560	592,858	3,538	17,367	13,321	2,522,528
Fast Food Restaurant with Drive Thru	1,845	2,414	1,851	703,399	5,151	20,606	15,805	3,241,435
Manufacturing	3,171	3,358	3,077	1,162,203	76,542	81,054	74,286	28,055,583

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Refrigerated Warehouse-No Rail	1,061	1,061	1,061	387,400	25,621	25,621	25,621	9,351,832
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Unrefrigerated Warehouse-No Rail	4,099	4,099	4,099	1,496,001	98,941	98,941	98,941	36,113,476
Gasoline/Service Station	1,555	2,034	1,560	592,858	3,538	17,367	13,321	2,522,528
Fast Food Restaurant with Drive Thru	1,845	2,414	1,851	703,399	5,151	20,606	15,805	3,241,435
Manufacturing	3,171	3,358	3,077	1,162,203	76,542	81,054	74,286	28,055,583

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	3,768,761	1,256,254	217,130

5.10.3. Landscape Equipment

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

5.10.4. Landscape Equipment - Mitigated

Season	Unit	Value
Snow Days	day/yr	0.00

Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

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

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Refrigerated Warehouse-No Rail	11,946,584	383	0.0330	0.0040	2,126,171
Parking Lot	3,170,102	383	0.0330	0.0040	0.00
Unrefrigerated Warehouse-No Rail	10,557,245	383	0.0330	0.0040	6,223,154
Gasoline/Service Station	12,567	383	0.0330	0.0040	46,901
Fast Food Restaurant with Drive Thru	241,789	383	0.0330	0.0040	718,454
Manufacturing	6,600,304	383	0.0330	0.0040	24,632,556

5.11.2. Mitigated

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)
Refrigerated Warehouse-No Rail	11,946,584	383	0.0330	0.0040	2,126,171
Parking Lot	3,170,102	383	0.0330	0.0040	0.00
Unrefrigerated Warehouse-No Rail	10,557,245	383	0.0330	0.0040	6,223,154
Gasoline/Service Station	12,567	383	0.0330	0.0040	46,901
Fast Food Restaurant with Drive Thru	241,789	383	0.0330	0.0040	718,454
Manufacturing	6,600,304	383	0.0330	0.0040	24,632,556

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Refrigerated Warehouse-No Rail	115,774,388	1,843,297
Parking Lot	0.00	0.00
Unrefrigerated Warehouse-No Rail	308,732,625	0.00
Gasoline/Service Station	119,537	0.00
Fast Food Restaurant with Drive Thru	2,428,270	0.00
Manufacturing	154,366,313	0.00

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Refrigerated Warehouse-No Rail	115,774,388	1,843,297
Parking Lot	0.00	0.00
Unrefrigerated Warehouse-No Rail	308,732,625	0.00
Gasoline/Service Station	119,537	0.00
Fast Food Restaurant with Drive Thru	2,428,270	0.00
Manufacturing	154,366,313	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Refrigerated Warehouse-No Rail	471	—
Parking Lot	0.00	—
Unrefrigerated Warehouse-No Rail	1,255	—

Gasoline/Service Station	4.85	—
Fast Food Restaurant with Drive Thru	92.2	—
Manufacturing	828	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Refrigerated Warehouse-No Rail	471	—
Parking Lot	0.00	—
Unrefrigerated Warehouse-No Rail	1,255	—
Gasoline/Service Station	4.85	—
Fast Food Restaurant with Drive Thru	92.2	—
Manufacturing	828	—

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
Refrigerated Warehouse-No Rail	Cold storage	R-404A	3,922	7.50	7.50	7.50	25.0
Fast Food Restaurant with Drive Thru	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00
Fast Food Restaurant with Drive Thru	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0
Fast Food Restaurant with Drive Thru	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
Manufacturing	Other commercial A/C and heat pumps	R-410A	2,088	0.30	4.00	4.00	18.0

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Refrigerated Warehouse-No Rail	Cold storage	R-404A	3,922	7.50	7.50	7.50	25.0
Fast Food Restaurant with Drive Thru	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00
Fast Food Restaurant with Drive Thru	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0
Fast Food Restaurant with Drive Thru	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
Manufacturing	Other commercial A/C and heat pumps	R-410A	2,088	0.30	4.00	4.00	18.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

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

5.15.2. Mitigated

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

5.18.1.2. Mitigated

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

5.18.1.2. Mitigated

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)

5.18.2.2. Mitigated

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	21.4	annual days of extreme heat
Extreme Precipitation	1.80	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	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	N/A	N/A	N/A	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	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	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	N/A	N/A	N/A	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 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	65.7
AQ-PM	53.3
AQ-DPM	54.3
Drinking Water	99.8
Lead Risk Housing	20.3
Pesticides	96.3
Toxic Releases	61.9
Traffic	59.4
Effect Indicators	—
CleanUp Sites	61.8
Groundwater	56.9
Haz Waste Facilities/Generators	78.5
Impaired Water Bodies	58.7
Solid Waste	52.9
Sensitive Population	—
Asthma	40.7
Cardio-vascular	46.7
Low Birth Weights	34.8
Socioeconomic Factor Indicators	—
Education	56.0
Housing	13.6
Linguistic	27.3
Poverty	37.6
Unemployment	53.9

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	77.6337739
Employed	66.08494803
Median HI	70.47350186
Education	—
Bachelor's or higher	51.84139612
High school enrollment	3.284999358
Preschool enrollment	28.28179135
Transportation	—
Auto Access	67.17567047
Active commuting	33.28628256
Social	—
2-parent households	81.72719107
Voting	68.04824843
Neighborhood	—
Alcohol availability	82.16348005
Park access	34.18452457
Retail density	23.02065957
Supermarket access	16.19402027
Tree canopy	72.11600154
Housing	—
Homeownership	84.11394842
Housing habitability	85.60246375
Low-inc homeowner severe housing cost burden	86.86000257
Low-inc renter severe housing cost burden	83.45951495
Uncrowded housing	60.77248813
Health Outcomes	—

Insured adults	82.81791351
Arthritis	8.6
Asthma ER Admissions	54.7
High Blood Pressure	16.4
Cancer (excluding skin)	15.0
Asthma	55.1
Coronary Heart Disease	15.5
Chronic Obstructive Pulmonary Disease	23.6
Diagnosed Diabetes	41.8
Life Expectancy at Birth	62.7
Cognitively Disabled	74.6
Physically Disabled	28.8
Heart Attack ER Admissions	24.8
Mental Health Not Good	58.7
Chronic Kidney Disease	45.1
Obesity	47.2
Pedestrian Injuries	58.9
Physical Health Not Good	49.1
Stroke	34.3
Health Risk Behaviors	—
Binge Drinking	69.8
Current Smoker	51.2
No Leisure Time for Physical Activity	53.2
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	56.6
Elderly	55.1

English Speaking	62.2
Foreign-born	40.4
Outdoor Workers	29.9
Climate Change Adaptive Capacity	—
Impervious Surface Cover	72.8
Traffic Density	67.6
Traffic Access	0.0
Other Indices	—
Hardship	32.8
Other Decision Support	—
2016 Voting	72.1

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	61.0
Healthy Places Index Score for Project Location (b)	55.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	No demolition
Operations: Fleet Mix	Fleet mix adjusted to account for truck trips detailed within the Project traffic study. Other trips proportioned based on CalEEMod defaults.
Operations: Vehicle Data	Based on traffic study
Land Use	—

Source: EMFAC2025 (v2.0.0) Emissions Inventory
Region Type: Sub-Area
Region: Stanislaus (SJV)
Calendar Year: 2025, 2028
Season: Annual
Vehicle Classification: EMFAC202Y Categories
Units: miles/day for Combustion VMT and Electric VMT, trips/day for Trips, tons/day for Emissions, 1000 g

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel
Stanislaus (SJV)	2025	LDA	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2025	LDA	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	LDT1	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2025	LDT1	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	LDT2	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2025	LDT2	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	LHD1 Other	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2025	LHD1 Other	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	LHD1 Public	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2025	LHD1 Public	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	LHD2 Other	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2025	LHD2 Other	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	LHD2 Public	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2025	LHD2 Public	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	MCY	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2025	MDV	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2025	MDV	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	MH	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2025	MH	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	Motor Coach	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	OBUS	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2025	OBUS	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	PTO	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	SBUS	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2025	SBUS	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6 CAIRP Class 4	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6 CAIRP Class 5	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6 CAIRP Class 6	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6 CAIRP Class 7	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6 Instate Delivery Cl	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6 Instate Delivery Cl	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6 Instate Delivery Cl	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6 Instate Delivery Cl	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6 Instate Other Clas	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6 Instate Other Clas	Aggregate	Aggregate	Diesel

Stanislaus (SJV)	2025	T6 Instate Other Clas	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6 Instate Other Clas	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6 Instate Tractor Cla	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6 Instate Tractor Cla	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6 OOS Class 4	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6 OOS Class 5	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6 OOS Class 6	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6 OOS Class 7	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6 Public Class 4	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6 Public Class 5	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6 Public Class 6	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6 Public Class 7	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6 Utility Class 5	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6 Utility Class 6	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6 Utility Class 7	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T6TS	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2025	T7 CAIRP Class 8	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T7 NNOOS Class 8	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T7 NOOS Class 8	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T7 Other Port Class 8	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T7 POAK Class 8	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T7 POLA Class 8	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T7 Public Class 8	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T7 Single Concrete/Tı	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T7 Single Dump Class	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T7 Single Other Class	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T7 SWCV Class 8	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T7 Tractor Class 8	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T7 Utility Class 8	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2025	T7IS	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2025	UBUS	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2025	UBUS	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	LDA	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2028	LDA	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	LDT1	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2028	LDT1	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	LDT2	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2028	LDT2	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	LHD1 Other	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2028	LHD1 Other	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	LHD1 Public	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2028	LHD1 Public	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	LHD2 Other	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2028	LHD2 Other	Aggregate	Aggregate	Diesel

Stanislaus (SJV)	2028	LHD2 Public	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2028	LHD2 Public	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	MCY	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2028	MDV	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2028	MDV	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	MH	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2028	MH	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	Motor Coach	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	OBUS	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2028	OBUS	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	PTO	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	SBUS	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2028	SBUS	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 CAIRP Class 4	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 CAIRP Class 5	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 CAIRP Class 6	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 CAIRP Class 7	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 Instate Delivery Cl	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 Instate Delivery Cl	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 Instate Delivery Cl	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 Instate Delivery Cl	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 Instate Other Clas	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 Instate Other Clas	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 Instate Other Clas	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 Instate Other Clas	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 Instate Tractor Cla	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 Instate Tractor Cla	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 OOS Class 4	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 OOS Class 5	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 OOS Class 6	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 OOS Class 7	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 Public Class 4	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 Public Class 5	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 Public Class 6	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 Public Class 7	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 Utility Class 5	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 Utility Class 6	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6 Utility Class 7	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T6TS	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2028	T7 CAIRP Class 8	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T7 NNOOS Class 8	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T7 NOOS Class 8	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T7 Other Port Class 8	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T7 POAK Class 8	Aggregate	Aggregate	Diesel

Stanislaus (SJV)	2028	T7 POLA Class 8	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T7 Public Class 8	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T7 Single Concrete/Tı	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T7 Single Dump Class	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T7 Single Other Class	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T7 SWCV Class 8	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T7 Tractor Class 8	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T7 Utility Class 8	Aggregate	Aggregate	Diesel
Stanislaus (SJV)	2028	T7IS	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2028	UBUS	Aggregate	Aggregate	Gasoline
Stanislaus (SJV)	2028	UBUS	Aggregate	Aggregate	Diesel

gallons/day for Fuel Consumption, kWh/day for Energy Consumption, kg/day for Hydrogen Cor

Population	Total VMT	Trips	Fuel Consumption	**MPG**	
156274.0416	4797786.78	674620.3	184.6030131	**25.98975**	
392.6686014	10443.71156	1608.403	0.280727108	**37.20236**	
17237.73051	448874.3288	67821.91	20.63194247	**21.75628**	
8.906637885	131.0576239	24.33694	0.005921303	**22.13324**	
79078.0717	2653468.362	371966.3	122.236183	**21.70772**	
129.5145246	4585.365514	629.7504	0.156339737	**29.32949**	
7796.725915	233774.9655	112109.5	24.82400579	**9.417294**	
8426.191466	251795.7571	102295.4	15.94123371	**15.79525**	
647.267876	19407.50862	9307.099	2.060837033	**9.417294**	
63.17395234	1887.79631	766.9423	0.119516717	**15.79525**	
1726.777175	63610.6394	28130.2	7.048711707	**9.024435**	
4346.851748	168268.5925	59786.85	12.35147002	**13.62337**	
204.6970254	7540.584192	3334.633	0.835574121	**9.024435**	
114.4881995	4431.889862	1574.677	0.325315342	**13.62337**	
10423.13069	51164.17297	19959.5	1.327215941	**38.55**	
80086.67623	2484968.365	357832.4	142.9486736	**17.38364**	
2229.010203	83655.24073	10708.83	3.541359045	**23.62236**	
1308.820118	10657.75089	139.3493	2.417744379	**4.408138**	
608.2628808	5086.336505	64.73548	0.542145586	**9.381865**	
13.57079365	1613.298087	311.8568	0.291505513	**5.534366**	
136.8140976	4001.186429	1218.133	0.855440912	**4.677338**	
59.15392613	2792.788753	526.4699	0.32669876	**8.548513**	
0	8073.726994	0	1.603003773	**5.036624**	
227.5757452	9668.23573	910.303	0.992014074	**9.746067**	
438.3928403	8883.669038	6347.928	1.089958705	**8.150464**	**MHD**
10.90942959	622.8691933	250.6987	0.069625402	**8.946005**	**8.429362**
19.565584	1128.977518	449.6171	0.125638564	**8.985915**	
47.89248112	2716.953212	1100.569	0.301767961	**9.003452**	
75.58147236	13763.98346	1736.862	1.424284009	**9.663791**	
104.6060307	3079.970858	1492.728	0.379081579	**8.124823**	
124.3994417	3732.790597	1775.18	0.459250753	**8.128001**	
451.4173634	13558.61009	6441.726	1.649115596	**8.221746**	
122.2054271	5522.627311	1743.871	0.661733206	**8.345701**	
302.4654795	10914.45256	3496.501	1.322482747	**8.253002**	
1322.227177	50158.21046	15284.95	5.924751533	**8.465876**	

724.6204081	26948.03808	8376.612	3.173338741	**8.492014**	
410.5334459	17293.35961	4745.767	2.025952689	**8.535915**	
10.11618308	543.731894	116.9431	0.060107382	**9.046009**	
352.3436803	20621.38647	4073.093	2.20814634	**9.338777**	
6.256994789	362.6331803	143.7857	0.039785109	**9.114797**	
11.19846758	656.5964266	257.3408	0.071725037	**9.154355**	
27.48332062	1579.477477	631.5667	0.172230557	**9.170716**	
43.29604772	9209.69102	994.9432	0.93402731	**9.860195**	
23.73703265	625.0791028	121.771	0.087744086	**7.123889**	
95.13613267	2950.435497	488.0484	0.387471622	**7.614585**	
77.39683879	2216.02034	397.0458	0.301043788	**7.361123**	
125.4408725	4377.911688	643.5117	0.580844926	**7.537144**	
34.88088758	1243.098402	446.4754	0.146624698	**8.478097**	
6.16566719	217.6770563	78.92054	0.02500643	**8.704844**	
5.845803247	247.1632372	74.82628	0.028186902	**8.768726**	
732.6089662	29888.6608	14658.04	6.327107488	**4.723906**	
2290.71005	357825.5057	52640.52	58.7700334	**6.088571**	
1743.491783	410591.9112	40065.44	64.51500917	**6.364285**	
677.3654005	146020.1796	15565.86	23.85203368	**6.121917**	
20.74376521	4175.40207	339.368	0.686704752	**6.080345**	**HHD**
97.02705908	9580.550173	1587.363	1.637414831	**5.851022**	**5.532019**
86.07636544	14305.15565	1408.209	2.402326939	**5.954708**	
277.3267178	10022.79561	1422.686	1.936173199	**5.176601**	
122.0064989	6640.843257	1149.301	1.122830334	**5.914378**	
167.8206183	8810.831164	1580.87	1.512899724	**5.823804**	
431.9523217	23928.59971	4068.991	4.053742358	**5.902842**	
112.6551683	6574.772084	518.2138	2.491554624	**2.638823**	
2049.32776	168226.8014	29776.73	26.69974667	**6.300689**	
11.88852594	501.2855797	152.1731	0.084559783	**5.92818**	
1.022227524	14.81596407	20.45273	0.004486831	**3.3021**	
23.30006299	1276.555369	93.20025	0.272076193	**4.691904**	
48.66727158	4864.862162	194.6691	0.671992936	**7.239454**	
144590.3	4354124.792	611569.2	160.9317669	**27.05572**	
265.9647508	6788.166396	1086.685	0.175334028	**38.71562**	
15907.52014	410641.6302	61714.17	18.19886112	**22.56414**	
1.968322022	28.27414235	5.254607	0.00118313	**23.89775**	
82311.12898	2739123.84	383506.4	119.6337982	**22.8959**	
132.1252772	4566.012263	640.045	0.140897297	**32.40667**	
7094.850425	208325.4522	101532.8	21.52652337	**9.677617**	
7477.75467	212063.3976	90350.11	13.35350559	**15.88073**	
588.999641	17294.74326	8429.04	1.78708694	**9.677617**	
56.06320708	1589.909632	677.3847	0.100115661	**15.88073**	
1683.666073	57766.48455	27303.02	6.29013176	**9.183668**	
4449.78451	161821.1468	60923.94	11.70522309	**13.8247**	

199.5865141	6847.801632	3236.576	0.745649919	**9.183668**		
117.199262	4262.075824	1604.626	0.308294369	**13.8247**		
10241.08131	49525.19077	19616.38	1.268434137	**39.04435**		
75753.48535	2307753.67	333964.3	127.1207431	**18.15403**		
2527.873156	91210.32315	11966.87	3.726043087	**24.47914**	**MHD**	
1167.913907	9588.755693	123.7275	2.173595325	**4.411472**	**8.635693**	
553.1814498	4515.773689	58.58001	0.481705528	**9.374552**		
16.29114959	1793.243817	374.3706	0.311453603	**5.75766**		
116.9324666	3007.080879	1041.115	0.634806846	**4.737001**		
65.59563361	3227.353793	583.8011	0.368407624	**8.76028**		
0	7936.325825	0	1.504716427	**5.2743**		
221.6692598	9445.953327	886.677	0.960944553	**9.829863**		
435.2062216	8538.466905	6301.786	1.043581809	**8.181886**		
11.33743514	623.1548263	260.5343	0.068004167	**9.16348**		
20.46852282	1128.740097	470.3667	0.122925501	**9.18231**		
49.80680252	2726.193577	1144.56	0.296307677	**9.20055**		
77.72718399	14053.52879	1786.171	1.399931278	**10.03873**		
108.1733832	3127.936633	1543.634	0.376994298	**8.29704**		
129.7605553	3788.029252	1851.683	0.457206413	**8.285162**		
470.1990534	13762.08453	6709.74	1.64567317	**8.362587**		
129.4061745	5545.651328	1846.626	0.650398185	**8.526548**		
321.388535	11266.00087	3715.251	1.35257719	**8.329285**		
1433.606012	51777.92502	16572.49	6.070425407	**8.529538**		
781.0699915	28113.47639	9029.169	3.291015353	**8.542493**		
438.3695569	17252.08443	5067.552	1.986916169	**8.682845**		
7.953759347	576.6443471	91.94546	0.064563272	**8.931461**		
340.4877285	20331.19817	3936.038	2.049072629	**9.922146**		
6.712328921	380.0462807	154.2493	0.039746577	**9.561736**		
12.04573161	687.7535618	276.8109	0.071680928	**9.594652**		
29.10576985	1634.044319	668.8506	0.170509962	**9.583278**		
44.24340101	9475.654043	1016.713	0.909476364	**10.4188**		
12.80300701	362.8079816	65.67943	0.050371027	**7.202712**		
68.92949479	2161.840929	353.6083	0.278606946	**7.759465**		
49.17447271	1441.453633	252.265	0.191342519	**7.533368**		
85.84939523	2967.25234	440.4074	0.38874444	**7.632913**		
29.42880978	1249.456455	376.6888	0.147559674	**8.467466**		
5.92790483	206.2029515	75.87718	0.023140599	**8.910873**		
5.14178486	234.2784065	65.81485	0.025983257	**9.016514**		
719.1131864	28916.29431	14388.02	5.959596931	**4.852055**		
2395.508378	379417.1746	55048.78	61.25464838	**6.194096**		
1860.657358	435249.8959	42757.91	63.6451144	**6.838701**		
723.7987593	154295.5502	16632.9	23.68653116	**6.514063**	**HHD**	
16.80755728	4427.160318	274.9716	0.671159588	**6.596286**	**5.787117**	
89.24644229	9805.275963	1460.072	1.581945147	**6.19824**		

69.15793672	15419.65009	1131.424	2.393409308	**6.442546**
192.4103479	6830.22705	987.0651	1.290372854	**5.29322**
131.0545727	6303.626427	1234.534	1.049002618	**6.009162**
173.6919291	8528.981752	1636.178	1.443608412	**5.908099**
434.2668241	23784.68169	4090.793	3.905539408	**6.089986**
97.48076199	5825.540641	448.4115	2.128722033	**2.736638**
2092.717548	171908.6738	30407.19	25.89550902	**6.638552**
11.0970392	477.4658972	142.0421	0.077578583	**6.15461**
1.097434008	17.78997013	21.95746	0.005223975	**3.405447**
22.36281758	1231.620271	89.45127	0.262497138	**4.691938**
44.3610955	4458.25447	177.4444	0.614356909	**7.256783**

On-road Mobile (Operational) Energy Usage

Unmitigated:

Step 1:

Therefore:

Average Daily VMT:

81,054	Source: CalEEMod

Note: Maximum daily value used.

Step 2: Given:

Fleet Mix (CalEEMod Output) Note: Conservative values used.

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
43.26%	3.36%	18.54%	15.87%	0.00%	0.00%	7.76%	9.05%	0.06%	0.00%	2.21%	0.00%	0.00%

And:

Gasoline MPG Factors for each Vehicle Class - Year 2025 (EMFAC2021 Output)

LDA	LDT1	LDT2	MDV	MCY	MH
27.056	22.564	22.896	18.154	39.044	4.411

Diesel MPG Factors for each Vehicle Class - Year 2023 (EMFAC2021 Output)

LHD1	LHD2	MHD	HHD	OBUS	UBUS	SBUS
15.881	13.825	8.636	5.787	8.760	7.257	8.182

Therefore:

Weighted Average MPG Factors

Gasoline:	**24.6**	Diesel:	**7.1**

Step 3: **Therefore:**

2,746	**daily gallons of gasoline**	**1,932**	**daily gallons of diesel**

or

1,002,338	**annual gallons of gasoline**	**705,353**	**annual gallons of diesel**

Off-road Mobile (Construction) Energy Usage

Note: For the sake of simplicity, and as a conservative estimation, it was assumed that all off-road vehicles use diesel fuel as an energy source.

Given Factor:	**1,178.4**	**metric tons**	**CO2**	**(provided in CalEEMod Output File)**
Conversion Factor:	2204.6262	pounds	per metric ton	
Intermediate Result:	**2,597,843**	**pounds**	**CO2**	
Conversion Factor:	22.38	pounds	CO2 per 1 gallon of diesel fuel	Source: U.S. EIA, 2016
Final Result:	**116,079**	**gallons**	**diesel fuel**	http://www.eia.gov/tools/faqs/faq.cfm?id=307&t=11

Mitigated Onsite Scenario	Total CO2 (MT/yr) (provided in CalEEMod Output File)
Site Preparation (2027)	53.0
Grading (2027)	165.0

On-road Mobile (Construction) Energy Usage - Site Preparation

Note: Year 2021 MPG factors were derived for construction-releated energy consumption (for the sake of a conservative estimate).

Step 1: **Total Daily Worker Trips (CalEEMod Output)**

18

Worker Trip Length (miles) (CalEEMod Output)

10.8

Therefore:

Average Worker Daily VMT:

194

Step 2: Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	LDT1	LDT2
0.5	0.25	0.25

And:

Gasoline MPG Factors for each Vehicle Class (EMFAC2025 Output) - Year 2025

LDA	LDT1	LDT2
25.99	21.76	21.71

Therefore:

Weighted Average Worker MPG Factor

23.9

Step 3: **Therefore:**

8.1 **Worker daily gallons of gasoline**

Step 4: 22 **# of Days (CalEEMod Output)**

Therefore:

Result: **179** **Total gallons of gasoline**

On-road Mobile (Construction) Energy Usage - Grading

Note: Year 2021 MPG factors were derived for construction-releated energy consumption (for the sake of a conservative estimate).

Step 1: **Total Daily Worker Trips (CalEEMod Output)**

20

Worker Trip Length (miles) (CalEEMod Output)

10.8

Therefore:

Average Worker Daily VMT:

216

Step 2: Given:

Assumed Fleet Mix for Workers

LDA	LDT1	LDT2
0.5	0.25	0.25

(Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

And:

Gasoline MPG Factors for each Vehicle Class (EMFAC2025 Output) - Year 2025

LDA	LDT1	LDT2
25.99	21.76	21.71

Therefore:

Weighted Average Worker MPG Factor

23.9

Step 3: **Therefore:**

9.1 Worker daily gallons of gasoline

Step 4: 55 **# of Days (CalEEMod Output)**

Therefore:

Result: **498** **Total gallons of gasoline**

On-road Mobile (Construction) Energy Usage - Building Construction

Note: Year 2021 MPG factors were derived for construction-releated energy consumption (for the sake of a conservative estimate).

Step 1:

Total Daily Worker Trips (CalEEMod Output)

1,090

Note: Assumes 5% of workers are on-site on a given day.

Total Daily Vendor Trips (CalEEMod Output)

430

Note: Assumes 5% of workers are on-site on a given day.

Worker Trip Length (miles) (CalEEMod Output)

10.8

Vendor Trip Length (miles) (CalEEMod Output)

7.17

Therefore:

Average Worker Daily VMT:

11,772

Average Vendor Daily VMT:

3,083

Step 2:

Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	LDT1	LDT2
0.5	0.25	0.25

Fleet Mix for Workers (CalEEMod Output)

MHD	HHD
100%	0%

Assumed Fleet Mix for Vendors

And:

MPG Factors for each Vehicle Class (from EMFAC2025) - Year 2025

Gasoline:

LDA	LDT1	LDT2
25.99	21.76	21.71

Diesel:

MHD	HHD
8.58	5.60

Therefore:

Weighted Average Worker (Gasoline) MPG Factor

23.9

Weighted Average Vendor (Diesel) MPG Factor

8.6

Step 3:

Therefore:

493 **Worker daily gallons of gasoline**

Therefore:

359 **Vendor daily gallons of diesel**

Step 4:

40 **# of Days (CalEEMod Output)**

Therefore:

19,734 **Total gallons of gasoline**

Therefore:

14,375 **Total gallons of diesel**

On-road Mobile (Construction) Energy Usage - Paving

Note: Year 2021 MPG factors were derived for construction-releated energy consumption (for the sake of a conservative estimate).

Step 1: **Total Daily Worker Trips (CalEEMod Output)**

15

Worker Trip Length (miles) (CalEEMod Output)

10.8

Therefore:

Average Worker Daily VMT:

162

Step 2: Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	LDT1	LDT2
0.5	0.25	0.25

And:

Gasoline MPG Factors for each Vehicle Class (EMFAC2025 Output) - Year 2025

LDA	LDT1	LDT2
25.99	21.76	21.71

Therefore:

Weighted Average Worker MPG Factor

23.9

Step 3: **Therefore:**

6.8 **Worker daily gallons of gasoline**

Step 4: 40 **# of Days (CalEEMod Output)**

Therefore:

Result: **272** **Total gallons of gasoline**

On-road Mobile (Construction) Energy Usage - Architectural Coatings

Note: Year 2021 MPG factors were derived for construction-releated energy consumption (for the sake of a conservative estimate).

Step 1: **Total Daily Worker Trips (CalEEMod Output)**

218

Worker Trip Length (miles) (CalEEMod Output)

10.8

Therefore:

Average Worker Daily VMT:

2,354

Step 2: Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	LDT1	LDT2
0.5	0.25	0.25

And:

Gasoline MPG Factors for each Vehicle Class (EMFAC2025 Output) - Year 2025

LDA	LDT1	LDT2
25.99	21.76	21.71

Therefore:

Weighted Average Worker MPG Factor

23.9

Step 3: **Therefore:**

98.7 **Worker daily gallons of gasoline**

Step 4: 40 **# of Days (CalEEMod Output)**

Therefore:

Result: **3,947** **Total gallons of gasoline**

AIR TOXICS HEALTH RISK ASSESSMENT

FOR THE

SCANNELL INDUSTRIAL PROJECT

MODESTO CALIFORNIA

JULY 16, 2025

PROJECT TITLE

Scannell Industrial

PREPARED BY:

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INTRODUCTION

This Health Risk Assessment (HRA) was prepared to assess potential public health risks related to air pollution that may be generated by the proposed Scannell Industrial Project in the City of Modesto, Stanislaus County, California. This report analyzes the emissions of toxic air pollutants within the project area and their impacts on public health.

PROJECT DESCRIPTION

PROJECT LOCATION

The Project (proposed Project) is comprised of approximately 145 acres located at the northwest corner of Kiernan Avenue and Dale Road intersection, within the unincorporated Community of Salida. The Project site is located within the Stanislaus County Salida Community Plan (SCP) and is zoned for development as Salida Community Plan Industrial/Business Park (SCP-IBP) and Salida Community Plan Planned Industrial (SCP-PI). The area is also within the City of Modesto General Plan Planning Area with a designation of Salida Community Plan (SCP). The Project location is provided in Figure 1. An aerial view of the Project site is provided in Figure 2.

FIGURE-1: PROJECT LOCATION

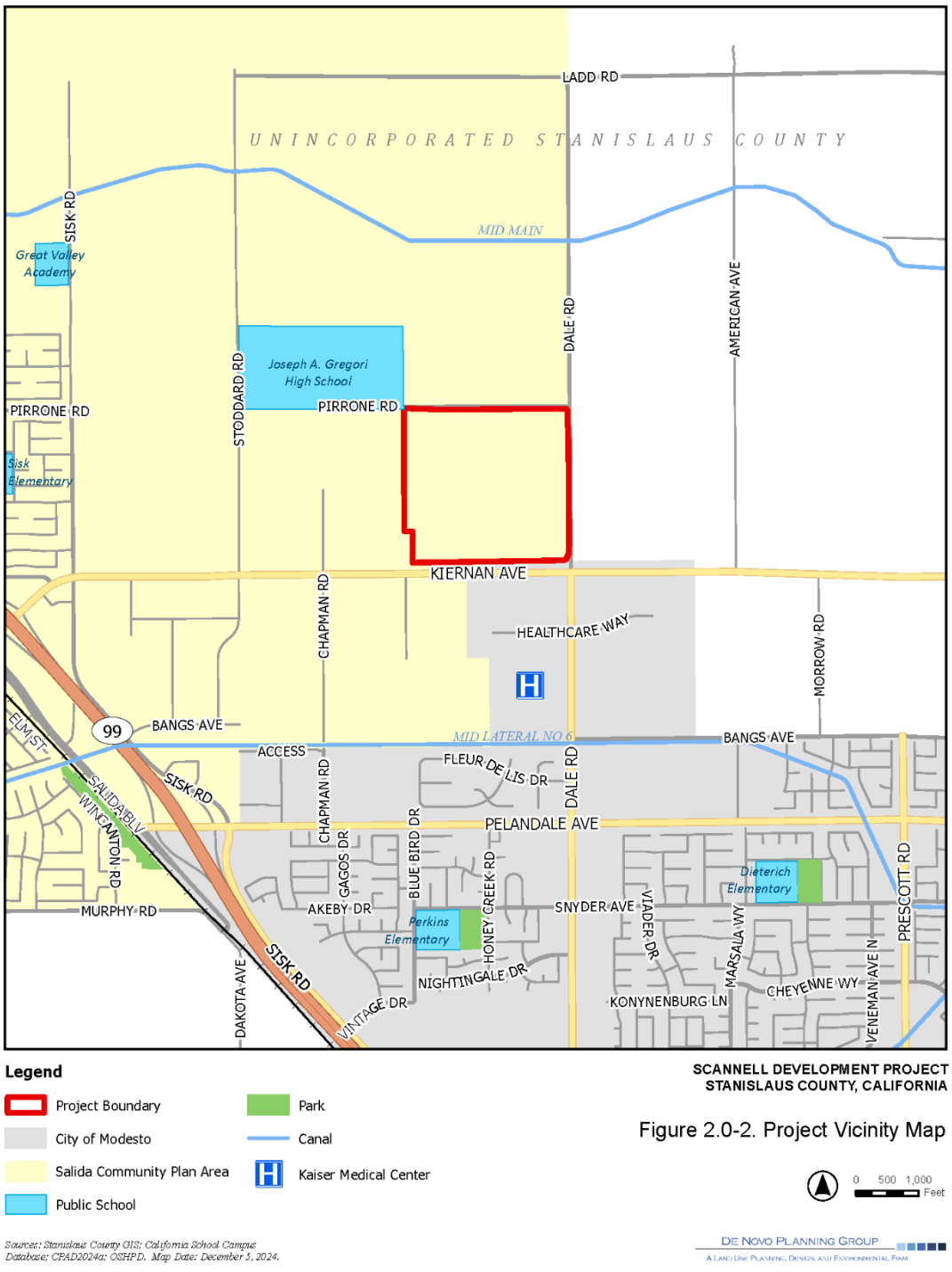
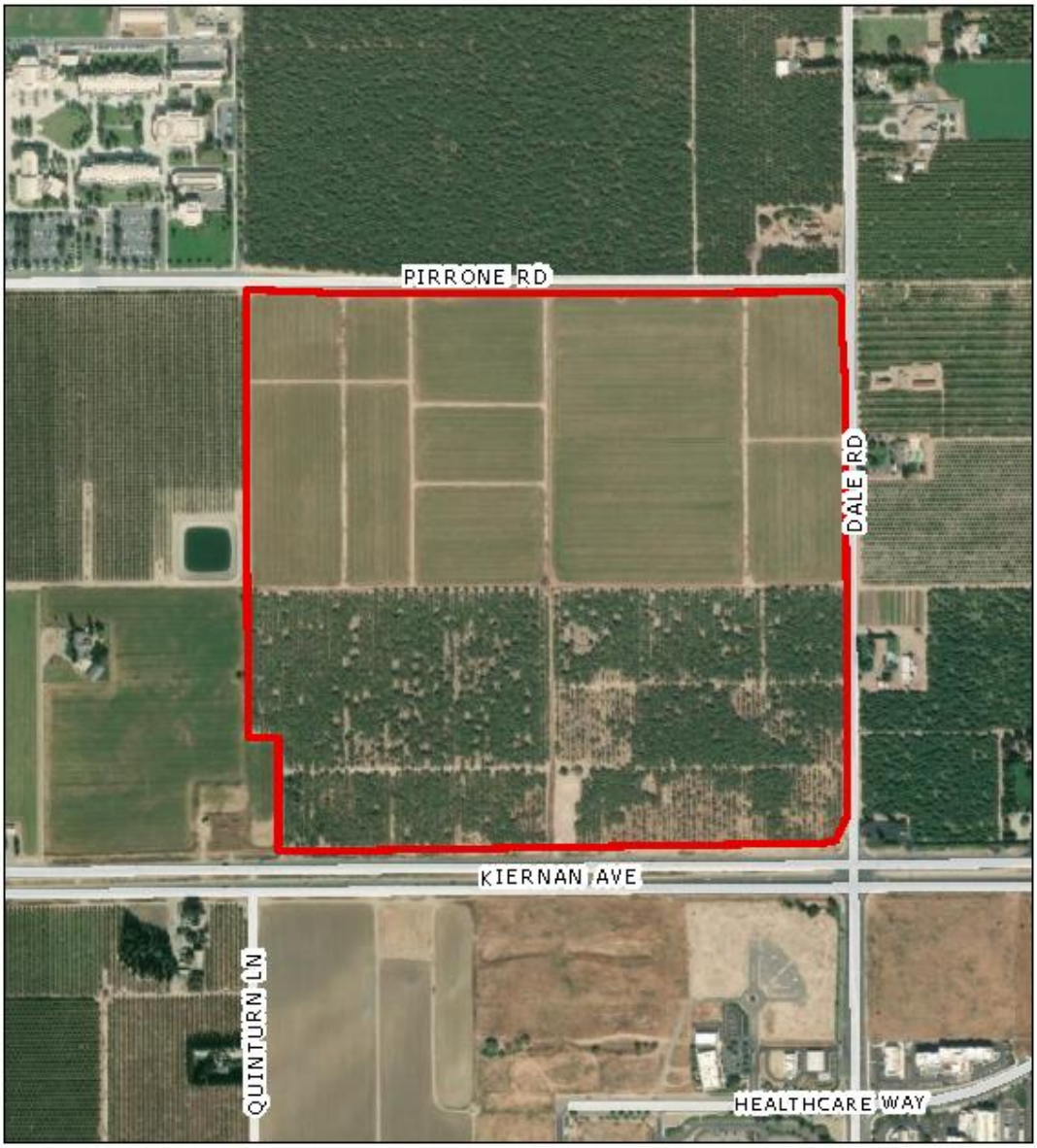


FIGURE-2: AERIAL VIEW



EXISTING SURROUNDING USES

The Project site and surrounding properties are generally in agricultural use. The Project site is primarily bounded by lands within the unincorporated county to the north, east and west. Lands within the City of Modesto are located to the south. Uses within the surrounding area include the following:

- North – Agricultural lands, Joseph A. Gregori High School.
- East – Agricultural lands, industrial developments, along Kiernan Avenue.
- South – Kaiser Permanente Modesto Medical Center and similar business park uses, within the City of Modesto.
- West – Agricultural lands, industrial developments.

PROJECT CHARACTERISTICS

The proposed Project will result in the construction of between 2,000,000 and 2,500,000 square feet of warehouse, distribution, and manufacturing space. In addition, a small 2–3-acre retail site is proposed at the corner of Dale Road and Kiernan Avenue (SR 219) to provide retail service to the project. The proposed Project includes a Tentative Map that would create eight parcels for the industrial and retail buildings.

The applicant proposes to construct seven industrial buildings. The warehouse buildings would be single-story, with a maximum height of 45 feet. The size of each building (in square feet) is summarized in Table 1, below. For the analysis, future uses are anticipated to be evenly split between manufacturing, warehouse, and distribution uses. The end user is not known currently, but cold storage is anticipated to occupy between 0-20% of the total space.

TABLE 1: SUMMARY OF PROPOSED OFFICE AND WAREHOUSE BUILDINGS

	BUILDING 1	*BUILDING 2*	*BUILDING 3*	*BUILDING 4*	*BUILDING 5*	*BUILDING 6*	*BUILDING 7*
Site Area (sf)	1,145,488	1,116,754	753,947	988,633	627,181	601,557	316,397
Building Area (sf) Office/Warehouse	20,000/ 531,640	20,000/ 510,160	20,000/ 322,700	20,000/ 435,230	20,000/ 240,010	20,000/ 240,010	10,000/ 93,480
Parking Provided Standard/Trailer	290/200	275/200	401/105	265/178	357/ 89	358/89	225/0

SOURCE: CITY OF MODESTO, 2024.

The projected project phasing is currently expected to be four (4) phases of development over approximately ten (10) years. Each phase would include removal of existing almond trees or ground crops (based on current farming practices). Improvements to serve each phase could include, but would not be limited to, any required off-site street improvements and extension of utilities, site grading, construction of underground utilities on-site (water, sewer, and dry utilities), storm drainage and storm drainage retention, paving, landscaping, lighting, and the construction of buildings. As the project develops, the timing, size, and number of phases may change based on market conditions.

The project would operate continuously, and the site would be active 24 hours a day, seven days a week. It is estimated that the warehouse facilities would provide approximately 1,000

employment opportunities, based on the employment generation assumptions in the Salida Community Plan.

The 2–3-acre retail site does not have a proposed end use, but a variety of commercial retail uses allowed under the City's commercial land use and zoning standards could occupy the retail site. Based on the size of the parcel, it is expected that the end user would be a local serving retail as opposed to regional shopping, and examples of such uses include a gas station, and possibly a small restaurant use.

SCOPE OF RISK ASSESSMENT

Preparation of health risk assessments is a three-step process. The first step is to identify potential contaminants that may lead to public health risks. The second step is to assess the magnitude of contaminants that may reach the public (exposure assessment). The last step is to calculate the magnitude of the health risk that may potentially occur as a result of exposure to harmful contaminants on the basis of the toxicology of the contaminants.

The Office of Environmental Health Hazard Assessment (OEHHA), and the San Joaquin Valley Air Pollution Control District (SJVAPCD) provide guidance on the procedures that should be used, including, toxicological data for individual contaminants. This risk assessment is based on the guidance provided within these guidance documents. It should be noted that while this risk assessment uses certain procedures and data from these Guidelines, this assessment is not intended to satisfy the reporting requirements under AB-2588 "Air Toxics" Hot Spots program.

The operational health risks that are evaluated in this study include:

- Residential Cancer Risk (70-year exposure; start at third trimester);
- School Cancer Risk (70-year exposure; start at third trimester);
- Workplace Cancer Risk (40-year exposure; start at age 16); and
- Acute and Chronic Hazard Indices.

The 70-year risk applies to residential areas where exposure may potentially occur 24 hours/day, 365 days/year depending on the amount of activities of the emission source. The 40-year risk is applicable to workplace exposure and therefore accounts for a reduced exposure for the fact that individuals typically would be exposed 8-hrs per day, 5 days per week, and 50 weeks per year. Non-cancer risks can be described as acute (short-term, exposure) or chronic health impacts.

Additionally, construction-related health risks are also evaluated in this study, addressed cumulatively (i.e. in conjunction) with the operational health risks. Since the construction schedule would occur over approximately 4 years, the construction-related health risks include:

- Residential Cancer Risk (4-year exposure; start at third trimester);
- School Cancer Risk (70-year exposure; start at third trimester);
- Workplace Cancer Risk (4-year exposure; start at age 16); and
- Acute and Chronic Hazard Indices.

MODELING ASSUMPTIONS

The Intake Rate Percentile utilized to assess both the operational and construction-related health risks was the "Inhalation Only" pathway. In non-cancer chronic assessments, the inhalation pathway is always considered a driving pathway. The pathways to evaluate selected was the 'Inhalation Only' selection, which accounts for the inhaled toxics.

SIGNIFICANCE CRITERIA

The following significance criteria shown in Table 2, based on guidance from the SJVAPCD, are used in this report to assess the significance of public health risks.

TABLE 2 THRESHOLDS OF SIGNIFICANCE FOR PUBLIC HEALTH RISKS

Risk Metric	*Significance Threshold*
Residential Cancer Risk[1]	20 per million
Workplace Cancer Risk	20 per million
Chronic and Acute non-cancer hazard Indices	non-cancer health hazard exposure index of 1.0

SOURCE: SJVAPCD, 2015.

If a project contributes a cancer risk in excess of 20 new cases in a population of one million persons at identified receptors, or a non-cancer hazard index of greater than or equal to 1.0, Project related emissions would be considered to have a significant project-level impact.

EMISSION SOURCES AND EXPOSURE

The main source of toxic air pollutants (TACs) by the proposed Project is diesel particulate matter (DPM) from construction vehicles and truck idle and mobile emissions during the construction phase and heavy-duty trucks during the operations phase. Based on numerous studies by the California Air Resources Board (ARB), DPM represents the largest single contributor to public health risks. Additionally, in its comprehensive assessment of diesel exhaust, OEHHA analyzed more than 30 studies of people who worked around diesel equipment, including truck drivers, railroad workers, and equipment operators. The studies showed these workers were more likely to develop lung cancer than workers who were not exposed to diesel emissions. These studies provide strong evidence that long-term occupational exposure to diesel exhaust increases the risk of lung cancer. Exposure to diesel exhaust also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks.

Emissions from the following project sources were analyzed and are shown in Table 3:

- Truck on-site and off-site mobile emissions
- Truck on-site idling emissions
- Construction-related emissions

[1] The residential cancer risk metrics were also utilized for school risk metrics.

TABLE 3: EMISSION SOURCE ASSUMPTIONS

Source Type / Emission	Configuration	Assumptions
Operation - On- and Off-site Mobile Diesel Truck Circulation (DPM)	*Modeled as volume sources* -Release Height = 2.55 meters - Initial Horizontal Dimension = 13.75 meters -Initial Vertical Dimension = 7.78 meters -Line Lengths = based on path of travel -Base Elevation = Flat terrain	• On-site and off-site truck travel includes 1,410 truck trips per day (Fehr & Peers, 2025). • Traveling distance based on proposed site plan layout and anticipated ingress/egress routes. • Both on-site and off-site mobile circulation modeled. • PM_{10} mobile emissions factor provided by EMFAC2021 • Modeling parameters based on methods established by the San Joaquin Valley Air Pollution Control District.
Operation - On-site Diesel Truck Idling (DPM)	*Modeled as point sources* -Release Height = -Gas Exit Velocity = 51.71 m/s -Stack Height = 3.84 meters -Stack Exit Diameter = 0.1 meters (based on typical stack inside diameters for heavy-duty vehicles). -Stack Temperature = 366 K (based on typical diesel exit temperatures) -Base Elevation = Flat terrain	• On-site Idle of 705 trucks per day • PM_{10} mobile emissions factor provided by EMFAC2021. Total daily truck idling emissions were assumed to occur within the Project site (as opposed to being split among multiple locations throughout the day), which represents a conservative assumption. • Modeling parameters based on methods established by the San Joaquin Valley Air Pollution Control District.
Construction - Off-road Vehicles	*Modeled as volume sources* -Release Height = 5 meters -Initial Horizontal Dimension = 28.35 meters -Initial Vertical Dimension = 1 meter -Base Elevation based on flat terrain	• On-site construction-related off-road emissions were modeled (based on the CalEEMod off-road emissions data).

DAILY TRUCK TRIPS AND ROUTES

The total diesel truck trips generated by the proposed project is based on the Scannell Industrial Development Trip Generation table prepared by Fehr & Peers in 2025. According to Fehr & Peers, the average total daily traffic includes 13,110 trips per day, with 1,410 of those daily trips being for trucks.

The off-site diesel truck routes were modeled at greater than 0.5 miles away from the Project site. Separately, the on-site circulation of trucks was modeled to account for the diesel truck travel

throughout the entirety of the internal circulation route. Specifically, on-site circulation was modelled to account for internal Project site travel between each of the ingress/egress locations and the circulation pattern that surrounds the warehouses (for docking and loading/unloading) and the diesel truck parking areas.

EMISSION RATES

Table 4 provides emissions rates by source and emissions factors. For calculations, data outputs, and reference documents please see Appendix 1.

TABLE 4: EMISSION RATES BY SOURCE

Source	Pollutant	Volume/Size	Emissions Pounds/Year
Operation – On- and Off-site Mobile Diesel Truck Circulation	DPM	1,410 truck trips per day	21.61
Operation - On-site Diesel Truck Idling	DPM	705 trucks per day idling 5 min	0.53
Construction – Off-Road Vehicles	DPM	All Off-Road Equipment Activities	151.36

SOURCES: EMFAC 2021; AERMOD 12.13.

EXPOSURE ASSESSMENT

Exposure assessment involves translating the emission rate (e.g., lbs/hr, g/hr) of individual toxic air contaminants into the concentration (e.g., grams/cubic meter g /sec m^2 or parts per million) of each toxic air contaminant. The key step in performing an exposure assessment is the application of an air dispersion model. The dispersion model incorporates the local meteorological data (wind speed, wind direction, local temperature, inversions, etc.), stack height, and exhaust flow characteristics, into the dispersion of individual air contaminant. The AERMOD Version 12.13 dispersion model was employed for this assessment.

Modeling Receptors: Receptors were placed at locations of nearby receptors, including residential, school, and workplace locations.

Additionally, workplace receptors were placed at various locations proximate to the Project site. A grid of receptors of a distance of approximately 50 meters was placed surrounding the modeled sources, to ensure capture of the maximum on-site workplace receptor. This allows for an analysis of the receptors that have the potential be most affected by the TACs generated by the proposed project. This approach to modeling receptors is consistent with the SJVAPCD's *Guidance for Air Dispersion Modeling* document, which requires receptor coverage to ensure that the maximum pollutant concentration is captured.

Meteorological Data: Five years of meteorological data was used in the exposure assessment. The meteorological ("Met") data (wind speed, wind direction, temperature, etc.) were recorded at the Modesto City-County Airport, CA location for the latest years of data available from the SJVAPCD. This location was the closest location MET data was available.

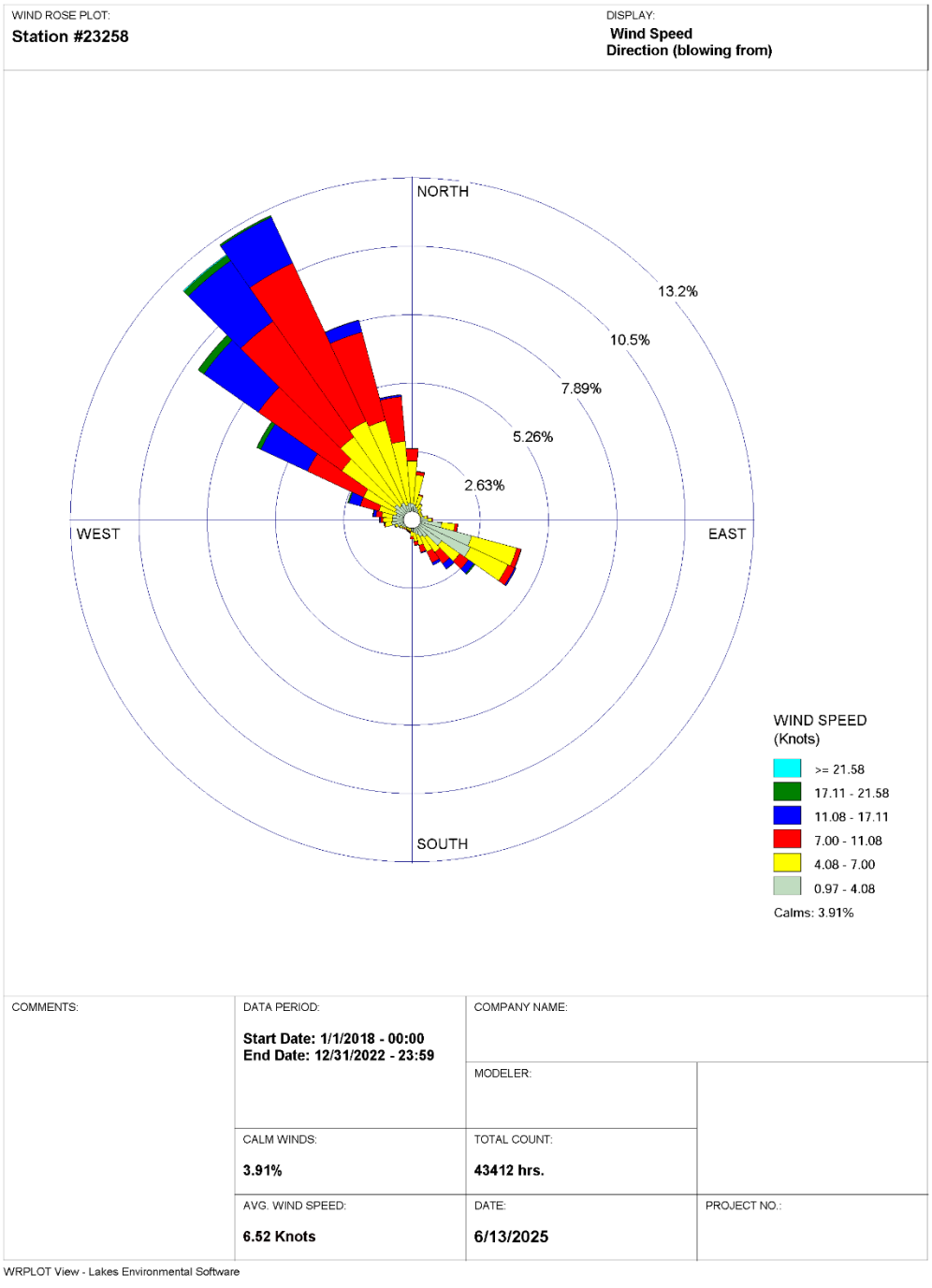
RISK ASSESSMENT

Once the emissions rates of individual air contaminants have been calculated, and an air dispersion model has been run through AERMOD, the next step in determining health risks is to determine the cancer risk, and acute and chronic incident rates. Period and 1-hour dispersion files we used in combination with HARP-2 risk modelling software to calculate risk scenarios for residential, school, and workplace cancer rates, as well as acute and chronic incidences. The Hotspots Analysis and Reporting Program (HARP) is a software suite used to assist with the programmatic requirements of the Air Toxics "Hot Spots" Program [Assembly Bill (AB) 2588]. HARP combines the tools needed to implement the requirements of AB 2588, such as reporting a facilities emissions inventory, determining a facilities prioritization score, conducting air dispersion modeling, and performing a facility health risk assessment. This study utilized the HARP2 Air Dispersion and Risk Tool with dispersion plot files created in AERMOD. After the risk assessment was complete, HARP-2 plot files were then imported back into AREMOD for spatial and visual representation, and analysis of impact areas.

RISK ASSESSMENT RESULTS

Cancer and non-cancer risks vary depending on the exposure scenario (e.g. residential, school, or worker) and on location. As would be expected, locations nearest the Project site have the greatest exposure and the associated risks are considerably lower as distance from the project site increases. Table 5 displays the residential, school, and workplace cancer risk, and acute and chronic incidence rate results at nearest receptors. Figure 3 provides wind patterns at the Modesto City-County Airport, CA location where meteorological data was used for the modeling. The results of the risk analysis are shown in Table 5, below.

FIGURE-3: WIND PATTERNS (MODESTO CITY-COUNTY AIRPORT – 2018-2022) LOCATION



Sources: Prepared by De Novo Planning group (2025)

TABLE 5: SUMMARY OF MAXIMUM HEALTH RISKS

RISK METRIC	*MAXIMUM PROJECT RISK*	*SIGNIFICANCE THRESHOLD*	*IS THRESHOLD EXCEEDED?*
	OPERATIONAL		
Residential Cancer Risk (70-year exposure)[1]	6 per million	20 per million	No
School Cancer Risk (70-year exposure)[1]	<1 per million	20 per million	No
Workplace Cancer Risk (40-year exposure)	1 per million	20 per million	No
Chronic (non-cancer)	<0.1	Hazard Index ≥1	No
Acute (non-cancer)	0	Hazard Index ≥1	No
	CONSTRUCTION		
Residential Cancer Risk (70-year exposure)[1]	4 per million	20 per million	No
School Cancer Risk (70-year exposure)	4 per million	20 per million	No
Workplace Cancer Risk (4-year exposure)	<1 per million	20 per million	No
Chronic (non-cancer)	<0.1	Hazard Index ≥1	No
Acute (non-cancer)	0	Hazard Index ≥1	No
	TOTAL		
Residential Cancer Risk (Aggregate)[1]	10 per million	20 per million	No
School Cancer Risk (Aggregate)	4 per million	20 per million	No
Workplace Cancer Risk (Aggregate)	1 per million	20 per million	No
Chronic (non-cancer)	<0.1	Hazard Index ≥1	No
Acute (non-cancer)	0	Hazard Index ≥1	No

SOURCES: AERMOD 12.13; AND HARP-2 AIR DISPERSION AND RISK TOOL (VERSION 22118).

[1]NOTE: SCHOOL CANCER RISK WAS MODELED WITH THE SAME LONG-TERM (70-YEAR, STARTING AT 3RD TRIMESTER) EXPOSURE PERIOD AS FOR RESIDENTIAL CANCER RISK, WHICH REPRESENTS A HIGHLY CONSERVATIVE ESTIMATE OF SCHOOL RISKS, SINCE STUDENTS WOULD ONLY BE AT THE SCHOOL FOR A PERIOD OF APPROXIMATELY 4 YEARS, STARTING AT AGE 14.

The TAC emissions from the project result from the on-site and off-site truck travel, and on-site idling of diesel-fueled vehicles. The nearest sensitive receptors are those that surround the Project site, to the east.

Overall, the results show that the operational residential cancer risk would remain below the SJVAPCD threshold of 20 in a million at areas near the project site that contain residential receptors, at a total of approximately 6 per million (at the location of maximum residential cancer risk), during Project operation. Figure 4 shows the residential operational cancer risk contours

surrounding the Project site, including at the nearest receptor, which is located just east of the Project site along Dale Road.[2] Additionally, other risks during Project operation would be below the 20 in a million threshold. The results also show that operational school cancer risk would be less than 1 per million during Project operation, as also shown in Figure 4. It should be noted that this is a highly conservative estimate, since modeled assumed a 70-year timeframe starting at the third trimester, and therefore the real risk is anticipated to be far below this risk level.

Furthermore, as shown in Figure 5, operational workplace cancer risk would also be below the threshold, at approximately 1 in a million at its peak value in the southern part of the Project site, for workers that may be located at or near this location during work conditions. However, it is very unlikely that any individual would be located at this location within the Project site for 40 years; therefore, this result also represents a conservative estimate.

The results also show that construction-related cancer risks would be below the threshold, as shown in Figure 6 and Figure 7. Construction-related residential cancer risk would be approximately 4 in a million; school cancer risk would also be approximately 4 in a million; and construction-related workplace cancer risk would be less than one in a million.

Overall, as shown in Table 5, aggregate (i.e. combined operational and construction-related health risks) is estimated to be a maximum of 10 in a million and is less than the 20 in a million threshold for residences, schools, and workers, consistent with SJVAPCD guidance.

Chronic or long-term exposures and acute exposure to DPM can result in non-cancer health effects. Chronic and acute non-cancer hazards results show that the acute and chronic risk on and near the project site would remain below the hazard index of ≥1. It should be noted that DPM does not generate acute health risks, and therefore the acute health risks from the Project site would be zero.

[2] The nearest residential receptor is located at 5136 Dale Road, just east of the Project site. Although this location is currently used for commercial purposes, it may be utilized for residential uses in the future. Therefore, it is also considered a residential receptor, for the purposes of this analysis. This represents a conservative approach to analyzing the highest potential health risks associated with the Project.

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FIGURE-4: RESIDENTIAL AND SCHOOL CANCER RISK - OPERATIONAL

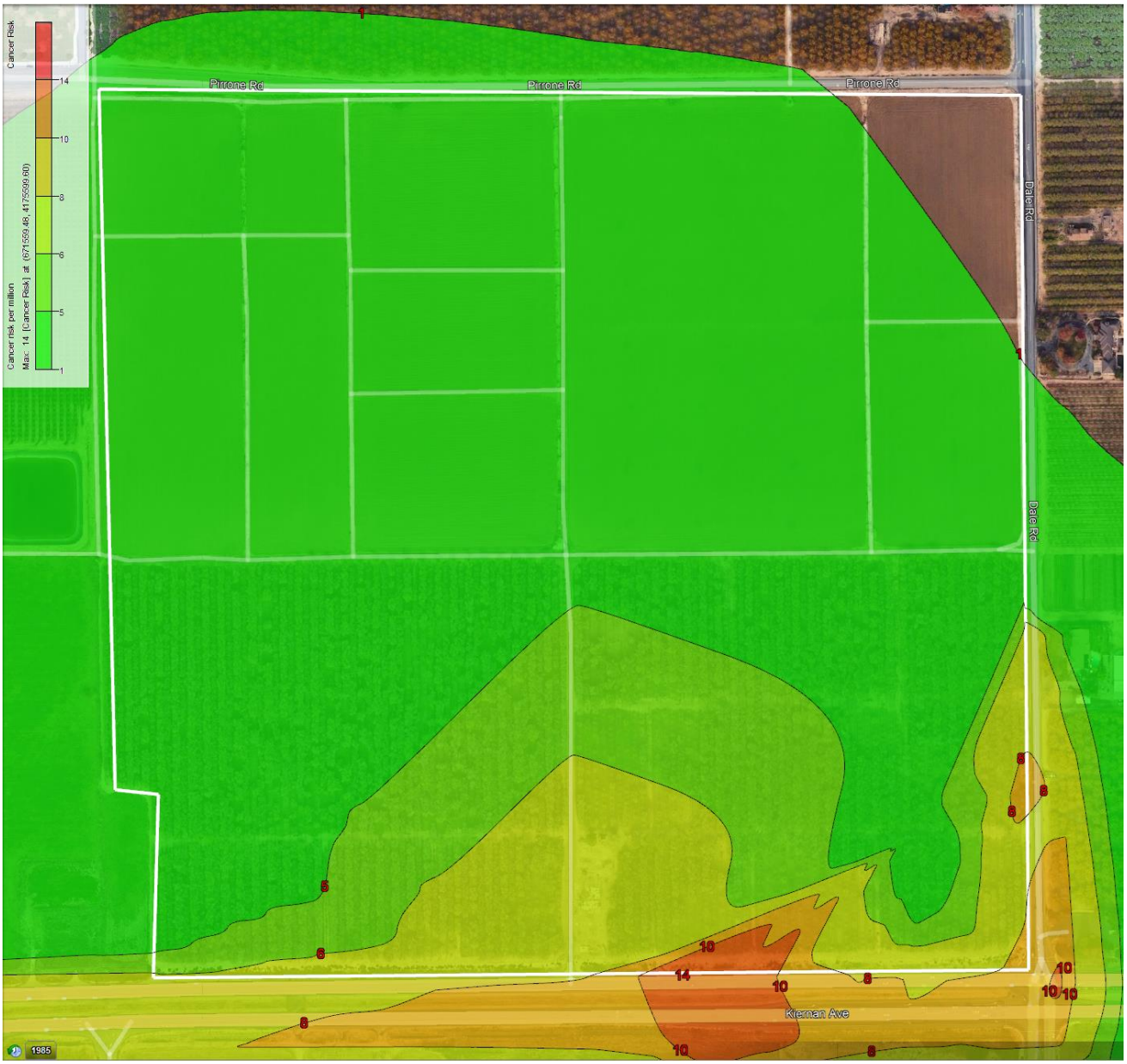

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FIGURE-5: WORKPLACE CANCER RISK - OPERATIONAL

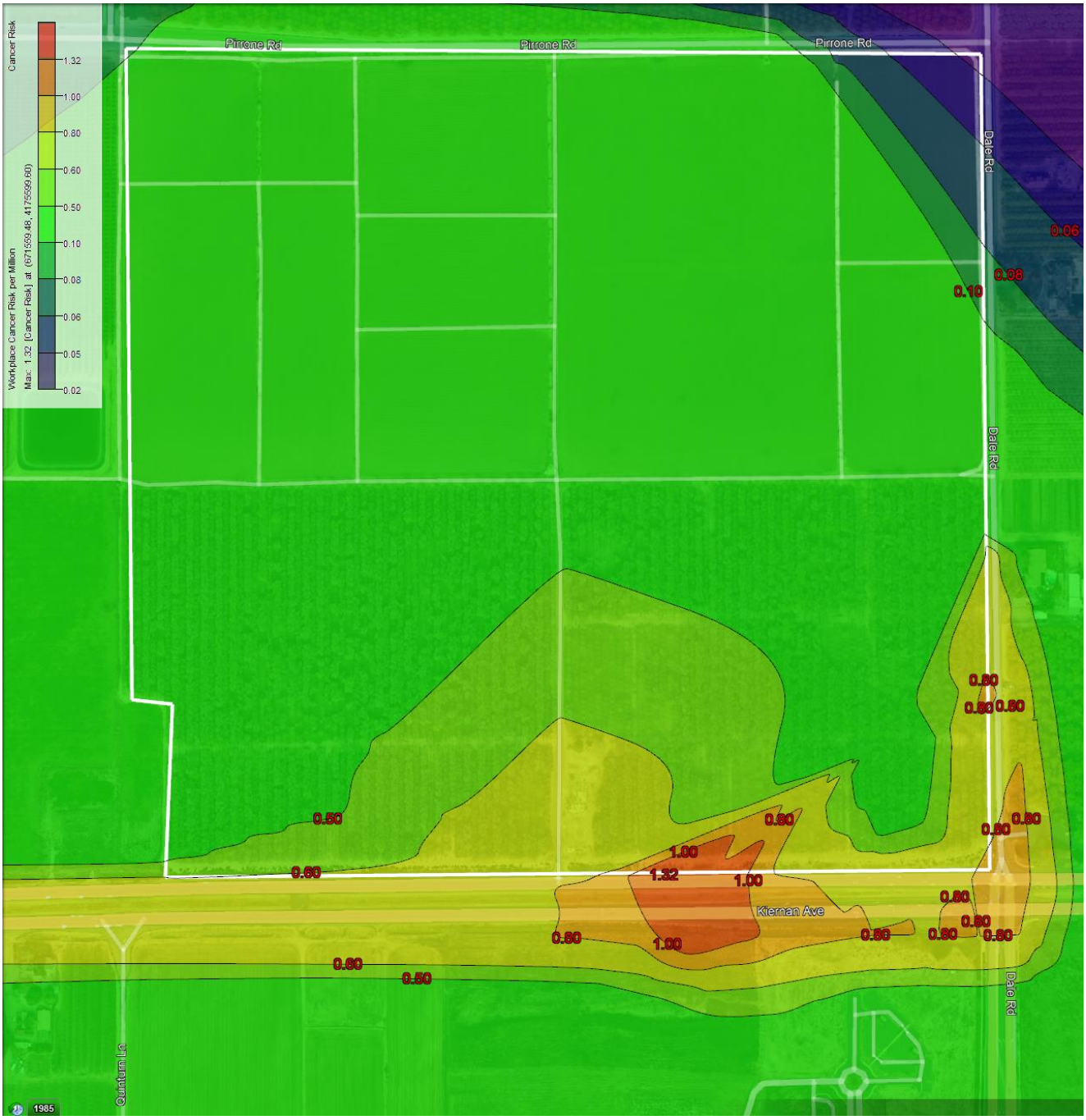

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FIGURE-6: RESIDENTIAL AND SCHOOL CANCER RISK - CONSTRUCTION

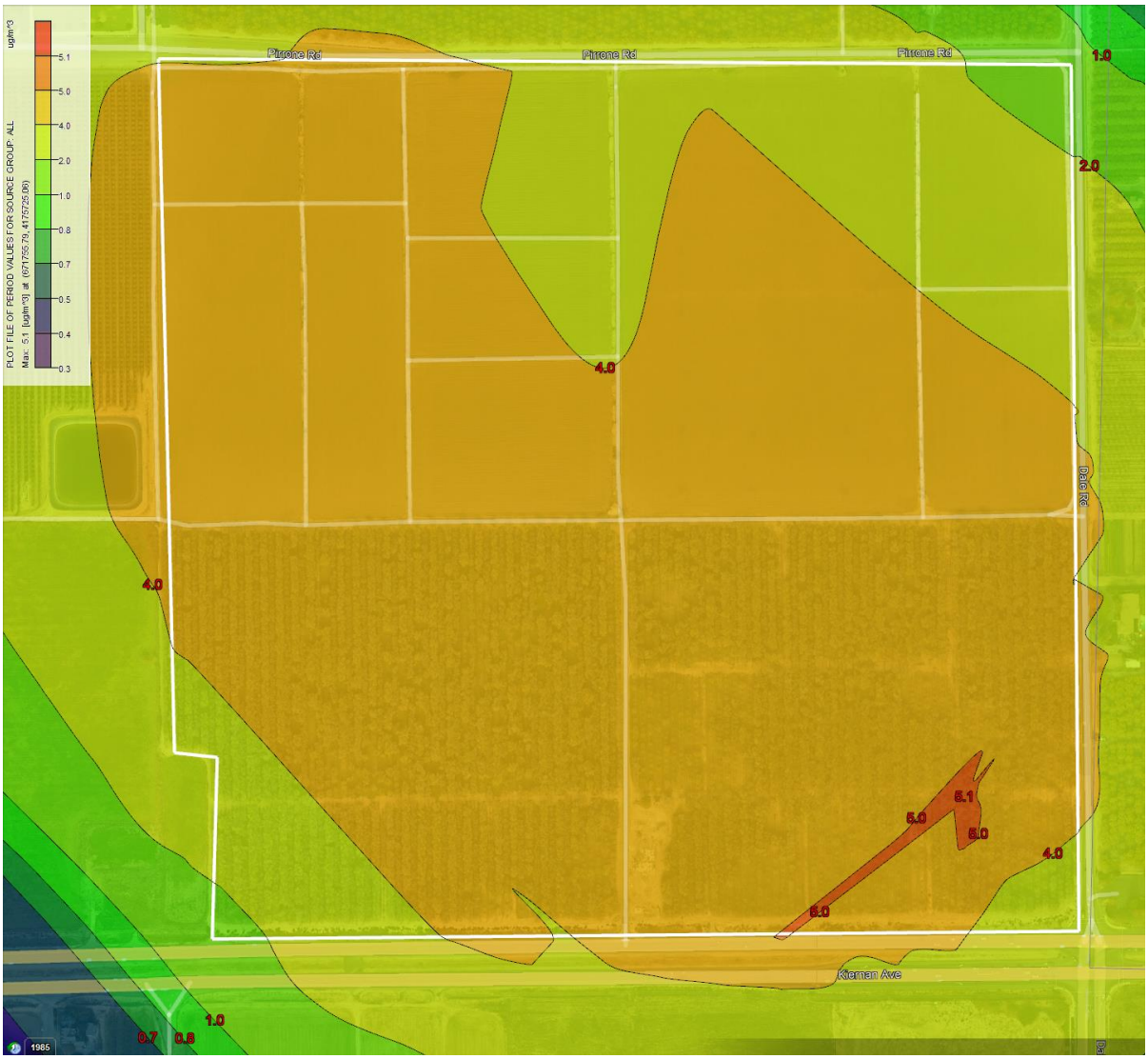

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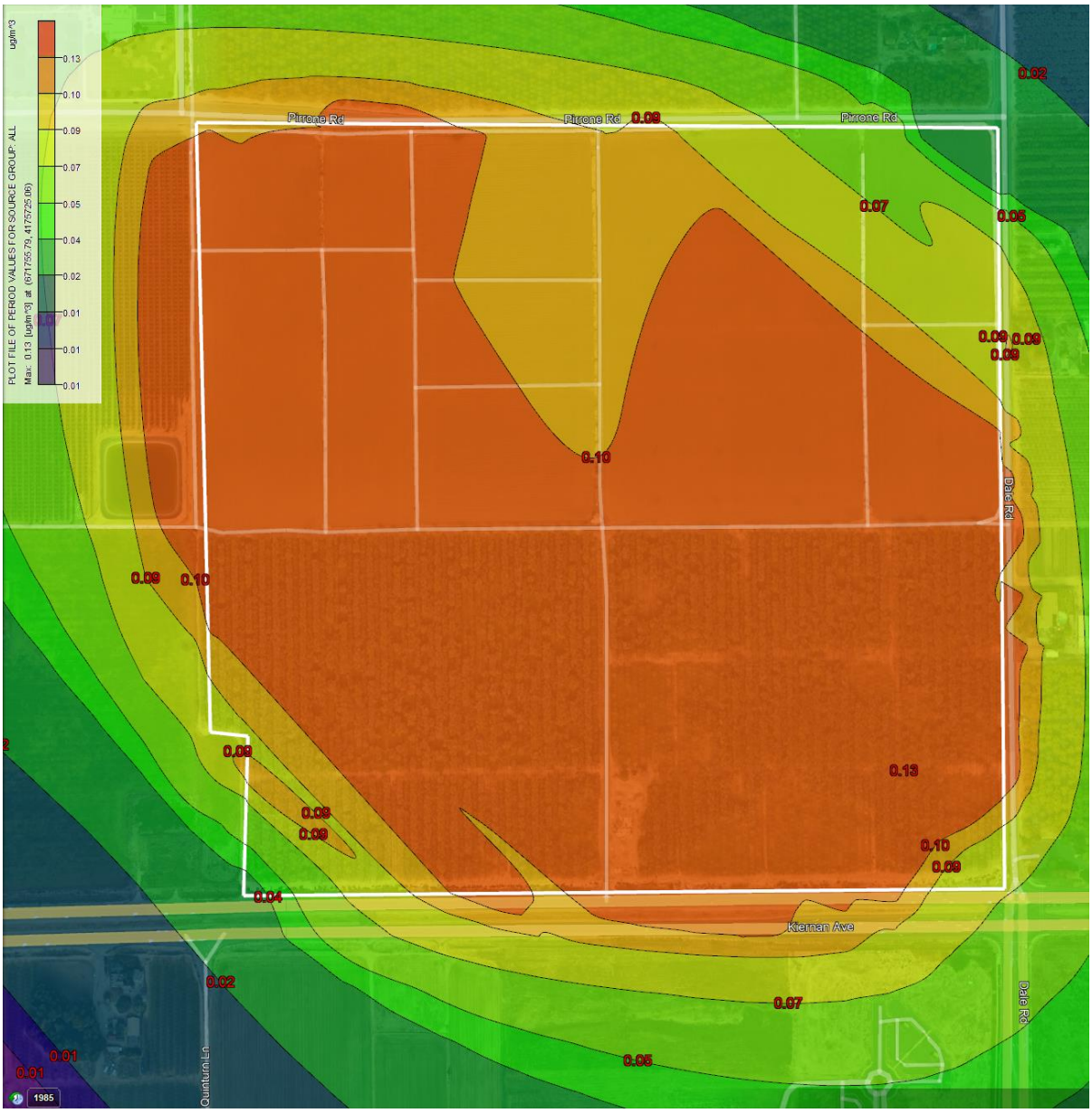
FIGURE-7: WORKPLACE CANCER RISK - CONSTRUCTION



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Appendix 1 - Emissions Calculations:

Construction Emissions (Off-Road Equipment)

365 days per year

Phase	PM10E		
2027	0.057266342	tons/year	Source: CalEEMod (v2022.1)
2028	7.67821E-05	tons/year	Source: CalEEMod (v2022.1)
2029	0.057266342	tons/year	Conservatively repeated of the first phase emissions
2030	7.67821E-05	tons/year	Conservatively repeated of the first phase emissions
2032	0.057266342	tons/year	Conservatively repeated of the first phase emissions
2033	7.67821E-05	tons/year	Conservatively repeated of the first phase emissions
2034	0.057266342	tons/year	Conservatively repeated of the first phase emissions
2035	7.67821E-05	tons/year	Conservatively repeated of the first phase emissions
	0.229372	**tons (total)**	
	458.74	**lbs (total)**	Includes all on and offsite emissions

5. Activity Data

5.1 Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Wee	Work Days per Phase	
Site Preparation	Site Preparation	4/15/2027	5/15/2027	5	22	Duration for a single phase
Grading	Grading	5/16/2027	7/31/2027	5	55	Duration for a single phase
Building Construction	Building Construction	8/1/2027	9/25/2027	5	40	Duration for a single phase
Paving	Paving	9/26/2027	11/20/2027	5	40	Duration for a single phase
Architectural Coating	Architectural Coating	11/21/2027	1/14/2028	5	40	Duration for a single phase

197 Total
4 Phases
260 CalEEMod Work days/year

Max Hr Emissions:

3.492982206 lbs/hour 0.757692

Note: Assumes max hour is six times average rate

Split into sources: **Split into:** **150 AERMOD sources (note: depends on final number of sources used in AERMOD)**

1.009083748 lbs/year (average)

Max Hr Emissions:

0.139719288 lbs/hour

Note: Assumes max hour is six times average rate

Mobile Truck Emissions - On-site Mobile

meters per mile: 1609.34 pounds per gram: 0.002205

Assumptions:			Source:
1. Distance travelled on-site per truck trip (line segment)[1]:	0.44	miles per trip	GoogleEarth
2. # of trucks trips per day (total):	1410	trucks trips	Fehr & Peers
4. PM10 Mobile Em. Factor[2] (San Joaquin County, Year 2029 Aggregate MPH, T7 Tractor Class 8):			EMFAC2021 (v1.0.2)
Note: T7 Tractor Class 8 EF was used for a conservative EF (large truck class).	**0.005088803**	g/mile	

Therefore:
Total daily PM10 Exhaust On-site Mobile Emissions Generated by the project:

3.157093464	**g/day-all trucks**
0.006960191	lbs/day-all trucks
2.540469858	**lbs/year-all trucks**
495	Volume Sources
0.005132262	**lbs/year per Volume Source**

Max Hr Emissions
Fehr & Peers

116 Peak hour truck trips (maximum peak hour truck trips is used for the sake of a conservative analysis)

0.000573	**lbs/hour-all trucks**
495	Volume Sources
1.15679E-06	**lbs/hour per Volume Source**

Notes:
[1]This assumes that each truck will travel from the farthest end of the site to the southern driveway.
[2]10 MPH Emission factor was utilized for on-site truck travel.

Mobile Truck Emissions - Off-site Mobile

meters per mile: 1609.34 pounds per gram: 0.002205

Assumptions:			Source:
1. Distance travelled on-site per truck trip (line segment)[1]:	1.94	miles per trip	GoogleEarth
2. # of trucks trips per day (total):	1410	truck trips	Fehr & Peers
3. DPM Mobile EF (San Joaquin, Year 2029, 50 MPH, T7 Tractor Class 8):			EMFAC2021 (v1.0.2)

Note: T7 Tractor Class 8 EF was used for a conservative EF (large truck class).[2]

0.00866632 g/mile

Therefore:

Total daily PM10 Exhuast Off-site Mobile Emissions Generated:

23.7058436 g/day-all trucks
0.05226238 lbs/day-all trucks
19.0757676 lbs/year-all trucks
357 Volume Sources
0.05343352 lbs/year per Volume Source

Max Hr Emissions

116 Peak hour truck trips (maximum peak hour truck trips is used for the sake of a conservative analysis)
0.004300 lbs/hour-all trucks
357 Volume Sources
1.2044E-05 lbs/year per Volume Source

Notes:

[1]This assumes that each truck will travel from the farthest end of the site to the southern driveway.

[2]50 MPH Emission factor was utilized for on-site truck travel.

Truck Idling

CARB EMFAC2021 idling emission factors for 2027 T7 Tractor Class 8 diesel trucks:	PM10	**0.005557294**	g/hour truck per day	Source: EMFAC 2021
		5	Minutes of idling/day	
		1410	Total # of diesel trucks per day based on two vehicle trips per vehicle	
		0.65298205	g/day-all trucks	
		238.3384481	g/year-all trucks	
		0.52544571	lbs/year-all trucks	

pounds per gram: 0.00220462

116 Peak hour truck trips (maximum peak hour truck trips is used for the sake of a conservative analysis)

Annual Emissions:	**0.007100618**	lbs/year-all trucks for each of the	**74**	idling points
Max Hr Emissions:	**0.000001600**	lbs/hour-peak hour trucks for each of the	**74**	idling points

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Appendix 2 – AERMOD Output Files:

Due to the extensive size, the output files will be provided by request.

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Appendix 3 – HARP2 Output Files:

Due to the extensive size, the output files will be provided by request.

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APPENDIX C

Cultural Resource Assessment

CULTURAL RESOURCE ASSESSMENT OF

THE SCANNELL INDUSTRIES PROJECT,

COUNTY OF STANISLAUS, CALIFORNIA

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May 29, 2025

Job # 24-094

INTRODUCTION

Project Location

The Scannell Industrial Project (proposed Project) is comprised of approximately 145 acres located at the northwest corner of Kiernan Avenue and Dale Road intersection, within the unincorporated Community of Salida. The Project site is located within the Stanislaus County Salida Community Plan (SCP) and is zoned for development as Salida Community Plan Industrial/Business Park (SCP-IBP) and Salida Community Plan Planned Industrial (SCP-PI). The area is also within the City of Modesto General Plan Planning Area with a designation of Salida Community Plan (SCP).

Figures 1 through 4 show the Project's regional location and vicinity.

Project Setting

The Modesto General Plan Land Use Map designates the Project site as the Salida Community Plan (SCP) Area. The Modesto General Plan notes that if the Salida Comprehensive planning district (or any portion thereof) is annexed to the City of Modesto, that the City does not propose to change any land use designations from those adopted by Stanislaus County.

Stanislaus County

The Stanislaus County General Plan Land Use Map designates the Project site as Salida Community Plan Business Park (SCP-IBP) and Salida Community Plan, Planned Industrial (SCP-PI). A description of each Stanislaus County land use designation is described in further detail below.

- **Salida Community Plan Business Park (SCP-IBP):** The Business Park designation is intended to accommodate development of a full range of uses, including modern, employment-intensive uses. Principal development and employment generating uses allowed within this designation include research, product development, professional office, commercial, and business services.

- **Salida Community Plan Planned Industrial (SCP-PI):** The Planned Industrial zoning designation is intended to help alleviate the existing jobs-housing imbalance in the County by promoting development of employment-generating industrial/business park uses in the area roughly bound by Ladd Road, Dale Road, Pelandale Expressway, and Sisk Road.

Figures 5a and 5b depict the Stanislaus County and City of Modesto General Plan land use designations for the Project site and the surrounding areas.

Existing Zoning Designations

City of Modesto

The Project site is located outside the Modesto city limits and the City of Modesto has not zoned the Project site.

Stanislaus County

The Stanislaus County Zoning Ordinance (Chapter 21.66 of the County Code) designates the project site for Salida Community Plan (SCP) zoning District. The SCP District is intended to implement the General Plan's stated vision for the development of the Salida Community Plan Amendment Area. There are nine sub-zoning districts for the SCP District, of which the Project site is Salida Community Plan, Industrial/ Business Park (SCP-IBP) and Salida Community Plan, Planned Industrial (SCP-PI). Figures 6a and 6b depicts the Stanislaus County and City of Modesto zoning districts for the Project site and the surrounding areas.

Surrounding General Plan Designations

Within Stanislaus County, lands to the north and west of the Project site are designated Salida Community Plan Business Park (SCP-IBP) and Salida Community Plan Planned Industrial (SCP-PI); lands to the east are designated Agriculture (AG); and lands to the south are designated Salida Community Plan Business Park (SCP-IBP). As mentioned, the City of Modesto designates the lands to the north and west of the Project site as Salida Community Plan Area.

Project Goals and Objectives

Consistent with the California Environmental Quality Act (CEQA), Guidelines Section 15124(b), a clear statement of objectives and the underlying purposes of the proposed Project shall be discussed. The principal objective of the proposed Project is to implement and achieve the goals and objectives of the General Plan through the approval and subsequent implementation of the Scannell Industrial Project (the proposed Project).

The principal objective of the proposed Project is to develop a multiple phase and well-planned industrial project with the potential for warehouse, distribution, and manufacturing uses with onsite commercial retail that will attract businesses to the City of Modesto and provide for local employment opportunities.

The City has identified several additional project goals and objectives that inform the Project purpose. These additional Project goals and objectives are as follows:

- Establish land use and zoning that is consistent with and facilitates the vision for new growth and development in the Salida Community Plan (SCP). This includes emphasizing Industrial uses planned in the eastern portion of the SCP adjacent to the City of Modesto limits.
- Design an industrial facility that could attract a variety of end users, including a transload facility, short-term storage facility, light industrial, and/or manufacturing uses.
- Incorporate a commercial use within the industrial area to provide opportunities for onsite employees to have access to retail services. Locate the commercial use such that it also enhances accessibility for passerby traffic to maximize the success of the commercial businesses.
- Strengthen the local economic base through job creation; development related investment; increased income opportunities; and increased property, and sales taxes through the development of the industrial and commercial uses.
- Provide local and regional employment opportunities that take advantage of the area's high level of accessibility, and help create a jobs/housing balance.
- Install infrastructure improvements, including water, sewer, power, and stormwater systems that meet city standards, and integrate with existing utility network without diminishing services to existing residents.

- Develop a multi-phase plan that could be constructed over an estimated 10-year building horizon, and align infrastructure improvements to the infrastructure needs of each phase.
- Design the facilities with efficient transportation access and circulation within site plan, including accessible loading bays, and logistics management. Ensure that offsite transportation systems can facilitate industrial traffic via designated truck routes.

Project Characteristics and Description

Project Characteristics

The proposed Project will result in the construction of between 2,000,000 and 2,500,000 square feet of warehouse, distribution, and manufacturing space. In addition, a small 2–3-acre retail site is proposed at the corner of Dale Road and Kiernan Avenue (SR 219) to provide retail service to the project. The proposed Project includes a Tentative Map that would create eight parcels for the industrial and retail buildings. Figure 7 provides an illustration of the proposed buildings and parcel lines. Figure 8 provides an illustration of the utility plan.

The applicant proposes to construct seven industrial buildings. The warehouse buildings would be single-story, with a maximum height of 45 feet. The size of each building (in square feet) is summarized in Table 1, below. For the purposes of analysis, future uses are anticipated to be evenly split between manufacturing, warehouse, and distribution uses. The end user is not known currently, but cold storage is anticipated to occupy between 0-20% of the total space.

TABLE 1: SUMMARY OF PROPOSED OFFICE AND WAREHOUSE BUILDINGS

	BUILDING 1	BUILDING 2	BUILDING 3	BUILDING 4	BUILDING 5	BUILDING 6	BUILDING 7
Site Area (sf)	1,145,488	1,116,754	753,947	988,633	627,181	601,557	316,397
Building Area (sf) Office/Warehouse	20,000/ 531,640	20,000/ 510,160	20,000/ 322,700	20,000/ 435,230	20,000/ 240,010	20,000/ 240,010	10,000/ 93,480
Parking Provided Standard/Trailer	290/200	275/200	401/105	265/178	357/ 89	358/89	225/0

SOURCE: CITY OF MODESTO, 2024.

The projected project phasing is currently expected to be four (4) phases of development over approximately ten (10) years. Each phase would include removal of existing almond trees or ground crops (based on current farming practices). Improvements to serve each phase could include, but would not be limited to, any required off-site street improvements and extension of utilities, site grading, construction of underground utilities on-site (water, sewer, and dry utilities), storm drainage and storm drainage retention, paving, landscaping, lighting, and the construction of buildings. As the project develops, the timing, size, and number of phases may change based on market conditions.

The project would operate continuously, and the site would be active 24 hours a day, seven days a week. It is estimated that the warehouse facilities would provide approximately 1,000 employment opportunities, based on the employment generation assumptions in the Salida Community Plan.

The 2–3-acre retail site does not have a proposed end use, but a variety of commercial retail uses allowed under the City's commercial land use and zoning standards could occupy the retail site. Based on the size of the parcel, it is expected that the end user would be a local serving retail as opposed to regional shopping, and examples of such uses include a gas station, and possibly a small restaurant use.

City of Modesto General Plan Amendment

The proposed Project includes an amendment to the City of Modesto General Plan to designate the site Industrial (I), while maintaining the SCP as a land use overlay designation. Ultimately the General Plan land use designation on the Project site would be SCP-I. This designation would allow uses consistent with uses anticipated under the Salida Community Plan.

- **Salida Community Plan (SCP) Overlay.** An overlay designation for areas located within the Salida Community Plan area.
    - **Industrial (I)**. To allow industrial uses in the Modesto Urban Area consistent with the SCP. This designation provides for the full range of industrial uses, including but not limited to manufacturing, food processing, trucking, packing, and recycling, as well as those enterprises which may want to combine office and production aspects of their business in the same complex. The guiding intensity is a Floor Area Ratio of approximately 0.50.

Figure 9 shows the proposed General Plan land use.

Pre-Zoning

The Project site is in unincorporated Stanislaus County and outside the City of Modesto city limits. The Project site is not zoned under the Modesto Zoning Ordinance. The proposed Project would pre-zone the Project site to Heavy Industrial (M-2), as described below. The proposed pre-zoning will ensure that land uses on the Project site align with the long-term vision for development of Salida Community Plan area.

- **M-2 Heavy Industrial (M-2)**. The M-2 Zone is intended to provide suitable sites for a wide range of industrial, manufacturing, business park and other similar uses that are further from non-industrial and potentially incompatible uses.

Figure -10 shows the proposed pre-zoning.

Circulation Improvements

Pirrone Road is a two-lane road constructed on the north boundary of the Project site, Dale Road is a two-lane road on the east boundary of the Project site, and Kiernan Avenue is a four-lane divided State Highway on the south boundary of the Project site. Kiernan Avenue is planned to be widened to six lanes in the future. The intersection of Dale Road with Kiernan Avenue is signalized.

Access to the Project site would be provided at two locations; main project access will be to Dale Road with a right-in/right-out access to Kiernan Avenue. Each of these access points allow for emergency vehicle access. As part of the Project, Dale Road, Pirrone Road, and Kiernan Avenue along the Project site's frontages would be improved with landscaping, as required by the City of Modesto.

The site plan includes various standard parking and trailer stalls as noted in table 2, which would be provided within the interior of the site between buildings. The trailer parking stalls would be in the center of the site, primarily adjacent to docking doors of each building; while the standard parking stalls would primarily be located along the Project site boundaries.

Utilities and Planned Infrastructure Improvements

The construction of infrastructure improvements will be required to accommodate development of the proposed Project. The proposed Project would connect to existing City infrastructure to provide water, sewer, and storm drainage utilities. Dry utility infrastructure (i.e. electrical, gas, telephone, cable) would also be installed to provide utility services to the Project. All infrastructure would be developed to the City of Modesto standards.

Water Service

Upon annexation, the Project would be added to the City of Modesto's future service area. An existing water line and anticipated point of connection is in Dale Road just south of Kiernan Avenue. The Modesto Water Master Plan identifies a 12" waterline that would extend from Kiernan Avenue to Pirrone Road via Dale Road. The proposed Project would require the 12" waterline extension, and would be required to loop the system consistent with the City's standards.

Sewer Service

The project site is located within the City of Modesto's future sewer service area (City of Modesto Wastewater Collection System Master Plan, 2017). The nearest sewer point of connection is at the 12" line located on Dale Road, south of Kiernan Avenue. That 12" line connects to a 27" sewer line at the intersection of Dale Road and Healthcare Way. This 12" sewer line will be extended north in Dale Road across Kiernan Avenue to serve the project.

Storm Drain

This Project site is in an area that is not served by existing public storm drain systems and will therefore need to retain all storm water on site. The proposed site plan includes an approximately 6.75-acre storm drainage basin. The final sizing could increase or decrease based a variety of engineering design factors that control storm drainage.

REGULATORY CONTEXT

Regulatory Setting

Federal

National Historic Preservation Act

The National Historic Preservation Act was enacted in 1966 as a mean to protect cultural resources that are eligible to be listed on the National Register of Historic Places (NRHP). The law sets forth criterion that is used to evaluate the eligibility of cultural resources. The NRHP is composed of districts, sites, buildings, structures, objects, architecture, archaeology, engineering, and culture that are significant to American History.

Virtually any physical evidence of past human activity can be considered a cultural resource. Although not all such resources can be considered to be significant and eligible for listing, they often provide the only means of reconstructing the human history of a given site or region, particularly where there is no written history of that area or that period. Consequently, their significance is judged largely in terms of their historical or archaeological interpretive values. Along with research values, cultural resources can be significant, in part, for their aesthetic, educational, cultural, and religious values.

National Register of Historic Places

The eligibility criteria for the NRHP are as follows (36 CFR 60.4):

> *The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess aspects of integrity of location, design, setting, materials, workmanship, feeling, association, and*
>
> *(A) that are associated with events that have made a significant contribution to the broad patterns of our history and cultural heritage; or*
> *(B) that are associated with the lives of persons significant in our past; or*
> *(C) that embody the distinctive characteristics of a type, period, region, or method of construction, or that represent the work of a master, or that possess high artistic values or that represent a significant and distinguishable entity whose components may lack individual distinction; or*
> *(D) that have yielded, or may be likely to yield, information important in prehistory or history.*

State

California Register of Historical Resources

The California Register of Historical Resources (CRHR) was established in 1992 and codified in the Public Resource Code §5020, 5024 and 21085. The law creates several categories of properties that may be eligible for the CRHR. Certain properties are included in the program automatically, including: properties listed in the NRHP; properties eligible for listing in the NRHP; and certain classes of State Historical Landmarks. Determining the CRHR eligibility of historic and prehistoric properties is guided by CCR §§15064.5(b) and Public Resources Code (PRC) §§21083.2 and 21084.1.

Cultural resources, under CRHR guidelines, are defined as buildings, sites, structures, or objects that may have historical, architectural, archaeological, cultural, or scientific importance. A cultural resource may be eligible for listing on the CRHR if it:

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

California Environmental Quality Act

CEQA Guidelines §15064.5 provides guidance for determining the significance of impacts to archaeological and historical resources. Demolition or material alteration of a historical resource, including archaeological sites, is generally considered a significant impact. Determining the CRHR eligibility of historic and prehistoric properties is guided by CCR §§15064.5(b) and Public Resources Code (PRC) §§21083.2 and 21084.1.

CEQA also provides for the protection of Native American human remains (CCR §15064.5[d]). Native American human remains are also protected under the Native American Graves Protection and

Repatriation Act of 1990 (25 USC 3001 et seq.), which requires federal agencies and certain recipients of federal funds to document Native American human remains and cultural items within their collections, notify Native American groups of their holdings, and provide an opportunity for repatriation of these materials. This act also requires plans for dealing with potential future collections of Native American human remains and associated funerary objects, sacred objects, and objects of cultural patrimony that might be uncovered as a result of development projects overseen or funded by the federal government.

If a prehistoric or historic period cultural resource does not meet any of the four CRHR criteria, but does meet the definition of a "unique" site as outlined in PRC §21083.2, it may still be treated as a significant resource if it is: 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 meets any of the following criteria:

- it contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information,
- it has a special and particular quality such as being the oldest of its type or the best available example of its type, or
- it is directly associated with a scientifically recognized important prehistoric or historic event.

Assembly Bill 978

In 2001, Assembly Bill (AB) 978 expanded the reach of Native American Graves Protection and Repatriation Act of 1990 and established a state commission with statutory powers to assure that federal and state laws regarding the repatriation of Native American human remains and items of patrimony are fully complied with. In addition, AB 978 also included non-federally recognized tribes for repatriation.

Assembly Bill 52

AB 52, approved in September 2014, creates a formal role for California Native American tribes by creating a formal consultation process and establishing that a substantial adverse change to a tribal cultural resource has a significant effect on the environment. Tribal cultural resources are defined as:

1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
   A) Included or determined to be eligible for inclusion in the CRHR
   B) Included in a local register of historical resources as defined in PRC Section 5020.1(k)
2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in PRC Section 5024.1 (c). In applying the criteria set forth in PRC Section 5024.1 (c) the lead agency shall consider the significance of the resource to a California Native American tribe.

A cultural landscape that meets the criteria above is also a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape. In addition, a historical resource described in PRC Section 21084.1, a unique archaeological resource as defined in PRC Section 21083.2(g), or a "non-unique archaeological resource" as defined in PRC Section 21083.2(h) may also be a tribal cultural resource if it conforms with above criteria.

AB 52 requires a lead agency, prior to the release of a negative declaration, mitigated negative declaration, or environmental impact report for a project, to begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project if: (1) the

California Native American tribe requested to the lead agency, in writing, to be informed by the lead agency through formal notification of proposed projects in the geographic area that is traditionally and culturally affiliated with the tribe, and (2) the California Native American tribe responds, in writing, within 30 days of receipt of the formal notification, and requests the consultation.

CULTURAL BACKGROUND

Prehistory

The Central Valley region was among the first in the state to attract intensive fieldwork, and research has continued to the present day. This has resulted in a substantial accumulation of data.

In the early decades of the 1900s, E.J. Dawson explored numerous sites near Stockton and Lodi, later collaborating with W.E. Schenck (Schenck and Dawson 1929). By 1933, the focus of work was directed to the Cosumnes locality where survey and excavation studies were conducted by the Sacramento Junior College (Lillard and Purves 1936). Excavation data, in particular from the stratified Windmiller site (CA-Sac-107), suggested two temporally distinct cultural traditions. Later work at other mounds by Sacramento Junior College and the University of California, Berkeley, enabled the investigators to identify a third cultural tradition, intermediate between the previously postulated Early and Late Horizons. The three-horizon sequence, based on discrete changes in ornamental artifacts and mortuary practices, as well as on observed differences in soils within sites (Lillard, Heizer and Fenenga 1939), was later refined by Beardsley (1954). An expanded definition of artifacts diagnostic of each time period was developed, and its application extended to parts of the central California coast. Traits held in common allow the application of this system within certain limits of time and space to other areas of prehistoric central California.

The Windmiller Culture (Early Horizon) is characterized by ventrally-extended burials (some dorsal extensions are known), with westerly orientation of heads; a high percentage of burials with grave goods; frequent presence of red ocher in graves; large projectile points, of which 60 percent are of materials other than obsidian; rectangular *Haliotis* beads; *Olivella* shell beads (types A1a and L); rare use of bone; some use of baked clay objects; and well-fashioned charmstones, usually perforated.

The Cosumnes Culture (Middle Horizon) displays considerable changes from the preceding cultural expression. The burial mode is predominately flexed, with variable cardinal orientation and some cremations present. During the Middle Horizon, there is a lower percentage of burials with grave goods, and ocher staining is common in graves. *Olivella* beads of types C1, F and G predominate, and there is abundant use of green *Haliotis* sp. rather than red *Haliotis* sp. Other characteristic artifacts include perforated and canid teeth; asymmetrical and "fishtail" charmstones, usually unperforated; cobble mortars and evidence of wooden mortars; extensive use of bone for tools and ornaments; large projectile points, with considerable use of rock other than obsidian; and use of baked clay.

The Hotchkiss Culture (Late Horizon) burial pattern retains the use of the flexed mode. There is wide spread evidence of cremation, and lesser use of red ocher, heavy sue of baked clay, *Olivella* beads of Types E and M, extensive use of *Haliotis* ornaments of many elaborate shapes and forms, shaped mortars and cylindrical pestles, bird-bone tubes with elaborate geometric designs, clam shell disc beads, small projectile points indicative of the introduction of the bow and arrow, flanged tubular pipes of steatite and

schist, and use of magnesite (Moratto 1984:181-183). The characteristics noted are not all-inclusive, but cover the more important traits.

Schulz (1981), in an extensive examination of the central California evidence for the use of acorns, used the terms Early, Middle and Late Complexes, but the traits attributed to them remain generally the same. While it is not altogether clear, Schulz seemingly uses the term “Complex” to refer to the particular archeological entities (above called “Horizons”) as defined in this region. Ragir's (1972) cultures are the same as Schulz's complexes.

Bennyhoff and Hughes (1984) have presented alternative dating schemes for the Central California Archeological Sequence. The primary emphasis is a more elaborate division of the horizons to reflect what is seen as cultural/temporal changes within the three horizons and a compression of the temporal span.

There have been other chronologies proposed, including Fredrickson (1973), and because it is correlated with Bennyhoff's (1977) work, it does merit discussion. The particular archeological cultural entities Fredrickson has defined, based upon the work of Bennyhoff, are patterns, phases, and aspects. Bennyhoff's (1977) work in the Plains Miwok area is the best definition of the Cosumnes District, which likely conforms to Fredrickson's pattern. Fredrickson also proposed periods of time associated heavily with economic modes, which provides a temporal term for comparing contemporary cultural entities. It corresponds with Willey and Phillips' (1958) earlier “tradition”, although it is tied more specifically to the archeological record in California.

Ethnography

The Project site lies within the northern portion of the ethnographic territory of the Yokuts people. The Yokuts were members of the Penutian language family which held all lands of the Central Valley, San Francisco Bay Area, and the Pacific Coast from Marin County to near Point Sur. The Yokuts differed from other ethnographic groups in California as they had true tribal divisions with group names (Kroeber 1925; Latta 1949). Each tribe spoke a particular dialect, common to its members, but similar enough to other Yokuts that they were mutually intelligible (Kroeber 1925).

The Yokuts held portions of the San Joaquin Valley from the Tehachapi range in the south to Stockton region in the north. On the north, they were bordered by the Plains Miwok, and on the west by the Saclan or Bay Miwok and Costonoan peoples. Although neighbors were often from distinct language families, differences between the people appear to have been more influenced by environmental factors as opposed to linguistic affinities. Thus, the Plains Miwok were more similar to the nearby Yokuts than to foothill members of their own language group. Similarities in cultural inventory co-varied with distance from other groups and proximity to culturally diverse people. The material culture of the southern San Joaquin Yokuts was therefore more closely related to that of their non-Yokuts neighbors than to that of Delta members of their own language group.

Trade was well developed with mutually beneficial interchange of needed or desired goods. Obsidian, rare in the San Joaquin Valley, was obtained by trade with Paiute and Shoshoni groups on the eastern side of the Sierra Nevada, where numerous sources of this material are located, and to some extent from the Napa Valley to the north. Shell beads, obtained by the Yokuts from coastal people, and acorns, rare in the Great Basin, were among many items exported to the east by Yokuts traders (Davis 1961).

Economic subsistence was based on the acorn, with substantial dependency on gathering and processing of wild seeds and other vegetable foods. The rivers, streams, and sloughs that formed a maze within the valley provided abundant food resources such as fish, shellfish, and turtles. Game, wild fowl, and small mammals were trapped and hunted to provide protein augmentation of the diet. In general, the eastern portion of the San Joaquin Valley provided a lush environment of varied food resources, with the estimated large population centers reflecting this abundance (Cook 1955; Baumhoff 1963).

Settlements were oriented along the water ways and village sites were normally placed adjacent to these features for their nearby water and food resources. House structures varied in size and shape (Latta 1949; Kroeber 1925), with most constructed from the readily available tules found in the extensive marshes of the low-lying valley areas. The housepit depressions for the structures ranged in diameter from three to 18 meters (Wallace 1978:470).

Historical Background

The project area lies between Salida and Modesto. After the initial rush of the gold miners in the 1850s, many of those who did not make money at mining, instead discovered the value of the land for agriculture. Many small towns were created as service centers for a wide spread population on ranches and farms. The towns were often associated with the railroad lines, creating a method of quickly sending farm products to a wider marketplace.

Salida Station started as a flag-stop on the railroad line. It was located on the property of John Murphy, one of the largest landowners in the region. By 1881, the town had a post office, restaurant, large warehouses, a blacksmith shop, church, and a public school (Elliott & Moore 1881). The Project area was owned by M.E. Byrum in 1906.

RECORDS SEARCH

On May 9, 2025, a records search was conducted for the project area and a 0.25-mile buffer zone through the Central California Information Center of the California Historical Resources Information System File No. 1333333448N). No resources have been reported for the project area nor for the buffer area. Two reports cover a small portion of the southern portion of the Project, covering the proposed widening to Kiernan Road. Two other reports cover portions of the buffer area. Citations are included in Appendix 2.

FIELD SURVEY

Janel Pleskac (M.A.) and Robert Marciales (A.A.) conducted a mixed-strategy pedestrian survey on May 15, 2025. The southern portion of the Project survey area, hosting an orchard, was covered in ten to fifteen meter wide transects. Ground visibility was good to fair. The northern portion was covered in dense alfalfa crop with extremely poor ground visibility. As such, only the dirt roads

surrounding the various fields could be inspected. No cultural resources were found during the survey effort cultural resources were observed. After the cutting of the next crop, the northern half should be re-surveyed to ensure full coverage.

RECOMMMENDATIONS

There is always a possibility that a site may exist in the project and be obscured by vegetation, siltation, or historic activities such as plowing and levelling for the establishment of an orchard, leaving no surface evidence. To assist in the recognition of cultural resources, a training session for all construction crew members should be conducted in advance of the initiation of any construction activities at the site. The training session will provide information on recognition of artifacts, human remains, and cultural deposits to help in the recognition of potential issues.

If artifacts, exotic rock, shell, or bone are uncovered during the construction, work should stop in that area immediately. A qualified archeologist should be contacted to examine and evaluate the deposit, and consult with the appropriate Native American group(s).

Discovery of Human Remains

In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area suspected to overlie adjacent remains until the Stanislaus County Coroner has determined that the remains are not subject to any provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative. The coroner shall make his or her determination within two working days from the time the person responsible for the excavation, or his or her authorized representative, notifies the coroner of the discovery or recognition of the human remains.

If the Stanislaus County Coroner determines that the remains are not subject to his or her authority and if the County Coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission (NAHC).

After notification, the NAHC will follow the procedures outlined in Public Resources Code Section 5097.98, that include notification of most likely descendants (MLDs), and recommendations for treatment of the remains.

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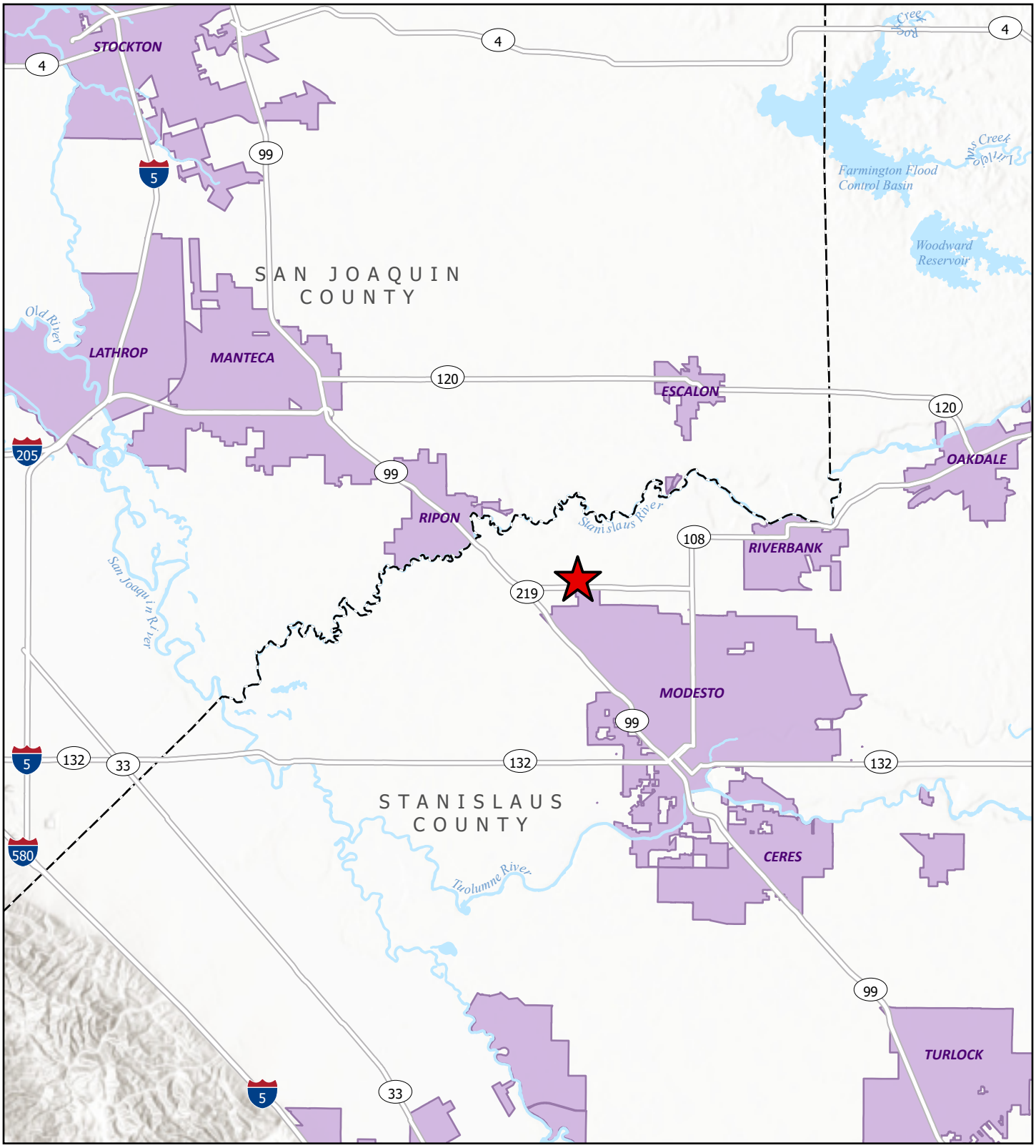
APPENDIX 1

PROJECT FIGURES



Legend

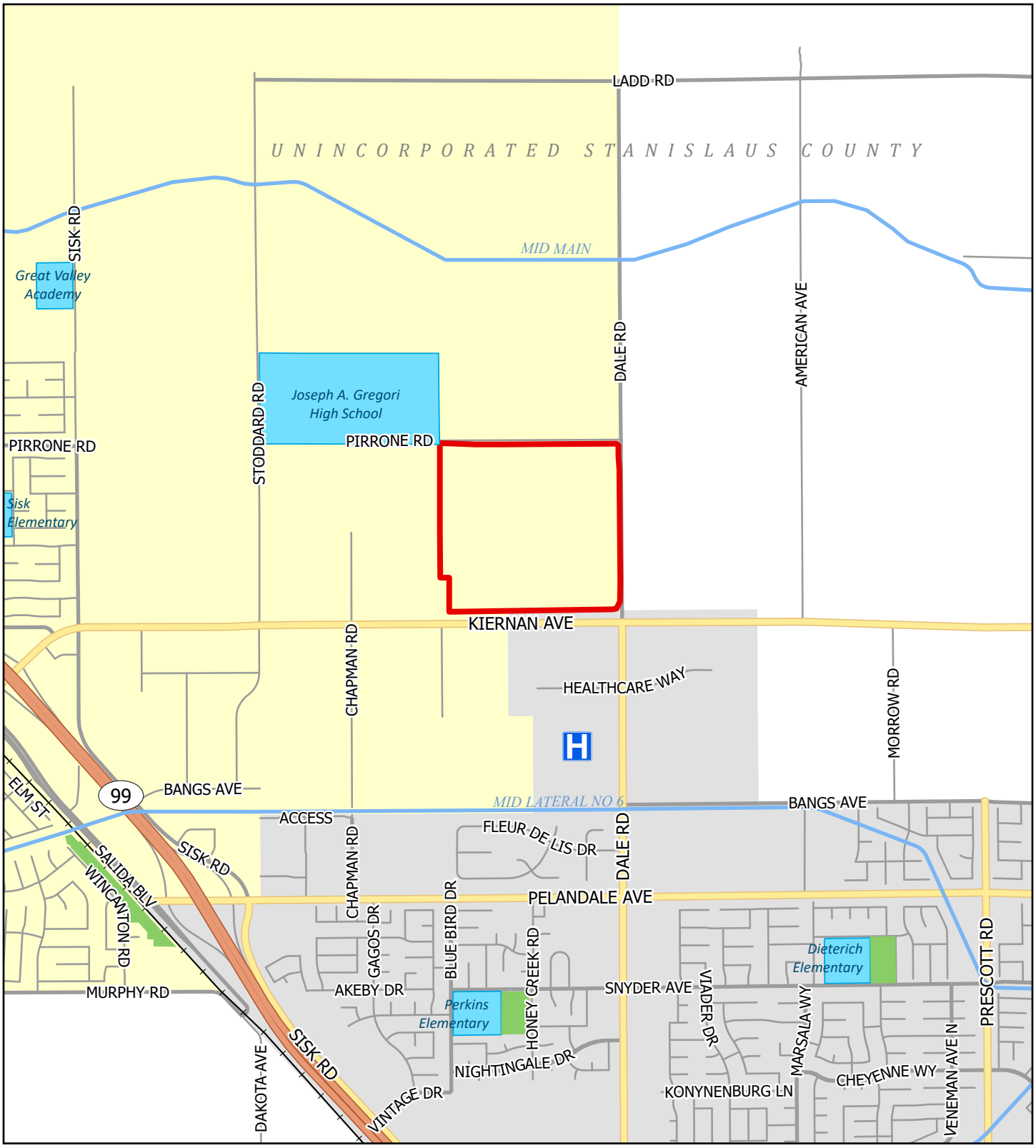
- Project Location
- County Area
- Water Feature
- Incorporated Area

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 1
Regional Location Map

0 1 2 Miles

Sources: California State Geoportal. Map Date: December 5, 2024.



Legend

- Project Boundary
- City of Modesto
- Salida Community Plan Area
- Public School
- Park
- Canal
- Kaiser Medical Center

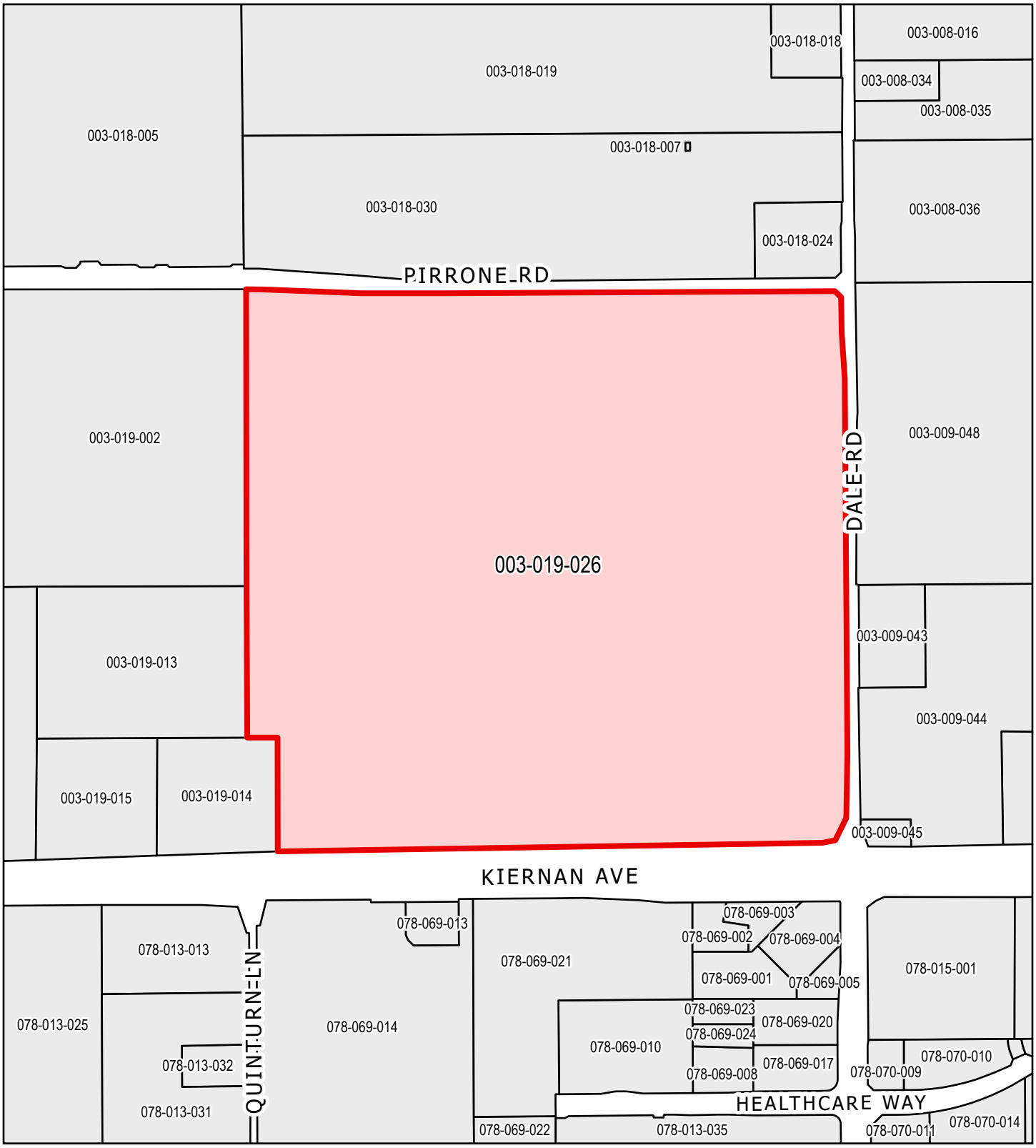
SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 2
Vicinity Map

0 500 1,000 Feet

Sources: Stanislaus County GIS; California School Campus Database; CPAD2024a; OSHPD. Map Date: December 5, 2024.

DE NOVO PLANNING GROUP
A LAND USE PLANNING, DESIGN, AND ENVIRONMENTAL FIRM



Legend

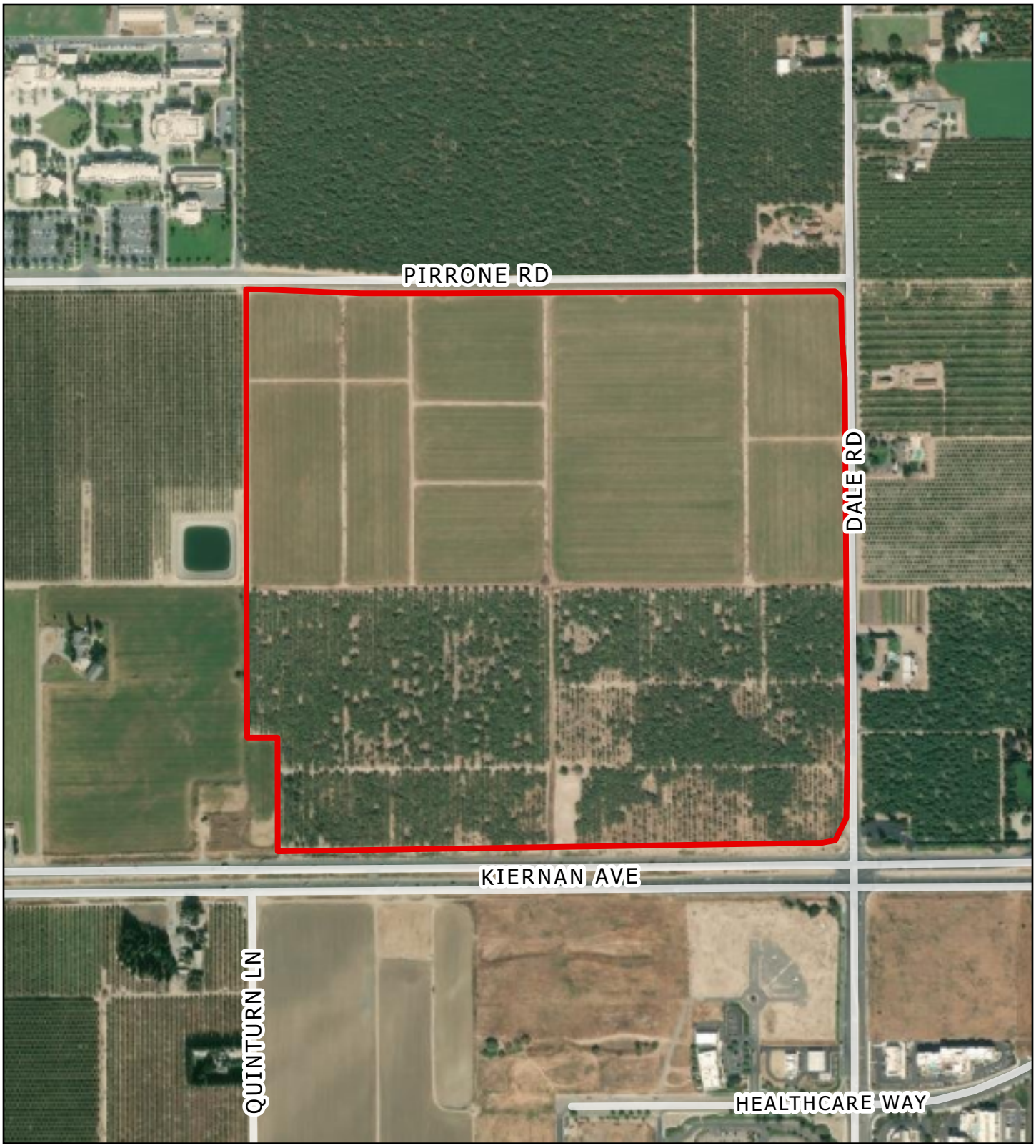
- Project Parcel
- Surrounding Parcel

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 3
Parcel Map

0 150 300 Feet

Sources: Stanislaus County GIS. Map Date: December 5, 2024.



Legend

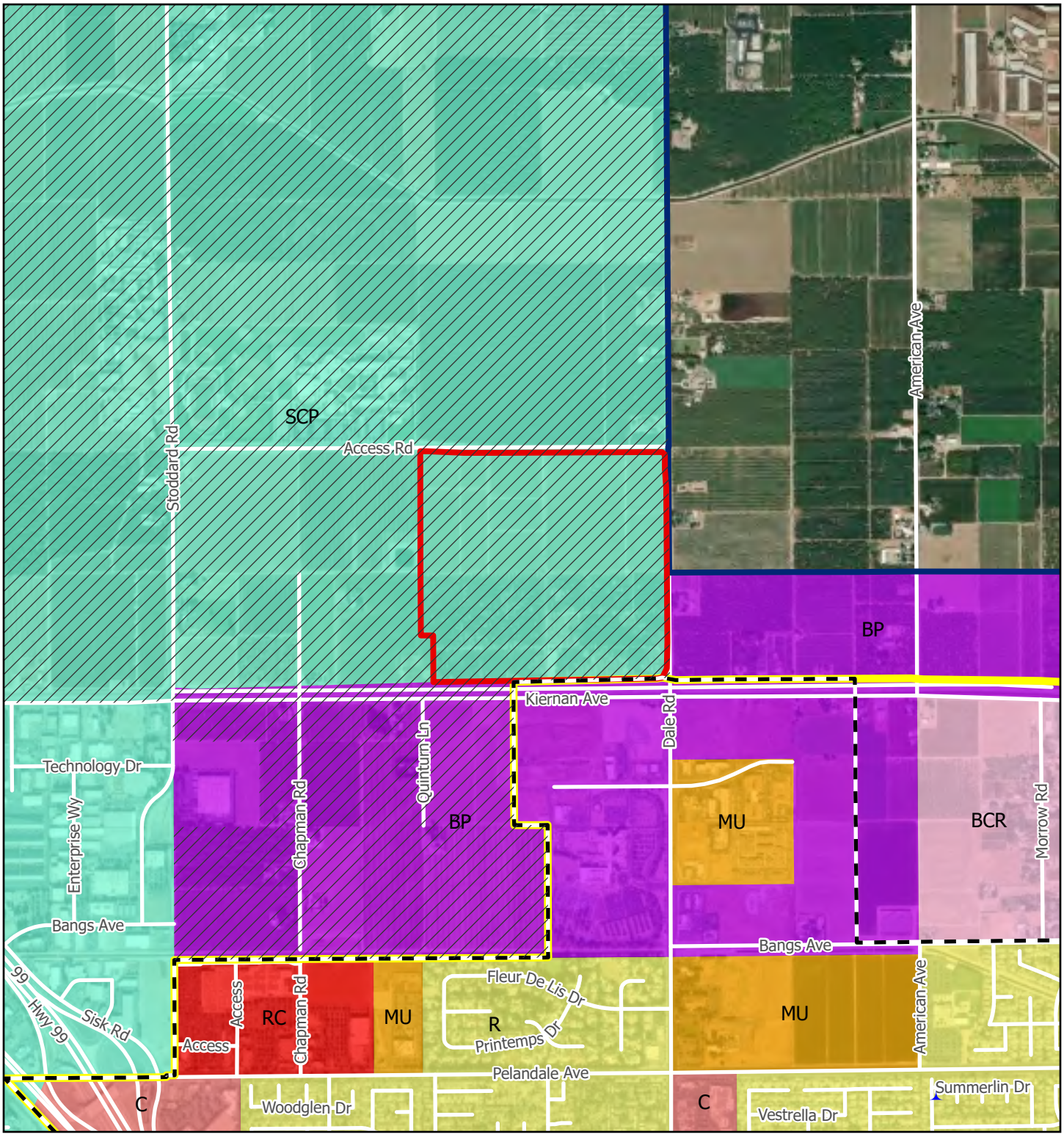
Project Parcel

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 4
Aerial View of Project Site

0 150 300
Feet

Sources: Stanislaus County GIS: MAXAR Imagery 9/23/2023.
Map Date: December 5, 2024.



Legend

- Project Parcel
- City of Modesto
- Modesto Sphere of Influence
- Modesto General Plan Planning Area
- Salida Community Plan Area
- R - Residential
- MU - Mixed Use
- C - Commercial
- RC - Regional Commercial
- BCR - Business-Commercial-Residential
- BP - Business Park
- SCP - Salida Community Plan

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

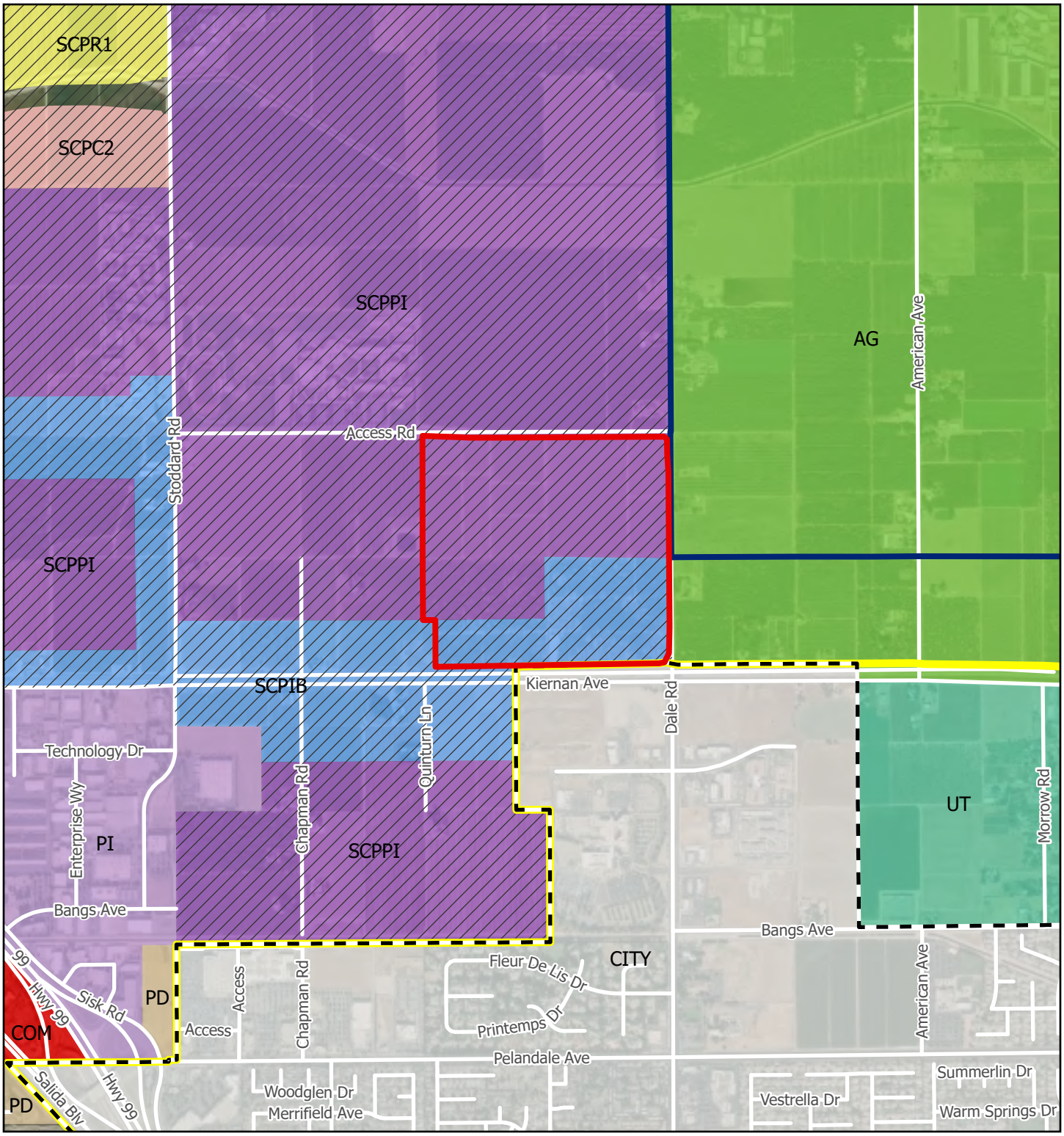
Figure 5a

Existing General Plan Land Use Designations
City of Modesto

0 500 1,000 Feet

DE NOVO PLANNING GROUP
A LAND USE PLANNING, DESIGN, AND ENVIRONMENTAL FIRM

Sources: City of Modesto General Plan. Map Date: December 13, 2024.



Legend

- Project Parcel
- City of Modesto
- Modesto Sphere of Influence
- Modesto General Plan Planning Area
- Salida Community Plan Area
- AG - Agriculture
- COM - Commercial
- PD - Planned Development
- PI - Planned Industrial
- UT - Urban Transition
- SCPR1 - Salida Community Plan R-1
- SCPC2 - Salida Community Plan C-2
- SCPIB - Salida Community Plan IPB
- SCPPI - Salida Community Plan PI
- CITY - City of Modesto

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

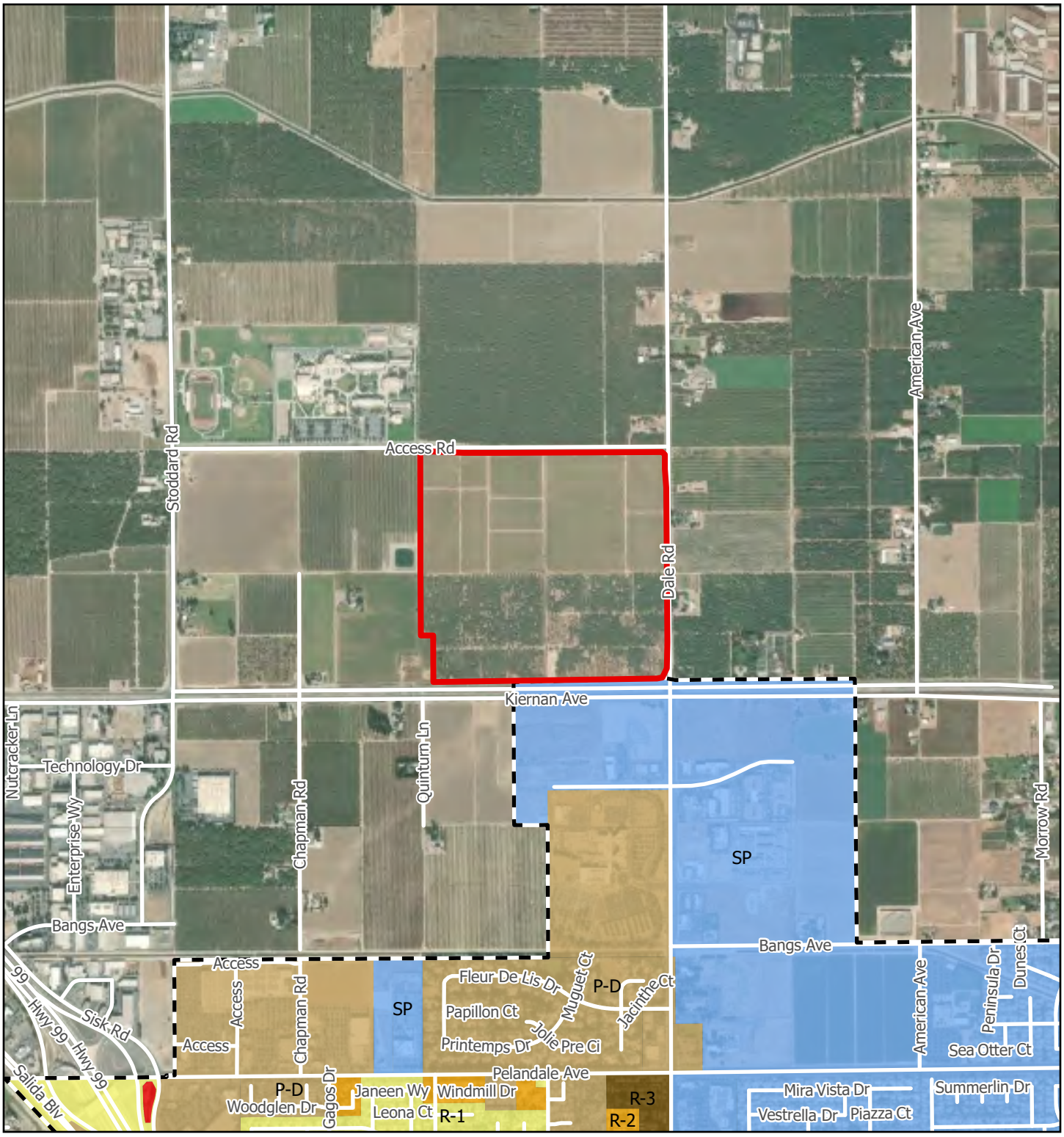
Figure 5b

Existing General Plan Land Use Designations
Stanislaus County

0 500 1,000 Feet

DE NOVO PLANNING GROUP
A LAND USE PLANNING, DESIGN, AND ENVIRONMENTAL FIRM

Sources: Stanislaus County General Plan. Map Date: December 13, 2024.



Legend

- Project Parcel
- City of Modesto
- R-1
- R-2
- R-3
- C-3
- P-D
- SP

Sources: City of Modesto Zoning Map. Map Date: December 13, 2024.

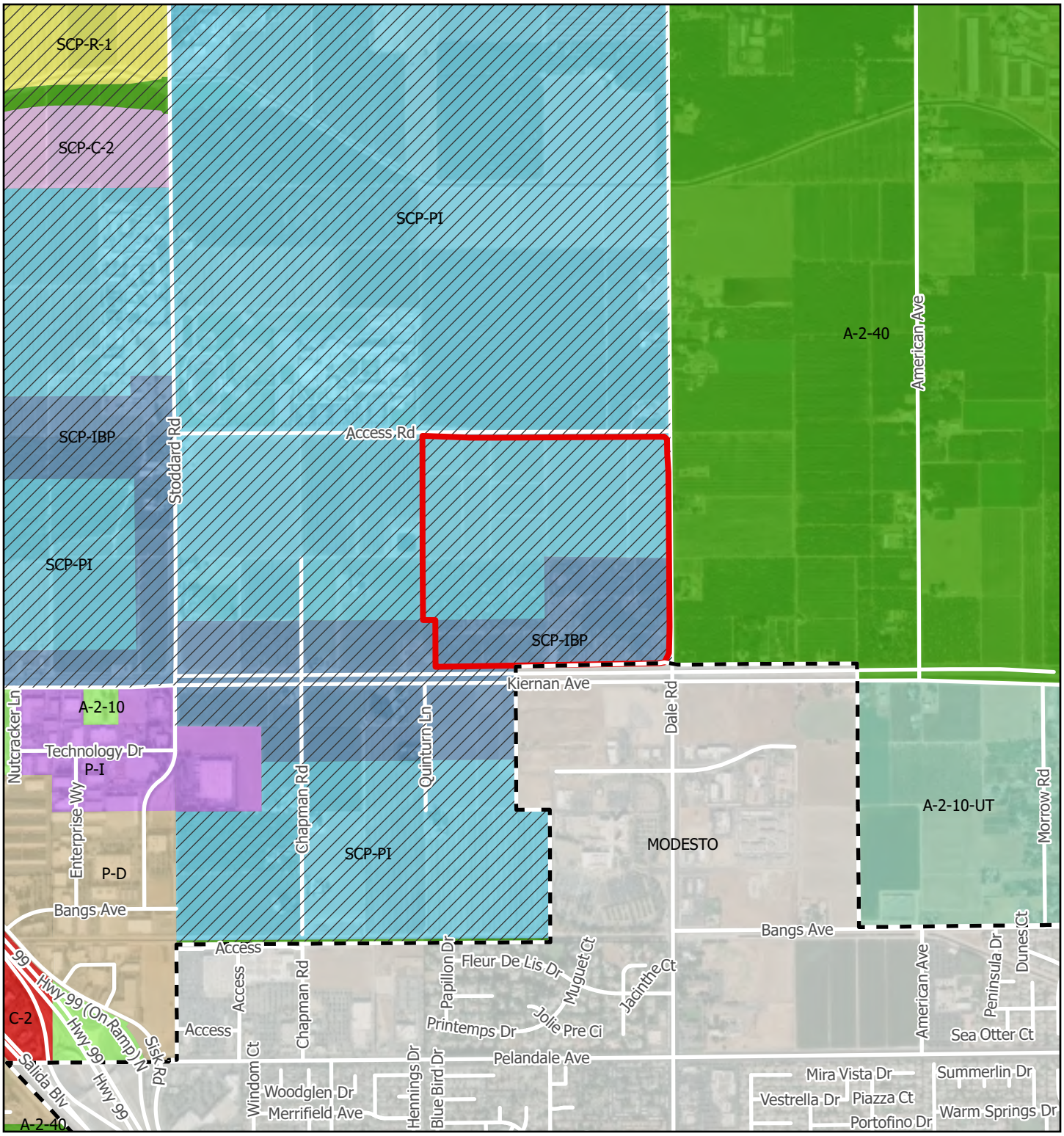
SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 6a

Existing Zoning Districts - City of Modesto

0 500 1,000 Feet

DE NOVO PLANNING GROUP
A LAND USE PLANNING, DESIGN, AND ENVIRONMENTAL FIRM



Legend

- Project Parcel
- City of Modesto
- Salida Community Plan Area
- A-2-10 - General AG 10 Acre
- A-2-10-UT - General AG 10 Acre UT
- A-2-40 - General AG 40 Acre
- C-2 - General Commercial
- P-I - Planned Industrial
- P-D - Planned Development
- SCP-R-1 - Salida Community Plan SF
- SCP-C-2 - Salida Community Plan C-2
- SCP-IBP - Salida Community Plan IBP
- SCP-PI - Salida Community Plan PI
- City of Modesto

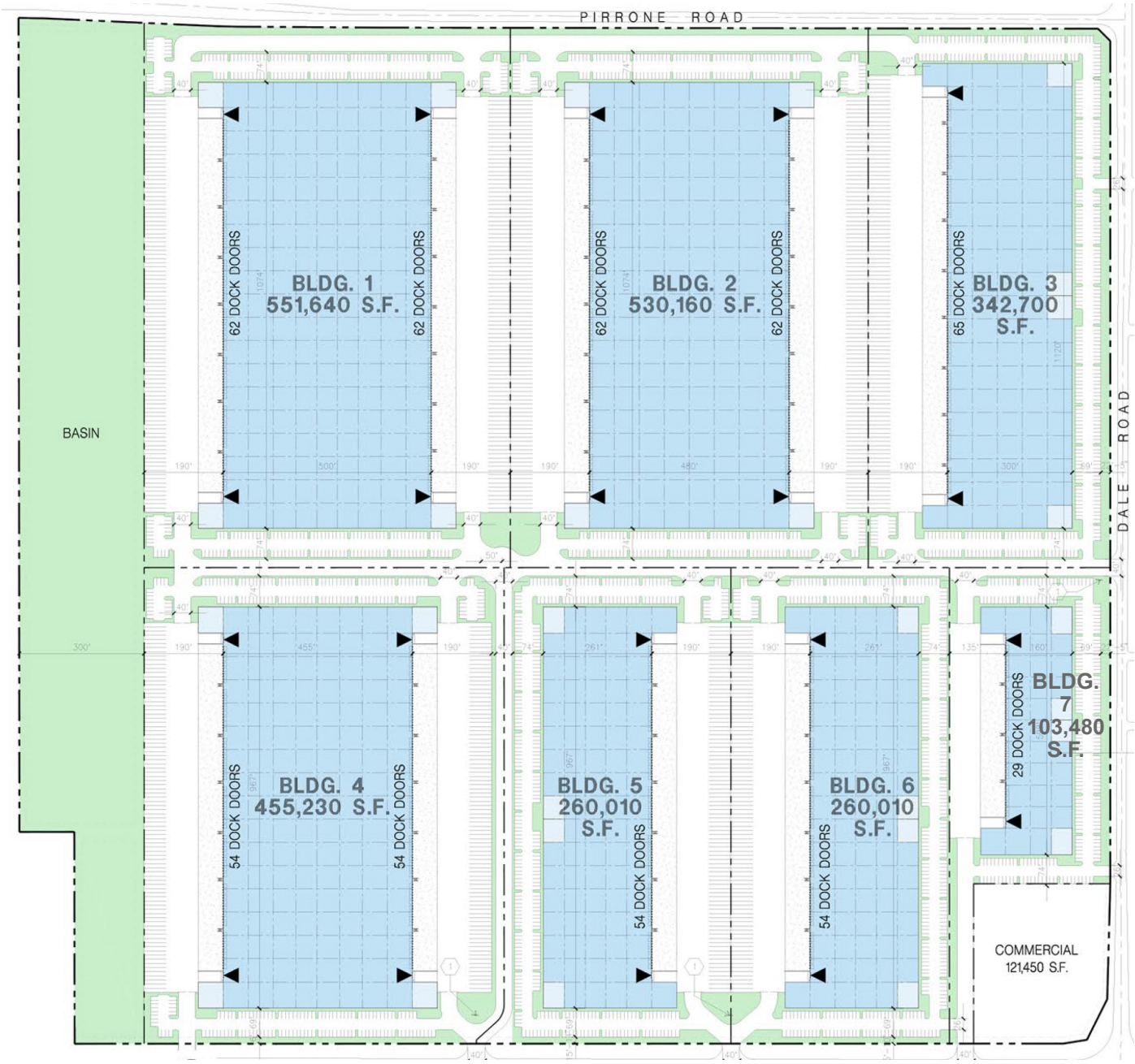
SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 6b
Existing Zoning Districts
Stanislaus County

0 500 1,000 Feet

DE NOVO PLANNING GROUP
A LAND USE PLANNING, DESIGN, AND ENVIRONMENTAL FIRM

Sources: Stanislaus County Zoning. Map Date: December 13, 2024.



Legend

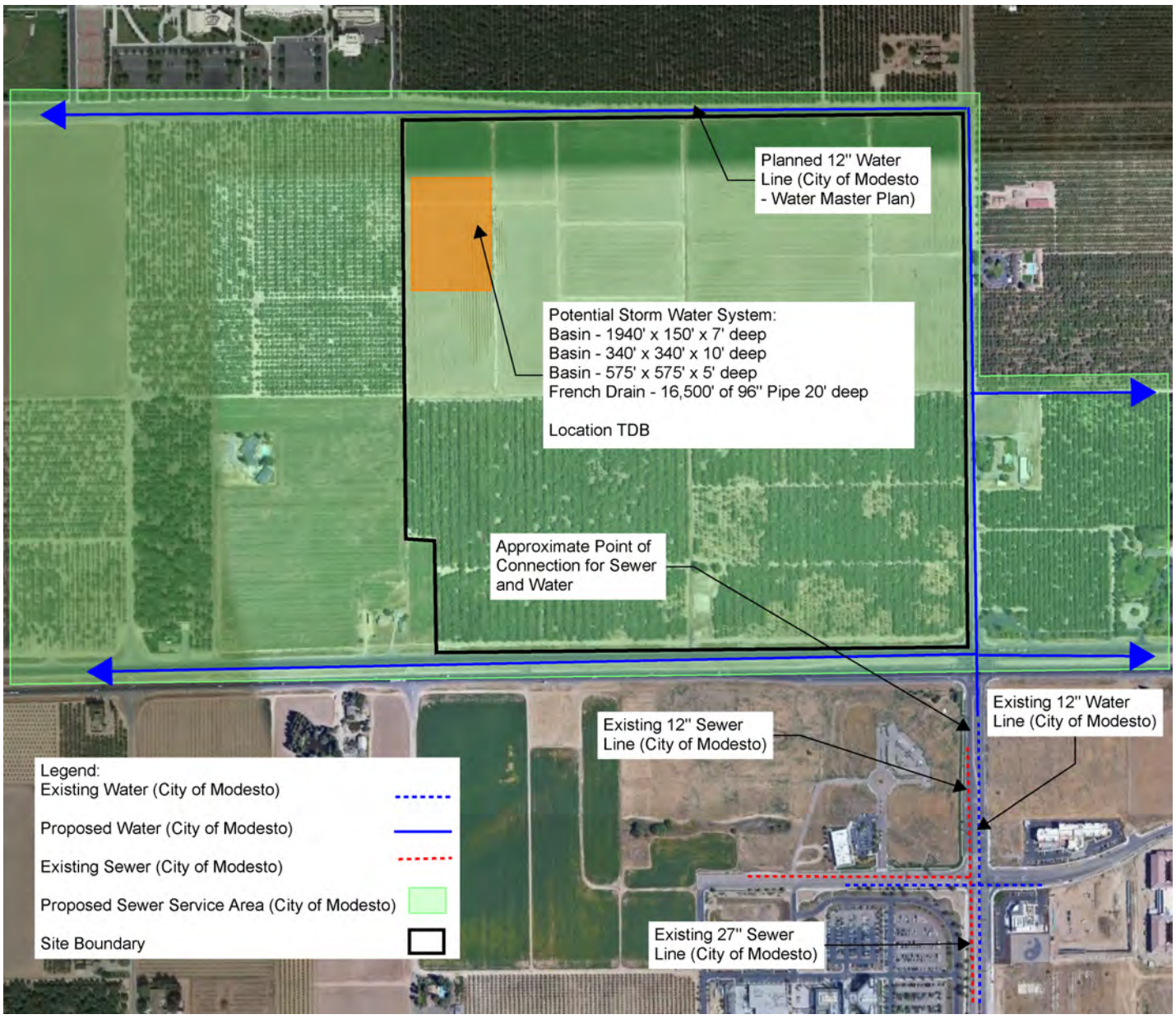
- Potential Office
- Warehouse
- Drive Thru Door

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 7
Proposed Tentative Map

0 150 300 Feet

Source: Stanislaus County. Map Date: December 5, 2024.

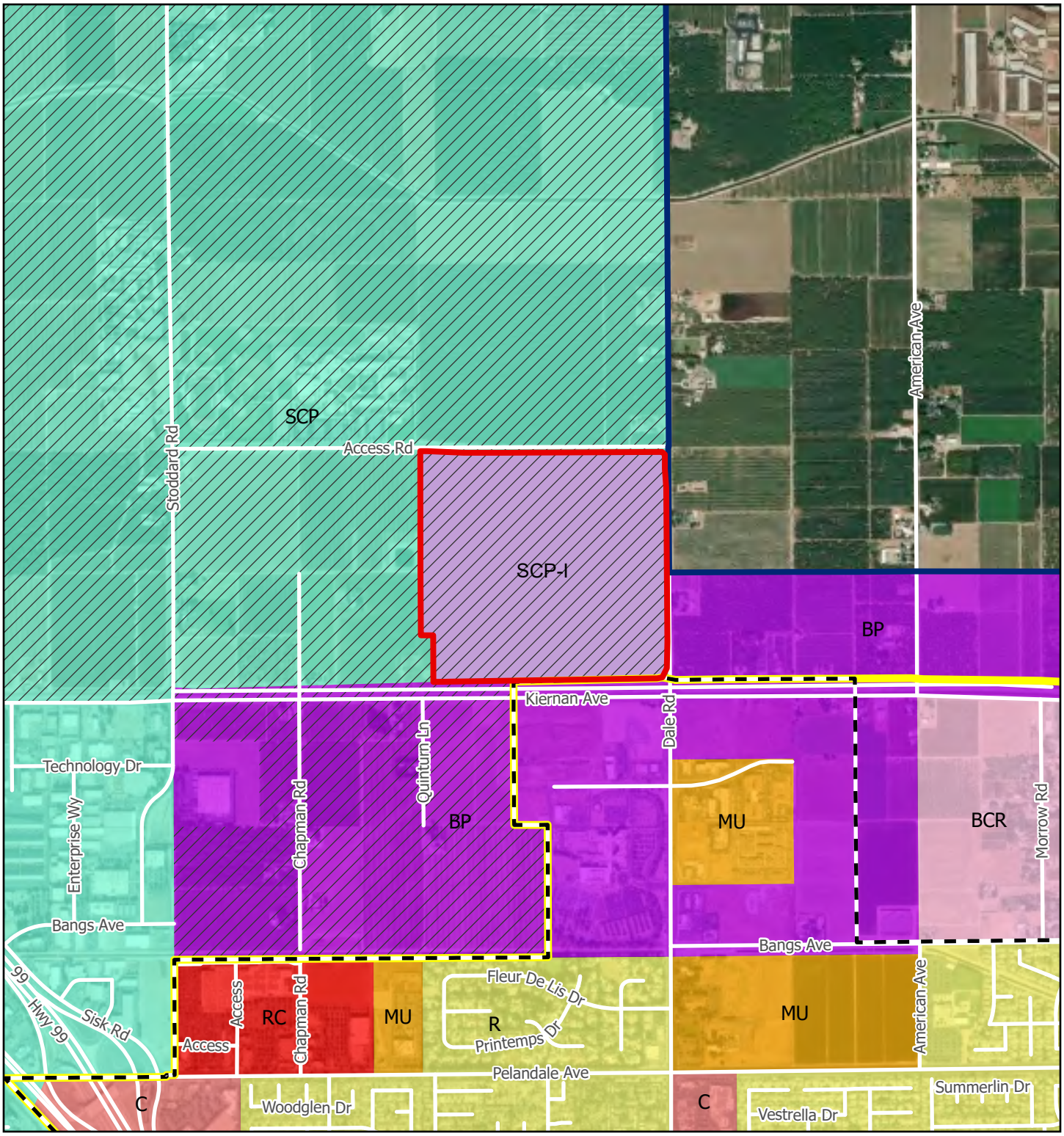


SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 8
Utility Plan

0 250 500 Feet

Source: North Star Engineering Group. Map Date: December 5, 2024.



Legend

- Project Parcel
- City of Modesto
- Modesto Sphere of Influence
- Modesto General Plan Planning Area
- Salida Community Plan Area

City of Modesto General Plan

- R - Residential
- MU - Mixed Use
- C - Commercial
- RC - Regional Commercial
- BCR - Business-Commercial-Residential
- BP - Business Park
- SCP - Salida Community Plan
- SCP-I - Salida Community Plan I

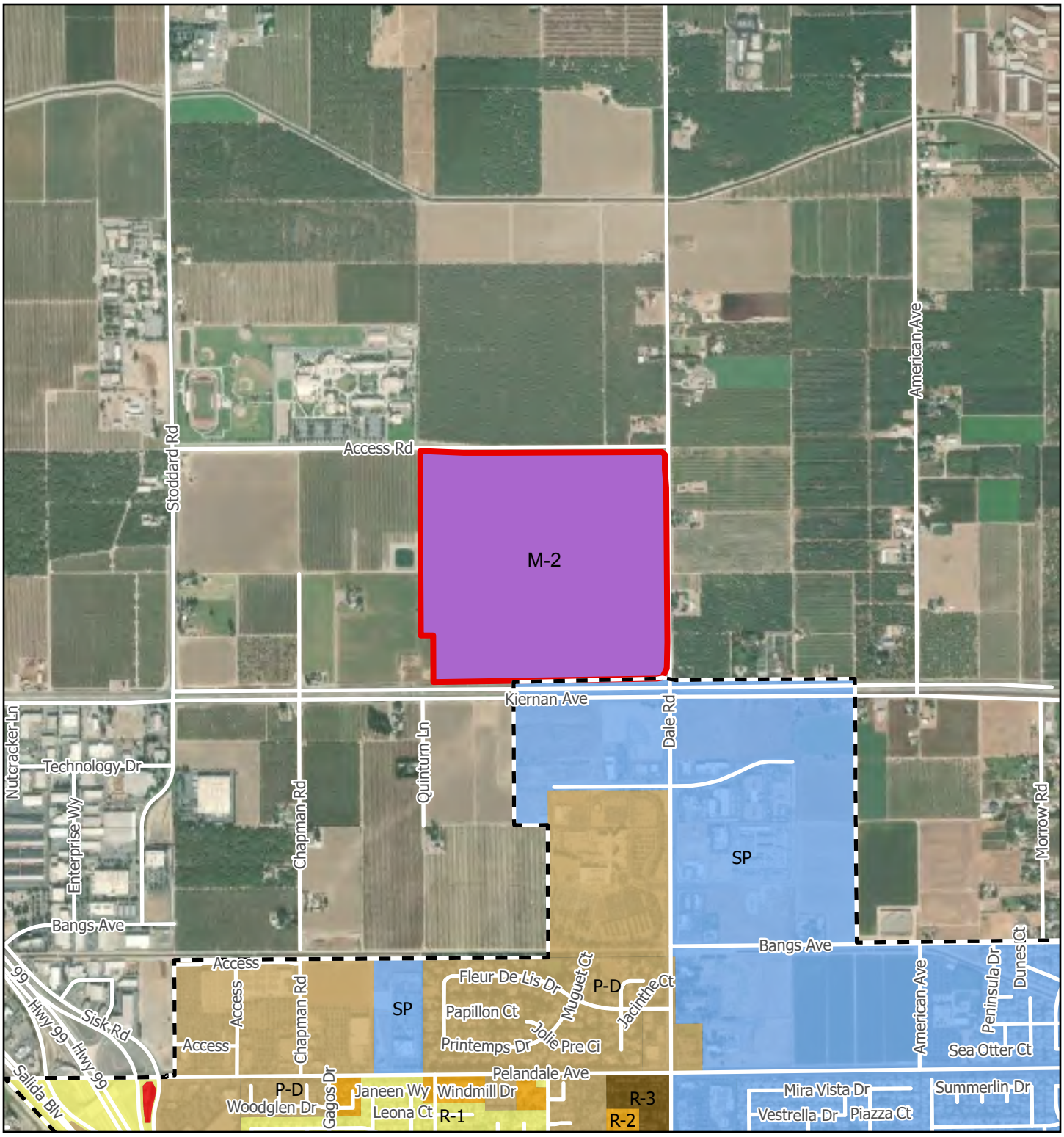
Sources: City of Modesto General Plan. Map Date: December 13, 2024.

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 9
Proposed General Plan Land Use Designations

0 500 1,000 Feet

DE NOVO PLANNING GROUP
A LAND USE PLANNING, DESIGN, AND ENVIRONMENTAL FIRM



Legend

- Project Parcel
- City of Modesto

City of Modesto Zoning

- R-1 -Low Density Residential
- R-2 - Medium Density Residential
- R-3 - Medium-High Density Residential
- C-3 - Highway Commercial
- P-D - Planned Development
- SP -Specific Plan
- M-2 - Heavy Industrial

Sources: City of Modesto Zoning Map. Map Date: December 13, 2024.

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 10
Proposed Zoning Districts

0 500 1,000 Feet

DE NOVO PLANNING GROUP
A LAND USE PLANNING, DESIGN, AND ENVIRONMENTAL FIRM

APPENDIX 2

RECORD SEARCH

CENTRAL CALIFORNIA INFORMATION CENTER

California Historical Resources Information System
Department of Anthropology – California State University, Stanislaus
One University Circle, Turlock, California 95382
(209) 667-3307

Alpine, Calaveras, Mariposa, Merced, Mono, San Joaquin, Stanislaus & Tuolumne Counties

Date: 5/9/2025

Records Search File No.: 13348N
Project: Scannel Property

Robert Gerry
Peak & Associates, Inc.
3941 Park Drive, Suite 30-329
El Dorado Hills, CA 95762
916-939-2405 robertgerry482@gmail.com

Invoice phone: 916-283-5238

The Central California Information Center received your record search request for the project area referenced above, located on the Salida 7.5' quadrangle in Stanislaus County. The following reflects the results of the records search for the project study area and radius:

As per data currently available at the CCaIC, the locations of resources/reports are provided in the following format: ☒ Custom GIS maps ☐ GIS Data/shape files

Summary Data:

Resources within the project area:	None formally reported to the Information Center.
Resources within the 1/4-mile radius:	None formally reported to the Information Center.
Reports within the project area:	2: ST-04054, 4821
Reports within the 1/4-mile radius:	3: ST-03698, 5470, 9742

Resource Database Printout (list):	☐ enclosed	☐ not requested	☒ nothing listed
Resource Database Printout (details):	☐ enclosed	☒ not requested	☐ nothing listed
Resource Digital Database Records:	☐ enclosed	☒ not requested	☐ nothing listed
Report Database Printout (list):	☒ enclosed	☐ not requested	☐ nothing listed
Report Database Printout (details):	☐ enclosed	☒ not requested	☐ nothing listed
Report Digital Database Records:	☐ enclosed	☒ not requested	☐ nothing listed
Resource Record Copies:	☐ enclosed	☐ not requested	☒ nothing listed
Report Copies:	☒ enclosed	☐ not requested	☐ nothing listed

OHP Historic Properties Directory: New Excel File: Built Environment Resource Directory (BERD)
Dated 9/23/2022: NOTE: Not all resources listed in the BERD are mapped in GIS, nor do we have records on file for; if you identify additional resources in the BERD that you need copies of, contact the IC.
☐ enclosed ☐ not requested ☒ nothing listed

Archaeological Resource Directory (ARD excerpt): ☐ enclosed ☐ not requested ☒ nothing listed

CA Inventory of Historic Resources (1976): ☐ enclosed ☒ not requested ☐ nothing listed

Caltrans Bridge Survey: ☐ enclosed ☒ not requested ☐ nothing listed

Ethnographic Information: ☐ enclosed ☒ not requested ☐ nothing listed

Historical Literature: ☐ enclosed ☒ not requested ☐ nothing listed

Historical Maps: ☐ enclosed ☒ not requested ☐ nothing listed

See also: http://ngmdb.usgs.gov>topoview

Local Inventories: ☐ enclosed ☒ not requested ☐ nothing listed

GLO and/or Rancho Plat Maps: ☐ enclosed ☒ not requested ☐ nothing listed

See also: https://glorecords.blm.gov

Shipwreck Inventory: ☒ not available at CaCIC; please go to http://shipwrecks.slc.ca.gov/ShipwrecksDatabase/Shipwrecks_Database.asp

Soil Survey Maps: ☒ not available at CCaIC; please go to http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Thank you for using the California Historical Resources Information System (CHRIS). **Note:** Billing will be transmitted separately via email by our Financial Services office* ($233.70), payable within 60 days of receipt of the invoice.

If you wish to include payment by Credit Card, you must wait to receive the official invoice from Financial Services so that you can reference the CMP # (Invoice Number), and then contact the link below:

https://commerce.cashnet.com/ANTHROPOLOGY

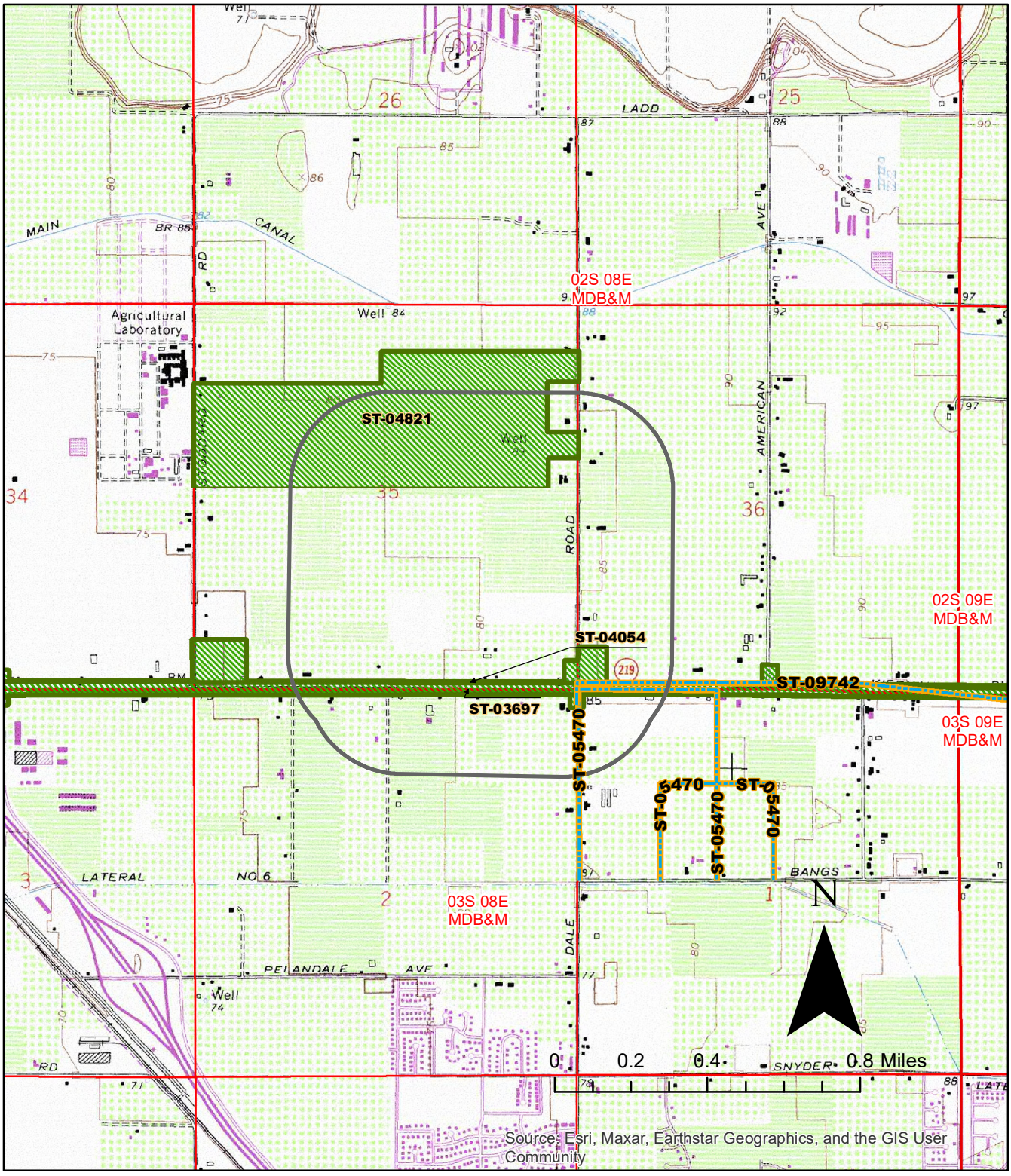
Sincerely,

E. A. Greathouse

E. A. Greathouse, Coordinator
Central California Information Center
California Historical Resources Information System

* Invoice Request sent to: ARBilling@csustan.edu, CSU Stanislaus Financial Services

CCaIC 13348N Scannel Property
Reports 1/4-mile radius 1:24,000-scale
Salida USGS 7.5' Quadrangle



Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
ST-03697	NADB-R - 1363628	1999	Sharp, J., K. Hovey, and L. Nishimura	Department of Transportation Negative Archaeological Survey Report, 10-STA-219, P.M. 0.1/4.9, E.A. 0A8700, Widen Existing Route 219 from a Two-Lane to a Four-Lane Section, Intersections Dale Road, Carver Road, and Tully Road will be Upgraded Adding Turn Lanes at each Intersection	Caltrans District 10	
ST-04054	NADB-R - 1364023	2000	Sharp, J.	Department of Transportation Negative Archaeological Survey Report- First Supplemental Survey, 10-STA-219, P.M. 0.1/4.9, EA 0A8700, Widening of Route 219 from a Two-Lane to a Four-Lane, Intersections at Dale, Carver, and Tully Road will be Upgraded with Left Turn Lanes	California Department of Transportation	
ST-04821	NADB-R - 1364741	2002	Windmiller, R. and D. S. Napoli	Cultural Resources Inventory, Gregori High School Project, Modesto, Stanislaus County, California	R. Windmiller	50-001867, 50-001868, 50-001869, 50-001870, 50-001871, 50-001872
ST-05470	NADB-R - 1365351	2004	Jensen, P. M.	Archaeological Inventory Survey, Kiernan Substation and Transmission Line Project, c. One-acre Substation and 2.2-mile Transmission Line, Stanislaus County, California.	Jensen & Associates for Insite Environmental, Inc.	
ST-09742		2023	Brunzell, D.	Cultural Resources Assessment, Stanislaus Elementary School 1, 2, 3-TCP Mitigation Project, Modesto and Unincorporated Stanislaus County, California	BCRConsulting LLC for Ardurra	

APPENDIX D

Noise and Vibration Assessment

NOISE AND VIBRATION ASSESSMENT

FOR THE

SCANNELL INDUSTRIAL PROJECT

MODESTO CALIFORNIA

JULY 29, 2025

PROJECT TITLE

Scannell Industrial

PREPARED BY:

De Novo Planning Group
1020 Suncast Lane Suite 106
El Dorado Hills, CA 95762

CONTACT PERSON AND PHONE NUMBER

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INTRODUCTION

This Noise and Vibration Assessment was prepared to assess potential noise and vibration impacts that may be attributable to the proposed Scannell Industrial Project in the City of Modesto, San Joaquin County, California. This report addresses the potential noise impacts associated with the Project in accordance with the California Environmental Quality Act (CEQA) (California Public Resources Code §21000 et seq.) and the State CEQA Guidelines (California Code of Regulations, Title 14, §15000 et seq.).

PROJECT DESCRIPTION

PROJECT LOCATION

The Scannell Industrial Project (proposed Project) is comprised of approximately 145 acres located at the northwest corner of Kiernan Avenue and Dale Road intersection, within the unincorporated Community of Salida. The Project site is comprised of active agricultural fields and orchards to the northern and southern portions of the Project site, respectively. The Project site is located within the Stanislaus County Salida Community Plan (SCP) and is zoned for development as Salida Community Plan Industrial/Business Park (SCP-IBP) and Salida Community Plan Planned Industrial (SCP-PI). The area is also within the City of Modesto General Plan Planning Area with a designation of Salida Community Plan (SCP).

EXISTING SURROUNDING USES

The Project site and surrounding properties are generally in agricultural use. There are also light industrial developments east and west of the project site, along Kiernan Avenue. Joseph A. Gregori High School is located northwest of the site and the Kaiser Permanente Modesto Medical Center and similar business park uses are located immediately south, within the City of Modesto. The Project site is located on the Assessor's Parcel Number (APN) 003-019-026. The Project location is provided in Figure 1. An aerial view of the Project site is provided in Figure 2.

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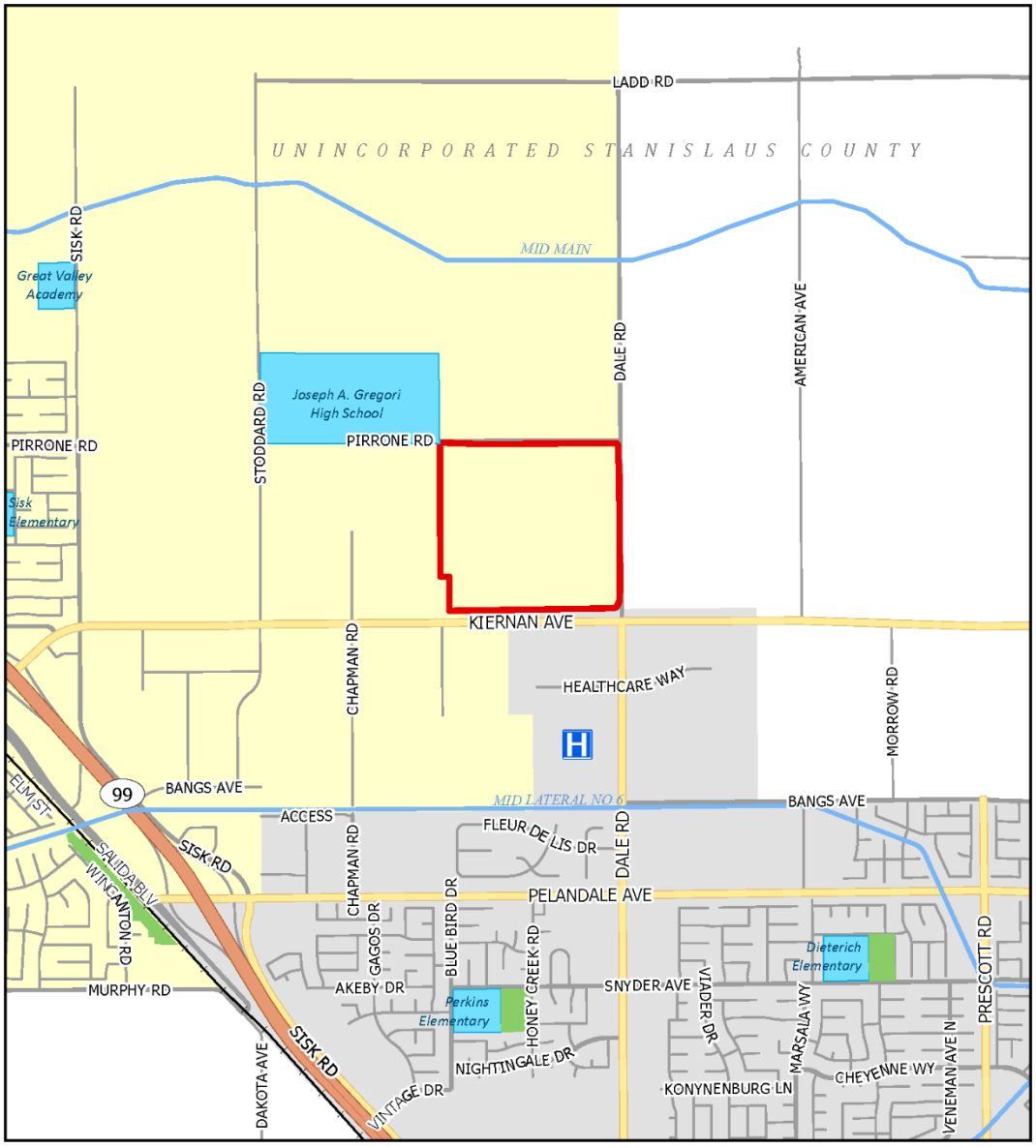
FIGURE-1: PROJECT LOCATION



Legend

- Project Boundary
- City of Modesto
- Salida Community Plan Area
- Public School
- Park
- Canal
- Kaiser Medical Center

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 2.0-2. Project Vicinity Map

0 500 1,000 Feet

Sources: Stanislaus County GIS; California School Campus Database; CPAD2024a; OSHPD. Map Date: December 5, 2024.

DE NOVO PLANNING GROUP
A LAND USE PLANNING, DESIGN, AND ENVIRONMENTAL FIRM

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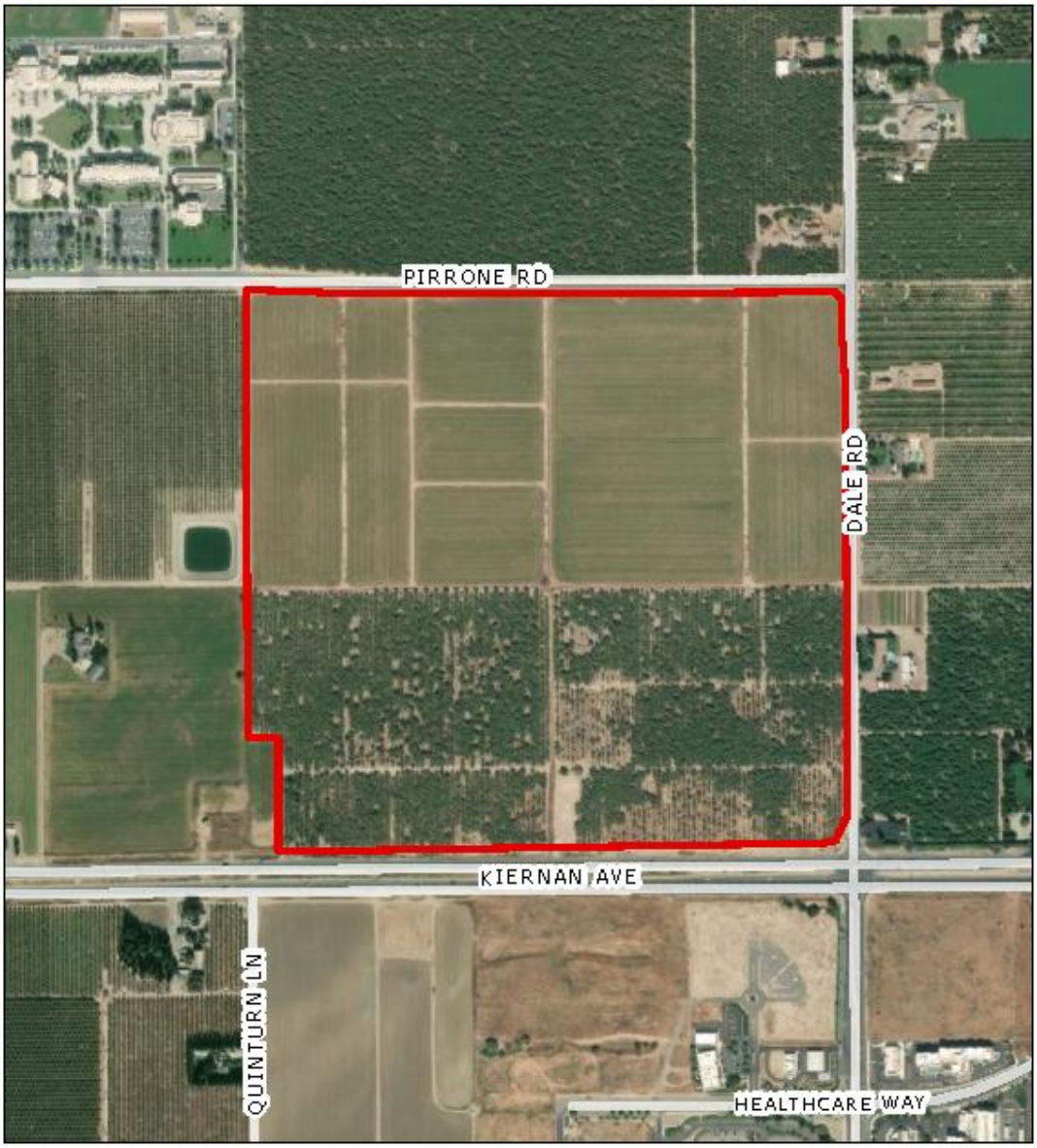
FIGURE-2: AERIAL VIEW



Legend

Project Parcel

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 2.0-4. Aerial View of Project Site

The Project site and surrounding properties are generally in agricultural use. The Project site is primarily bounded by lands within the unincorporated county to the north, east and west. Lands within the City of Modesto are located to the south. Uses within the surrounding area include the following:

- North – Agricultural lands, Joseph A. Gregori High School.
- East – Agricultural lands, industrial developments, along Kiernan Avenue.
- South – Kaiser Permanente Modesto Medical Center and similar business park uses, within the City of Modesto.
- West – Agricultural lands, industrial developments.

PROJECT CHARACTERISTICS

The proposed Project will result in the construction of between 2,000,000 and 2,500,000 square feet of warehouse, distribution, and manufacturing space. In addition, a small 2–3-acre retail site is proposed at the corner of Dale Road and Kiernan Avenue (SR 219) to provide retail service to the project. The proposed Project includes a Tentative Map that would create eight parcels for the industrial and retail buildings.

The applicant proposes to construct seven industrial buildings. The warehouse buildings would be single-story, with a maximum height of 45 feet. The size of each building (in square feet) is summarized in Table 1, below. For the analysis, future uses are anticipated to be evenly split between manufacturing, warehouse, and distribution uses. The end user is not known currently, but cold storage is anticipated to occupy between 0-20% of the total space.

TABLE 1: SUMMARY OF PROPOSED OFFICE AND WAREHOUSE BUILDINGS

	BUILDING 1	*BUILDING 2*	*BUILDING 3*	*BUILDING 4*	*BUILDING 5*	*BUILDING 6*	*BUILDING 7*
Site Area (sf)	1,145,488	1,116,754	753,947	988,633	627,181	601,557	316,397
Building Area (sf) Office/Warehouse	20,000/ 531,640	20,000/ 510,160	20,000/ 322,700	20,000/ 435,230	20,000/ 240,010	20,000/ 240,010	10,000/ 93,480
Parking Provided Standard/Trailer	290/200	275/200	401/105	265/178	357/ 89	358/89	225/0

SOURCE: CITY OF MODESTO, 2024.

The projected Project phasing is currently expected to be four (4) phases of development over approximately ten (10) years. Each phase would include removal of existing almond trees or ground crops (based on current farming practices). Improvements to serve each phase could include, but would not be limited to, any required off-site street improvements and extension of utilities, site grading, construction of underground utilities on-site (water, sewer, and dry utilities), storm drainage and storm drainage retention, paving, landscaping, lighting, and the construction of buildings. As the project develops, the timing, size, and number of phases may change based on market conditions.

The Project would operate continuously, and the site would be active 24 hours a day, seven days a week. It is estimated that the warehouse facilities would provide approximately 1,000

employment opportunities, based on the employment generation assumptions in the Salida Community Plan.

The 2 to 3-acre retail site does not have a proposed end use, but a variety of commercial retail uses allowed under the City's commercial land use and zoning standards could occupy the retail site. Based on the size of the parcel, it is expected that the end user would be a local serving retail as opposed to regional shopping, and examples of such uses include a gas station, and possibly a small restaurant use.

SCOPE OF NOISE AND VIBRATION ASSESSMENT

Relevant elements of the proposed Project related to the analysis of potential noise impacts include: (1) the use of construction equipment during construction of the proposed warehousing uses and parking lot (2) noise generated during the operations phase of the Project, which would include noise sources such as stationary sources (e.g., mechanical equipment, landscape maintenance equipment) and (3) the vehicle trips generated by the proposed Project. This Report provides discussions of noise and vibration relative to the regulatory and environmental setting, Projects impacts and mitigation measures.

NOISE AND VIBRATION BASICS AND TERMINOLOGY

Noise

"Sound" is a vibratory disturbance created by a moving or vibrating source and is capable of being detected. "Noise" is defined as sound that is loud, unpleasant, unexpected, or undesired and may therefore be classified as a more specific group of sounds. The effects of noise on people can include general annoyance; interference with speech communication; sleep disturbance; and, in the extreme, hearing impairment (Caltrans 2013).

Sound pressure levels are described in units called the decibel (dB). Decibels are measured on a logarithmic scale. A doubling of the energy of a noise source (such as doubling of traffic volume) would increase the noise level by 3 dB. The human ear is not equally sensitive to all frequencies within the sound spectrum. To accommodate this phenomenon, the A-scale was devised; the A-weighted decibel scale (dBA) approximates the frequency response of the average healthy ear when listening to most ordinary everyday sounds and is used in this analysis.

Human perception of noise has no simple correlation with acoustical energy. Due to subjective thresholds of tolerance, the annoyance of a given noise source is perceived very differently from person to person. The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at 3 feet is approximately 60 dBA, while loud jet engine noises at 1,000 feet equate to 100 dBA, which can cause serious discomfort. Table 2 shows the relationship of various noise levels in dBA to commonly experienced noise events.

TABLE 2: NOISE LEVELS FOR COMMON EVENTS

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock Band
Jet fly-over at 300 m (1,000 ft)	100	
Gas lawn mower at 1 m (3 ft)	90	
Diesel truck at 15 m (50 ft) at 80 km/hr (50 mph)	80	Food blender at 1 m (3 ft); garbage disposal at 1 m (3 ft)
Noisy urban area, daytime gas lawn mower at 30 m (100 ft)	70	Vacuum cleaner at 3 m (10 ft)
Commercial area, heavy traffic at 90 m (300 ft)	60	Normal speech at 1 m (3 ft)
Quiet urban daytime	50	Large business office, dishwasher in next room
Quiet urban nighttime	40	Theater, large conference room (background)
Quiet suburban nighttime	30	Library
Quiet rural nighttime	20	Bedroom at night, concert hall (background)
	10	Broadcast/recording studio
Lowest threshold of human hearing	0	Lowest threshold of human hearing
Notes: dBA: A-weighted decibels; m: meter; ft: feet; km/hr: kilometers per hour; mph: miles per hour		

SOURCE: CALTRANS 2013.

Two noise sources do not "sound twice as loud" as one source. As stated above, a doubling of noise sources results in a noise level increase of 3 dBA. It is widely accepted that (1) the average healthy ear can barely perceive changes of a 3 dBA increase or decrease; (2) a change of 5 dBA is readily perceptible; and (3) an increase (decrease) of 10 dBA sounds twice (half) as loud (Caltrans, 2013).

From the source to the receiver, noise changes both in the level and frequency spectrum. The most obvious change is the decrease in noise level as the distance from the source increases. Sound from a small localized source (approximating a "point" source) radiates uniformly outward as it travels away from the source in a spherical pattern. For point sources, such as heating, ventilation, and air conditioning (HVAC) units or construction equipment, the sound level attenuates (or drops off) at a rate of 6 dBA for each doubling of distance (i.e., if the noise level is 70 dBA at 25 feet, it is 64 dBA at 50 feet). Vehicle movement on a road makes the source of the sound appear to emanate from a line (line source) rather than a point when viewed over some time interval. The sound level attenuates or drops off at a rate of 3 dBA per doubling of distance for line sources.

A large object in the path between a noise source and a receiver can significantly attenuate noise levels at that receiver location. The amount of attenuation provided by this "shielding" depends on the size of the object and the frequencies of the noise levels. Natural terrain or landform features as well as man-made features (e.g., buildings and walls) can significantly alter noise exposure levels. For a noise barrier to work, it must be high enough and long enough to block the view from the receiver to a road or to the noise source. Effective noise barriers can reduce outdoor noise levels at the receptor by up to 15 dBA.

Several rating scales (or noise "metrics") exist to analyze effects of noise on a community. These scales include the equivalent noise level (Leq), including Lmax and Lmin, which are respectively the highest and lowest A-weighted sound levels that occur ding a noise event, and the Community Noise Equivalent Level (CNEL). Average noise levels over a period of minutes or hours are usually expressed as dBA Leq, which is the equivalent noise level for that period of time. The period of time averaging may be specified; for example, Leq(3) would be a three-hour average. Noise of short duration (i.e., substantially less than the averaging period) is averaged into ambient noise during the period of interest. Thus, a loud noise lasting many seconds or a few minutes may have minimal effect on the measured sound level averaged over a one-hour period.

To evaluate community noise impacts, CNEL was developed to account for human sensitivity to nighttime noise. CNEL represents the 24-hour average sound level with a penalty for noise occurring at night. The CNEL computation divides a 24-hour day into 3 periods: daytime (7:00 AM to 7:00 PM), evening (7:00 PM to 10:00 PM), and nighttime (10:00 PM to 7:00 AM). The evening sound levels are assigned a 5 dBA penalty, and the nighttime sound levels are assigned a 10 dBA penalty prior to averaging with daytime hourly sound levels.

Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration is normally associated with activities such as railroads or vibration-intensive stationary sources, but can also be associated with construction equipment such as jackhammers, pile drivers, and hydraulic hammers. Vibration displacement is the distance that a point on a surface moves away from its original static position. The instantaneous speed that a point on a surface moves is described as the velocity, and the rate of change of the speed is described as the acceleration. Each of these descriptors can be used to correlate vibration to human response, building damage, and acceptable equipment vibration levels. During construction of a project, the operation of construction equipment can cause groundborne vibration. During the operational phase of a project, receptors may be subject to levels of vibration that can cause annoyance due to noise generated from vibration of a structure or items within a structure. Analysis of this type of vibration is best measured in velocity and acceleration.

The three main wave types of concern in the propagation of groundborne vibrations are surface or Rayleigh waves, compression or P-waves, and shear or S-waves.

- Surface or Rayleigh waves travel along the ground surface. They carry most of their energy along an expanding cylindrical wave front, similar to the ripples produced by throwing a rock into a lake. The particle motion is more or less perpendicular to the direction of propagation (known as retrograde elliptical).
- Compression or P-waves are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal, in a push-pull motion. P-waves are analogous to airborne sound waves.
- Shear or S-waves are also body waves, carrying their energy along an expanding spherical wave front. Unlike P-waves, however, the particle motion is transverse, or perpendicular to the direction of propagation.

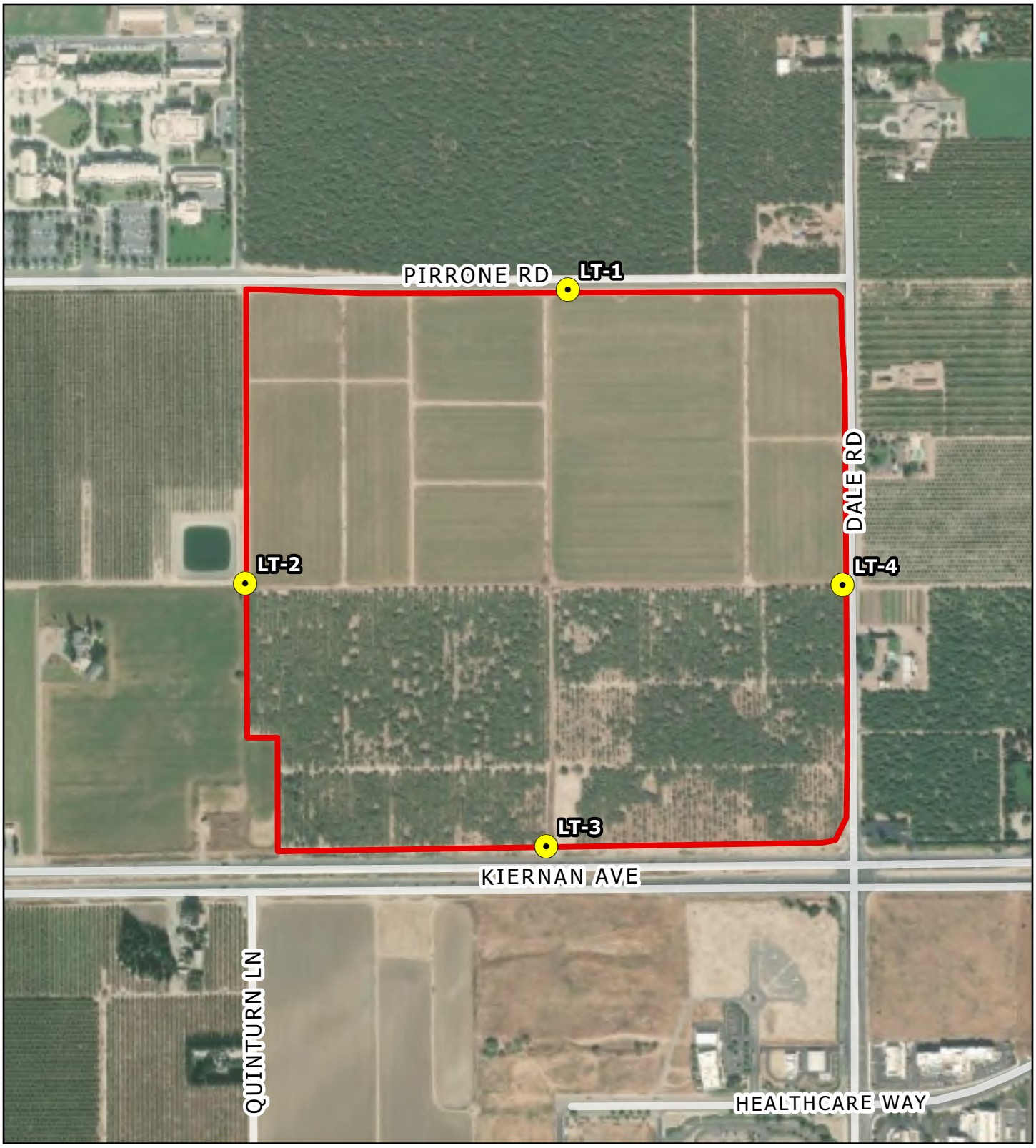
The peak particle velocity (ppv) or the root mean square (rms) velocity is usually used to describe vibration amplitudes. The ppv is defined as the maximum instantaneous peak of the vibration signal and the rms is defined as the square root of the average of the squared amplitude of the signal. The ppv is more appropriate for evaluating potential building damage, whereas the rms is typically more suitable for evaluating human response.

The units for ppv and rms velocity are normally inches per second (in/sec). Often, vibration is presented and discussed in dB units in order to compress the range of numbers required to describe the vibration. In this study, all ppv and rms velocity levels are in in/sec and all vibration levels are in dB relative to one microinch per second (abbreviated as VdB). The threshold of perception is approximately 65 VdB. Typically, groundborne vibration generated by human activities attenuates rapidly with distance from the source of the vibration. Even the more persistent Rayleigh waves decrease relatively quickly as they move away from the source of the vibration. Manmade vibration problems are, therefore, usually confined to short distances (500 feet or less) from the source.

Construction generally includes a wide range of activities that can generate groundborne vibration. In general, blasting and demolition of structures generate the highest vibrations. Vibratory compactors or rollers, pile drivers, and pavement breakers can generate perceptible amounts of vibration at distances within 200 feet of the vibration sources. Heavy trucks can also generate groundborne vibrations, which vary depending on vehicle type, weight, and pavement conditions. Potholes, pavement joints, discontinuities, differential settlement of pavement, and other anomalies all increase the vibration levels from vehicles passing over a road surface. Construction vibration is normally of greater concern than vibration of normal traffic on streets and freeways with smooth pavement conditions. Trains generate substantial quantities of vibration due to their engines, steel wheels, and heavy loads.

EXISTING CONDITIONS

The existing noise environment in the Project area is influenced by traffic noise on nearby roads. The roadway contributing the most noise to the Project site is Kiernan Avenue and to a much lesser extent local roadways which includes Dale Road, Pirrone Road. De Novo conducted ambient noise surveys on April 23 and 24, 2025 for the Project at locations shown in Figure 3.



Legend

Project Parcel

Long-Term Noise Monitoring Location

SCANNELL DEVELOPMENT PROJECT
STANISLAUS COUNTY, CALIFORNIA

Figure 3. Noise Measurement Locations

0 150 300 Feet

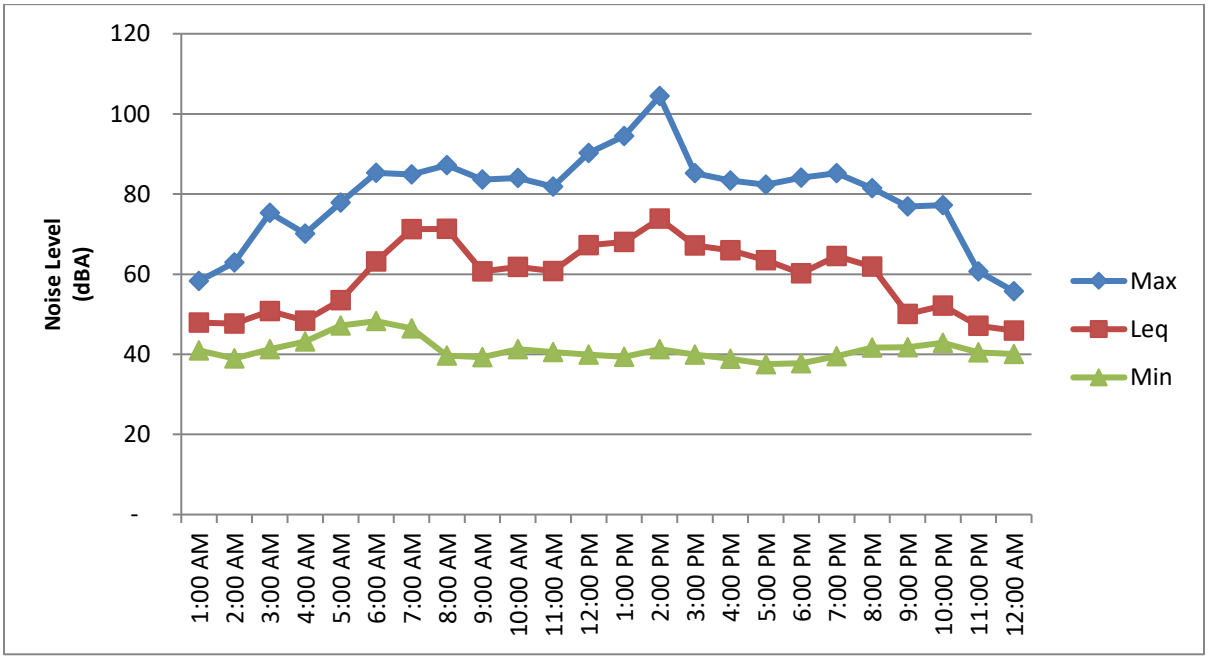
Sources: Stanislaus County GIS: MAXAR Imagery 9/23/2023.
Map Date: April 28, 2025.

De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm

Noise level measurements were taken using a Larson Davis Laboratories SoundTrack LxT sound level meter (LD LxT). The LD LxT were set up at a height of approximately five feet above the ground and equipped with a windscreen. Four measurement locations were taken at each of the Project site boundaries. The LD LxTs were calibrated before and after use with a Larson Davis Model CAL200 acoustical calibrator to ensure that the measurements would be accurate. The sound level meters were programmed to record noise levels in "slow" mode in A-weighted form. Meteorological conditions during all measurement periods were favorable, with clear skies. The noise level measurements were collected for approximately 24 hours at each location. The minimum (L_{min}), average (L_{eq}), and maximum noise levels (L_{max}) are taken at each ambient noise measurement location. Figures of the hourly noise levels at each location to depict existing noise levels at each of the Project site boundaries. The complete noise monitoring results are included in Attachment A.

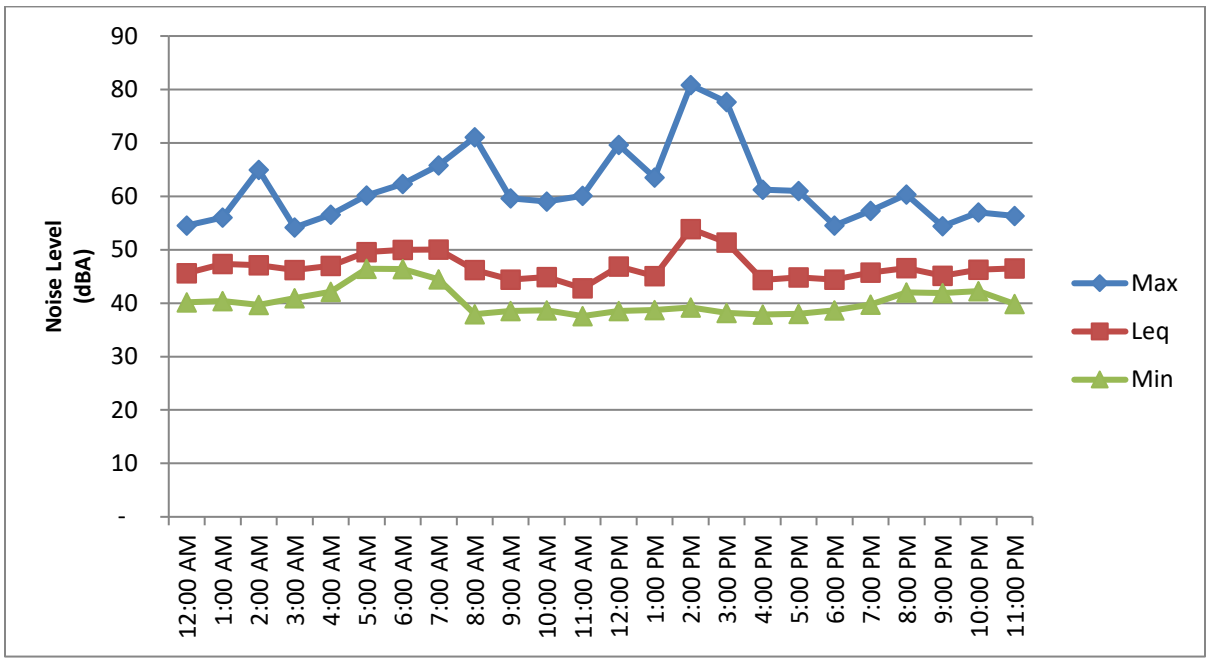
As shown in Figure 4, average daytime noise levels at noise monitoring location 1 is located at the northern Project site boundary. Measured noise levels range from 46 to 74 dBA L_{eq}. The 24-hour weighted noise level at this location is 69.9 dBA CNEL.

FIGURE 4: HOURLY NOISE LEVELS AT NOISE MONITORING LOCATION 1 AT NORTHERN PROJECT SITE BOUNDARY



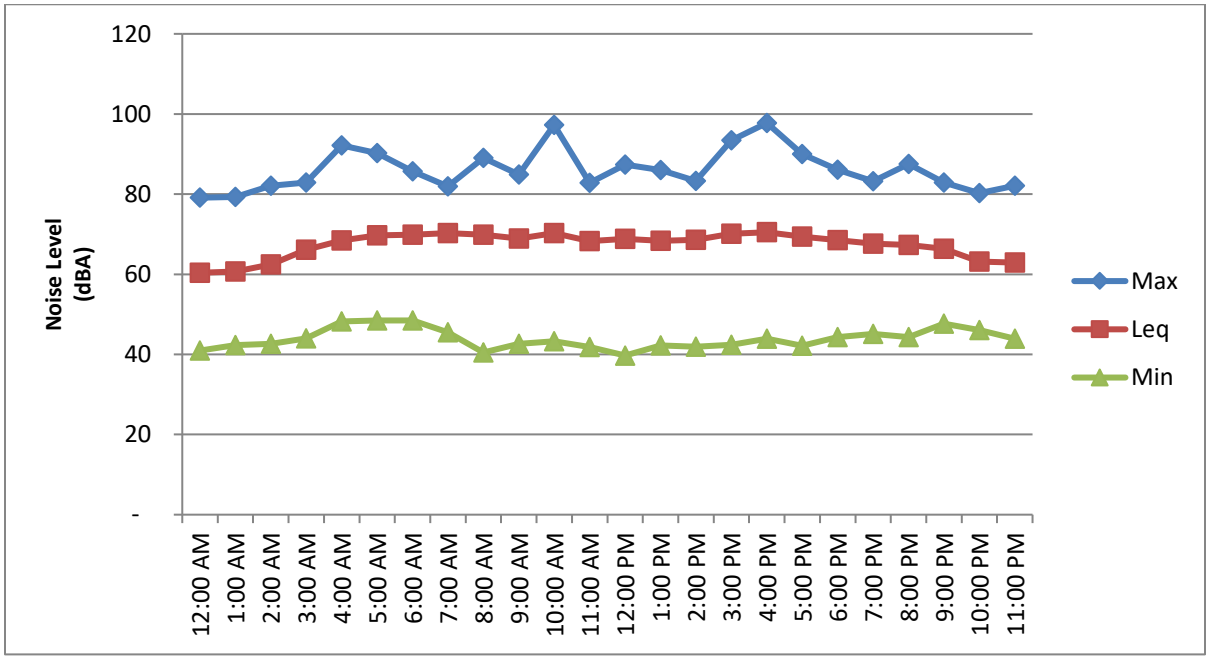
Noise Monitoring Location 2 is located on the western property line. As shown in Figure 5, average daytime noise levels in the study area which range from 43 to 54 dBA L_{eq}. The 24-hour weighted noise level at this location is 54.1 dBA CNEL. Noise sources include local traffic as well as a tractor. The measured noise levels are representative of a rural environmental setting.

FIGURE 5: HOURLY NOISE LEVELS AT NOISE MONITORING LOCATION 2 AT WESTERN PROJECT SITE BOUNDARY



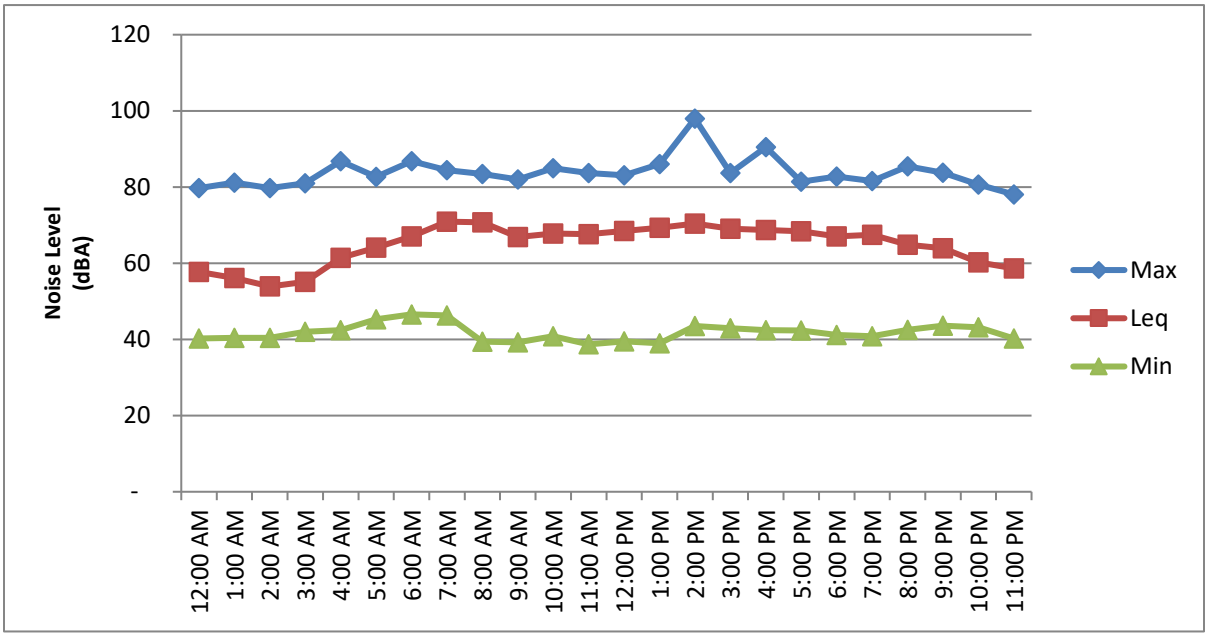
Noise Monitoring Location 3 is located on the southern property line. As shown in Figure 6, Hourly Noise Levels at Noise Monitoring Location 3, average daytime noise levels in the study area range from 60 to 70 dBA L_{eq}. The 24-hour weighted noise level at this location is 73.5 dBA CNEL. Traffic along Kiernan The measured noise levels are representative of a location exposed to high levels of roadway traffic.

FIGURE 6: HOURLY NOISE LEVELS AT NOISE MONITORING LOCATION 3 AT SOUTHERN PROJECT SITE BOUNDARY



Noise monitoring location 4 is at the eastern property line. As shown in Figure 7, average daytime noise levels in the study area range from 54 to 71 dBA L_{eq}. The 24-hour weighted noise level at this location is 70.2 dBA CNEL.

FIGURE 7: HOURLY NOISE LEVELS AT NOISE MONITORING LOCATION 4 AT EASTERN PROJECT SITE BOUNDARY



SENSITIVE RECEPTORS

Noise-sensitive receptors are generally considered to be humans who are engaged in activities that may be subject to the stress of significant interference from noise. Activities usually associated with sensitive receptors include, but are not limited to, talking, reading, and sleeping. Noise-sensitive receptors closest to the Project site include single-family residences proximate to the Project site. The City of Modesto has also defined sensitive receptors as: "Sensitive noise receptors are persons and facilities that could be adversely affected by noise. Sensitive receptors in Modesto include residences, hospitals, parks, churches, and schools."

REGULATORY SETTING

Public agencies have established noise guidelines and standards to protect citizens from potential hearing damage and various other adverse physiological and social effects associated with noise.

STATE OF CALIFORNIA

Title 24 of the California Code of Regulations, also known as the California Building Standards Code, establishes building standards applicable to all occupancies throughout the state. Section 1207.11.2 requires that residential structures other than detached single-family dwellings be designed to prevent the intrusion of exterior noise so that the interior noise attributable to exterior sources shall not exceed 45 dBA CNEL in any habitable room. Section 1207.12 states, "if interior allowable noise levels are met by requiring that windows be unopenable or closed, the design for the structure must also specify a ventilation or air conditioning system to provide a

habitable interior requirement. The ventilation system must not compromise the dwelling unit or guest room noise reduction".

CITY OF MODESTO

The City of Modesto has established guidelines and standards in the General Plan and the Municipal Code.

General Plan Chapter VII. Environmental Resources, Open Space and Conservation

The City of Modesto is affected by several different sources of noise, including automobile traffic, rail, aircraft, commercial activity, and periodic nuisances such as construction, loud parties, and other events. Chapter VII. Environmental Resources, Open Space and Conservation (Noise Element) is intended to identify these sources and provide objectives and policies that ensure that noise from these sources does not create an unacceptable noise environment (Modesto 2019). The Noise Element contains guidelines for noise compatible land use for long-term operations as shown in Table 3. This Table of the Noise Element depicts "normally acceptable," "conditionally acceptable," "normally unacceptable," and "clearly unacceptable" noise levels for various land use categories. These noise levels identify noise limitations for determining land use compatibility between a new development and neighboring uses. Table VII-2 utilizes the community noise equivalent level (CNEL), which is the time-varying noise over a 24-hour period with a weighting factor applied to noises occurring during evening and nighttime hours.

Table VII-2. Noise Compatibility Matrix

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE (LDN) OR CNEL (DB)						
	50	55	60	65	70	75	80
Residential: low-density single-family, duplex, mobile homes							
Residential: multi-family							
Transient lodging (hotel/ motel)							
Schools, libraries, churches, hospitals, nursing homes							
Auditoriums, concert halls, amphitheaters							
Sports arenas, outdoor spectator sports							
Playgrounds, neighborhood parks							
Golf courses, riding stables, water recreation, cemeteries							
Office buildings (professional, business, commercial)							
Industrial, manufacturing, utilities, agriculture							

NORMALLY ACCEPTABLE
Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special insulation requirements

CONDITIONALLY ACCEPTABLE
Specified land use may be permitted only after detailed analysis of the noise reduction requirements and needed noise insulation features included in the design

NORMALLY UNACCEPTABLE
New construction or development should generally not be undertaken because mitigation was found to be infeasible to comply with noise element policies

CLEARLY UNACCEPTABLE
New construction or development should generally not be undertaken because mitigation was found to be infeasible to comply with noise element policies

Source: Modesto 2019.

2. Noise Sources

Major sources of continuous or occasional noise include the following.

- Roadways, especially arterials and expressways
- Roadway noise is generally continuous throughout the day, tapering off in the evening. In the evening, noise from trucks, loud car stereos, emergency vehicles, and poorly muffled engines are especially noticeable. Typical noise ranges from 60 dB to 100 dB.
- Railroads – Union Pacific, Burlington Northern-Santa Fe, and Modesto & Empire Traction Noise and vibrations from freight and passenger rail occurs throughout the day and night, which can be very disruptive. Due to federal regulations, train horns must be sounded at particular volumes and durations. It is possible to establish a 'quiet zone' in some circumstances to reduce – but not eliminate – train horn noise. Typical noise can range from 70 dB to 90 dB at a distance of 100 feet.
- Modesto City-County Airport - Aircraft noise can occur at most hours of the day or night. Identifiable aircraft noise is negligible at a distance of more than two (2) or three (3) miles from the airport, but can be very significant and disruptive to nearby residences in the vicinity of the runway. CNEL volumes average about 60 dB at the eastern edges of the neighborhoods nearest to the airport. While CNEL averages noise levels, it should be noted that individual noise events, such as engine run-ups and takeoffs, can produce considerably higher short-term noise volumes.

Modesto's hospitals provide medical evacuation services by helicopter which adds noise in the areas adjacent to those hospitals. Additionally, industry and domestic noise, such as a party, someone working on a car in their garage, and/or power tools, add to the noise environment.

3. Sensitive Receptors

Sensitive noise receptors are persons and facilities that could be adversely affected by noise. Sensitive receptors in Modesto include residences, hospitals, parks, churches, and schools. The following policies apply to development in all areas of the City.

a) Construction activities are to comply with Modesto Municipal Code Title 4, Chapter 9.
b) Implement noise-reducing construction practices as conditions of approval where substantial construction-related noise impacts would be likely to occur, such as with extended periods of pile driving, or where construction is expected to continue or where sensitive receptors would be affected by construction noise. Conditions of approval may include, but are not limited to:
   ◦ Require construction equipment, including air compressors and pneumatic equipment to have properly maintained mufflers;
   ◦ Require impact tools to be equipped with shrouds or shields;
   ◦ Require that the quietest equipment available be used; and,
   ◦ Require selection of haul routes that affect the fewest number of people.
   c. Implement techniques, where feasible, to reduce noise impacts from new or widened roadways. Such techniques may include, but are not limited to:
   ◦ Traffic calming to reduce vehicle speeds, including narrowing travel lanes and limiting the number of motor vehicle lanes;

◦ Adding bicycle and parking lanes to move the noise source farther away from sensitive receptors; and,

◦ Use of earthen berms and landscaped walls to channel noise away from sensitive receptors.

d. Use the most recent noise contour map (Figure VII-2) to implement the requirements of Noise Insulation Standards contained in Title 24 of the California Code of Regulations. Developers may be allowed to demonstrate that detailed noise studies and / or mitigation are not necessary due to local conditions, changes in the expected future noise environment, or inapplicable assumptions made in the Master EIR.

e. Incorporate construction practices and acoustic treatment in new residential construction to reduce typical indoor noise levels to 45 dB. Developers of residential buildings within the 65 dBA contours shown in the General Plan Master EIR shall demonstrate that interior noise has been reduced to 45 dB. Other types of development should be protected against noise intrusion at least to the levels indicated on Table VII-2.

f. For proposed non-transportation noise sources, reduce noise levels so as not to exceed the allowable noise exposure thresholds specified in Table V.3.9, below, at the property line of residential or other noise-sensitive land uses.

TABLE VII-3 Noise Exposure Thresholds – Non-Transportation Noise Sources

	Citywide, excluding Downtown		**Downtown**	
	Daytime (7:00am - 10:00pm)	**Nighttime (10:00pm - 7:00am)**	**Daytime (7:00am - 10:00pm)**	**Nighttime (10:00pm - 7:00am)**
Hourly L_{eq}, dBA	55	45	60	50
Maximum level, dBA	75	65	80	70

* Each of the noise level standards shall be reduced by five (5) dBA for pure tone noises, noise consisting primarily of speech or music, or for recurring impulsive noises. Where measured ambient noise levels exceed the standards, the standards shall be increased to the ambient levels.

** If the existing ambient noise level at the receiving use exceeds the thresholds given in Table V.3.9, then the noise level standards shall be increased to account for the ambient noise level.

g. At noise-sensitive land uses, increases in noise should not exceed 3 dBA where any other noise threshold or standard would be exceeded, and/or 5 dBA where noise levels would otherwise fall within acceptable limits, for the existing conditions scenario as compared to the buildout scenario.

h. Additional study and/or mitigation for outdoor recreation areas will be required if:

◦ For single-family dwellings, noise exceeds 65 dBA Ldn in one or more backyards;

◦ For multi-family dwellings, noise exceeds 65 dBA Ldn at common recreation areas, such as swimming pools or play areas or at private patios and balconies; or,

◦ For other uses, noise exceeds the level considered "conditionally acceptable" as shown on Table VII-2.

i. Limit trucking to specific routes, times, and speeds that avoid or minimize adverse effects on sensitive receptors.

j. Airport and aircraft noise analysis will be conducted in accordance with the Modesto City–County Airport's Master Plan and Federal Aviation Regulation (FAR Part 150). New construction must meet Modesto's noise compatibility standards. As airport operations increase, mitigation will be provided to existing residential and other sensitive uses, either through operations or direct property improvements, in order to meet Title 14 Code of Federal Regulations Part 150 land use compatibility guidelines.

k. Study, analyze and consider establishment of "Quiet Zones" along the rail corridors through downtown, along Yosemite Boulevard and along the east side of the planning area.

l. For new residential development proposed in areas within 200 feet of the center of the near mainline of active rail lines where single-event noise from trains is of concern, demonstrate that the proposed development will incorporate measures to reduce maximum noise levels generated during train passbys to 50 dBA Lmax or less inside bedrooms and to 55 dBA Lmax or less inside other noise sensitive occupied areas.

m. For new residential and vibration sensitive commercial development (including but not limited to lodging facilities, hospitals and similar uses) located within 200 feet of the center of the near mainline of active rail lines, demonstrate that the proposed development will incorporate measures to reduce vibration levels generated during train passby events to meet the FTA vibration criteria as shown in Master EIR Table V-3-6.

n. For construction activities involving high-powered vibratory tools or pile driving within 200 feet of an existing structure, demonstrate that project construction would not exceed the Caltrans construction vibration thresholds to ensure that no damage to sensitive structures would occur.

Municipal Code

Chapter 9 NOISE REGULATIONS
(Ord. 1269-C.S., amended by Ord. 2604-C.S., § 4, repealed and reenacted by Ord. 2752-C.S., § 1, effective 3-27-91)

Article 1. General Noise Regulations
4-9.101 Declaration of Policy.

It is hereby declared to be the policy of the City of Modesto that the peace, health, safety, and welfare of its citizens require protection from loud and raucous noises from any and all sources in the community.
(Added by Ord. 2752-C.S., § 1, effective 3-27-91)

4-9.102 Prohibited Generally.
It shall be unlawful for any person to willfully or knowingly make, continue, or cause to be made or continued any loud and raucous noise.
The term "loud and raucous noise" shall mean any sound which, because of its volume level, duration, or character, annoys, disturbs, injures, or endangers the comfort, health, peace, or safety of a reasonable person of ordinary sensibility within the limits of the City of Modesto.
The term "loud and raucous noise" specifically includes, but is not limited to, the kinds of noise generated by the activities enumerated in Section 4-9.103. The term "loud and raucous noise" specifically excludes the kinds of noise generated by the activities described in Section 4-9.104.
For any kind of noise not enumerated in Section 4-9.103, the factors which may be considered in determining whether a violation of the provisions of this section exists may include, but shall not be limited to, the following:
(a) The volume of the noise;
(b) Whether the nature of the noise is usual or unusual;
(c) Whether the origin of the noise is natural or unnatural;
(d) The volume and intensity of the background noise, if any;
(e) The proximity of the noise to residential sleeping facilities;
(f) The nature and zoning of the area within which the noise emanates;
(g) The density of the inhabitation of the area within which the noise emanates;
(h) The time of the day or night the noise occurs;
(i) The day of the week the noise occurs;
(j) The duration of the noise;
(k) Whether the noise is recurrent, intermittent, or constant; and
(l) Whether the noise is produced by a commercial or noncommercial activity.

4-9.104 Exemptions.
The term "loud and raucous noise" as used in this chapter does not include noise or sound generated by the following:
(a) Cries for emergency assistance and warning calls.
(b) Radios, sirens, horns, and bells on police, fire, and other emergency response vehicles.
(c) Parades, fireworks displays, and other special events for which a permit has been obtained from the City are exempted provided there is compliance with all conditions which have been noted in writing on the permit. That loud and raucous noise produced as a result of noncompliance with any condition specified on the permit is not exempted from the requirements of this chapter.
(d) Activities on or in publicly owned property and facilities, or by public employees while in the authorized discharge of their responsibilities, are exempt provided that such activities have

been authorized by the owner of such property or facilities or its agent or by the employing authority.
(e) Religious worship activities, including but not limited to, bells, organs, singing, and preaching.
(f) Locomotives and other railroad equipment, and aircraft.
(g) The collection of solid waste is exempted to the extent that the noise of such collection is regulated by Section 5-5.15 (Collection Equipment). That noise not covered by Section 5-5.15 is not exempted from the requirements of this chapter.
(Added by Ord. 2752-C.S., § 1, effective 3-27-91)

SIGNIFICANCE CRITERIA

The following questions correspond to the questions in the Noise section of the Initial Study Checklist in Appendix G of the State CEQA Guidelines.

- Generation of a 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;
- Generation of excessive groundborne vibration or groundborne noise levels; and/or
- 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.

Temporary Construction Noise Impacts

Determining "substantial increases" in construction noise depends on factors such as duration, time of occurrence, whether the noise source is constant or impulsive, and overall changes in decibel levels. According to the City of Modesto noise ordinance, construction activities that operate between 9 p.m. and 7 a.m. (except Saturday and Sunday and State or federal holidays, when the prohibited time shall be before 9:00 a.m. and after 9:00 p.m.) and cause disturbances are prohibited and considered significant impacts since they are violations of the Municipal Code limits.

Operational Noise Impacts

A project may be considered to have a significant environmental impact if it substantially increases ambient noise levels in adjacent areas or exposes individuals to high noise levels. Significant impacts are also defined as those that either exceed local ordinances and criteria or substantially raise noise levels at sensitive locations.

Research on human perception of sound changes indicates:

- 3 dB increase is barely noticeable.
- 5 dB increase is clearly perceptible.
- 10 dB increase is perceived as twice as loud or half as quiet.

To assess ambient noise increases, the Modesto General Plan Noise Element states: "At noise-sensitive land uses, increases in noise should not exceed 3 dBA where any other noise threshold or standard would be exceeded, and/or 5 dBA where noise levels would otherwise fall within acceptable limits, for the existing conditions scenario as compared to the buildout scenario." In addition, Table VII-3 Noise Exposure Thresholds – Non-Transportation Noise Sources provide noise limits that cannot be exceeded based on location and time. Exceedances of the limits represent significant noise impacts.

Vibration Impacts

The Noise Element provides the following threshold.

For construction activities involving high-powered vibratory tools or pile driving within 200 feet of an existing structure, demonstrate that project construction would not exceed the Caltrans construction vibration thresholds to ensure that no damage to sensitive structures would occur. The City's Noise Element has adopted standards for vibration-induced annoyance or structural damage from the California Department of Transportation (Caltrans). These vibration damage thresholds are shown in Table 4. The threshold for "Older residential structures" is 0.3 peak particle velocity (ppv) inch per second (in/sec) is selected for analysis. This threshold represents the adjacent uses to the Project site.

TABLE 4: VIBRATION DAMAGE THRESHOLD CRITERIA

Structure and Condition	Maximum ppv (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

ppv: peak particle velocity; in/sec: inch(es) per second

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: Caltrans 2020.

The Caltrans vibration annoyance potential guideline thresholds are shown in Table 5. As shown in this Table, the strongly perceptible threshold is 0.1 ppv. These thresholds are used to assess the potential for a significant vibration impact for human annoyance. Annoyance is evaluated within occupied buildings.

TABLE 5: VIBRATION ANNOYANCE CRITERIA

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4
ppv: peak particle velocity; in/sec: inch(es) per second Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.		

Source: Caltrans 2020.

IMPACTS AND MITIGATION MEASURES

The following questions correspond to the questions in the Noise section of the Initial Study Checklist in Appendix G of the State CEQA Guidelines.

Generation of a 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 Noise

The development of the proposed Project would entail construction activities which include noise generated from grading/excavation and building construction activities. The assumptions are listed below:

- Site preparation would occur for approximately two weeks and would generate an average of 8 worker trips per day and no hauling trips.
- Mass grading activities would occur for four weeks, and would generate an average of 5 worker trips per day and 70 round trips per day for export of soil.
- Fine grading activities would occur for two weeks and would generate an average of 8 worker trips per day and no hauling trips.
- Building construction would take approximately 18 months and would generate an average of 83 worker trips per day and less than 1 trip per day for hauling of construction debris over the duration of the phase.
- Architectural coating would take approximately 6 weeks and would generate 17 worker trips per day.

Local residents would be subject to elevated noise levels due to the operation of Project-related construction equipment. Construction activities are carried out in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise levels surrounding the construction

site as work progresses. Construction noise levels reported in the U.S. Environmental Protection Agency's (USEPA's) Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances were used to estimate future construction noise levels for the Project (USEPA 1971). Typically, the estimated construction noise levels are governed primarily by equipment that produces the highest noise levels. Construction noise levels for each generalized construction phase (ground clearing, excavation, foundation construction, building construction, paving, and site cleanup) are based on a typical construction equipment mix for an industrial project and do not include use of atypical, very loud, and vibration-intensive equipment (e.g., pile drivers).

The degree to which noise-sensitive receptors are affected by construction activities depends heavily on their proximity. Estimated noise levels attributable to the development of the proposed Project are shown in Table 6, and calculations are included in the Attachment B, Noise Calculations.

TABLE 6: CONSTRUCTION NOISE LEVELS AT NOISE-SENSITIVE USES

Construction Phase	Noise Levels (L_{eq} dBA)			
	Residents to the North of the Project site	**Residents to the East of the Project site**	**Residents to the South of the Project site**	**Residents to the West of the Project site**
	1,700 feet away	**1,300 feet away**	**2,110 feet away**	**2,040 feet away**
Site Preparation	60	62	58	58
Grading	60	63	59	59
Building Construction	57	60	55	56
Paving	60	63	59	59
Architectural Coating	49	52	47	48
Maximum Construction Noise	**60**	**63**	**59**	**59**
FTA Construction Criterion	**80**	**80**	**80**	**80**
Exceeds Threshold	**No**	**No**	**No**	**No**

L_{eq} dBA: Average noise energy level; Max: maximum; avg: average; ft: feet

Note: Noise levels from construction activities do not take into account attenuation provided by intervening structures.

Source: FHWA Roadway Construction Noise Model.

Table 6 shows both the average noise levels of construction noise levels attributable to the Project based on an assessment distance at the center of the site. Average noise levels represent the noise exposure to sensitive uses based on the distance to the center of all Project components. Noise levels from general Project-related construction activities would range from 47 to 63 dBA L_{eq} for the average noise levels. Noise levels from construction equipment would be less than the 80 dBA noise criterion developed by the Federal Transit Administration for construction noise.

This is due to the large project site and the large distance between offsite noise sensitive uses and the average location of construction vehicles.

Traffic volumes related to construction workers and truck trips needed for delivery of equipment and building materials. The amount of construction related traffic would be a small proportion of the overall traffic volume along Kiernan Avenue. A doubling of traffic is generally necessary to increase traffic noise levels by 3 dBA. Construction traffic would not double the traffic volumes along Kiernan Avenue and consequently would not result in a 3 dBA noticeable change in noise levels. This noise impact would be less than significant due to the traffic noise levels would be below the 3 dBA threshold adopted by the City and because construction traffic would be limited to the allowed hours of construction activity.

While noise from construction activities on-site would be clearly audible above the existing ambient noise environment but would occur during the least noise-sensitive portions of the day as per Municipal Code section 4-9.103 – Enumeration. Consequently, noise associated with Project-related construction would not result in significant impacts and no mitigation is required.

Operations Phase Noise

The operations phase of the Project would involve noise generation from stationary and mobile noise sources. Stationary noise sources associated with the proposed Project would include, but not limited to, mechanical equipment (e.g., HVAC units); landscape maintenance equipment; vehicles on the local internal roadway; and truck loading/unloading activities. The City of Modesto's Noise Element and Ordinance is designed to control unnecessary, excessive, and annoying sounds from sources on private property by specifying noise levels that cannot be exceeded. Table VII-3 Noise Exposure Thresholds – Non-Transportation Noise Sources defines the noise level exposure limits at properties affected by specific noise sources. HVAC units and other stationary equipment would be selected and installed to comply with the City of Modesto's Noise Ordinance. Because HVAC units are potentially continuous sources that may operate at night, the applicable Noise Ordinance requirement is that the noise shall not exceed these noise limits at the property lines of residential and other noise-sensitive land uses. Compliance with the City's noise limits would minimize these impacts to less than significant levels.

Parking lot noise was modeled using the 3-dimension noise model SoundPlan. SoundPlan allows a project site to replicate the roadway network, nearby buildings, terrain, and noise sources in a virtual environment to calculate noise exposure at offsite noise sensitive uses. This model represents the most sophisticated method for the quantification of environmental noise exposure. For the Project, the proposed warehouse buildings, parking areas, and travel lanes were prepared within SoundPlan. Traffic volumes for automobiles and trucks for the Project were assigned to each area within the large 145-acre site. Noise generated by parking lot activities would be attenuated by both distance from the noise source and the proposed 45-foot buildings which act as noise barriers. The Project is estimated to generate 15,120 automobiles and 1,410 trucks on a daily basis. An automobile generates relatively low levels of noise of approximately 51 dBA at 10 mph whereas a truck would result in approximately 75 dBA at 10 mph. Truck volumes would occur intermittently with an average of 60 trucks per hour or 1 truck

per minute with most of the truck traffic entering and leaving the Project site along Kiernan Avenue along the three driveways with a smaller volume of traffic occurring along the single driveway on Dale Road. Traffic noise along these roadways were included within the SoundPlan modeling.

Noise exposure levels from the Project's parking lot and vehicle movements at individual points at land uses proximate to the Project site are shown in Figure 8. Noise contours for these activities are also shown in Figure 9. To provide a comparison to cumulative and existing conditions of the same locations, Figures 10 through 13 provide noise exposure levels at single points and noise contours under existing and cumulative conditions.

This information is also presented in tabular form in Table 7 to show the changes in noise levels between future Project and future No Project conditions. As shown in this Table, noise levels attributable to the Project's traffic volumes and parking lot activities would be below the City's noise limit. This is because the Project would not result in traffic increases that would result in an audible change in noise levels (+3 decibels) over the course of a day. The Project would also develop warehouses that would block traffic noise levels for receptors and land uses located to the north of the proposed buildings. Because Project related noise levels would be less than the City's noise threshold, the Project would consequently would result in less than significant impacts related to noise exposure at the nearest noise sensitive uses. Locations located further from the analyzed locations would likewise result in less than significant noise impacts.

TABLE 7 OPERATIONS PHASE NOISE

Noise Sensitive Receptors	Future No Project (dBA L_{eq})	Future With Project (dBA L_{eq})	Project Increase (dBA L_{eq})	City Noise Threshold (dBA L_{eq})	Exceeds Threshold?
Northern Property Line - Pirrone Road Near Dale Road	56.7	56.5	-0.2	3	No
Eastern Property Line - Dale Road	70.8	72.7	1.9	3	No
Southern Property Line – Kiernan Avenue	66.2	67.6	1.4	3	No
Western Residential Property Line	50.5	52.0	1.5	3	No
Joseph A Gregori High School	41.0	40.2	-0.8	3	No

Source: SoundPlan Essentials.

An assessment of changes in noise levels due to future cumulative traffic conditions and those with the Project over existing conditions was also conducted. Table 8 shows the increase in noise levels associated with future cumulative traffic growth as well as cumulative traffic growth in addition to that generated by the Project. As shown in this Table, there would be substantial increases in noise levels associated with future cumulative traffic and cumulative traffic with the

Project along Dale Road. Dale Road (between Pirrone Road & Kiernan Avenue) currently has approximately 5,680 Average Daily Trips (ADT) under existing conditions for the year 2025. Future cumulative traffic growth (year 2046) along Dale Road would result in 14,150 ADT and future cumulative traffic plus Project traffic would result in a total of 22,114 ADT. Dale Road between Healthcare Way & Kiernan Avenue would likewise experience a substantial increase in traffic and traffic noise. Because of the substantial increase in vehicle traffic from existing conditions along Dale Road, there would be significant impact from traffic noise increases associated with cumulative and Project traffic conditions.

TABLE 8 OPERATIONS PHASE NOISE PLUS CUMULATIVE TRAFFIC GROWTH

Noise Sensitive Receptors	Existing Conditions	Future No Project (dBA L_{eq})	Future With Project (dBA L_{eq})	Cumulative Increase Over Existing (dBA L_{eq})	Cumulative + Project Increase Over Existing (dBA L_{eq})	City Noise Threshold (dBA L_{eq})	Exceeds Threshold ?
Northern Property Line - Pirrone Road Near Dale Road	45.9	56.7	56.5	10.8	10.6	3	Yes
Eastern Property Line - Dale Road	64.0	70.8	72.7	6.8	8.7	3	Yes
Southern Property Line – Kiernan Avenue	65.3	66.2	67.6	0.9	2.3	3	No
Western Residential Property Line	49.2	50.5	52.0	1.3	2.8	3	No
Joseph A Gregori High School	38.3	41.0	40.2	2.7	1.9	3	No

Source: SoundPlan Essentials.

Noise from landscape maintenance, vehicles, and residential activities would be similar to noise currently occurring in other land uses. Noise from landscaping activities are specifically addressed under Municipal Code Section 4-9.103 Enumeration. Compliance with these requirements would result in less than significant noise impacts. Noise impacts from stationary sources would be less than significant and no mitigation is required.

FIGURE-8: PROJECT PARKING LOT AND ROADWAY NOISE LEVELS SHOWN AT SINGLE POINTS

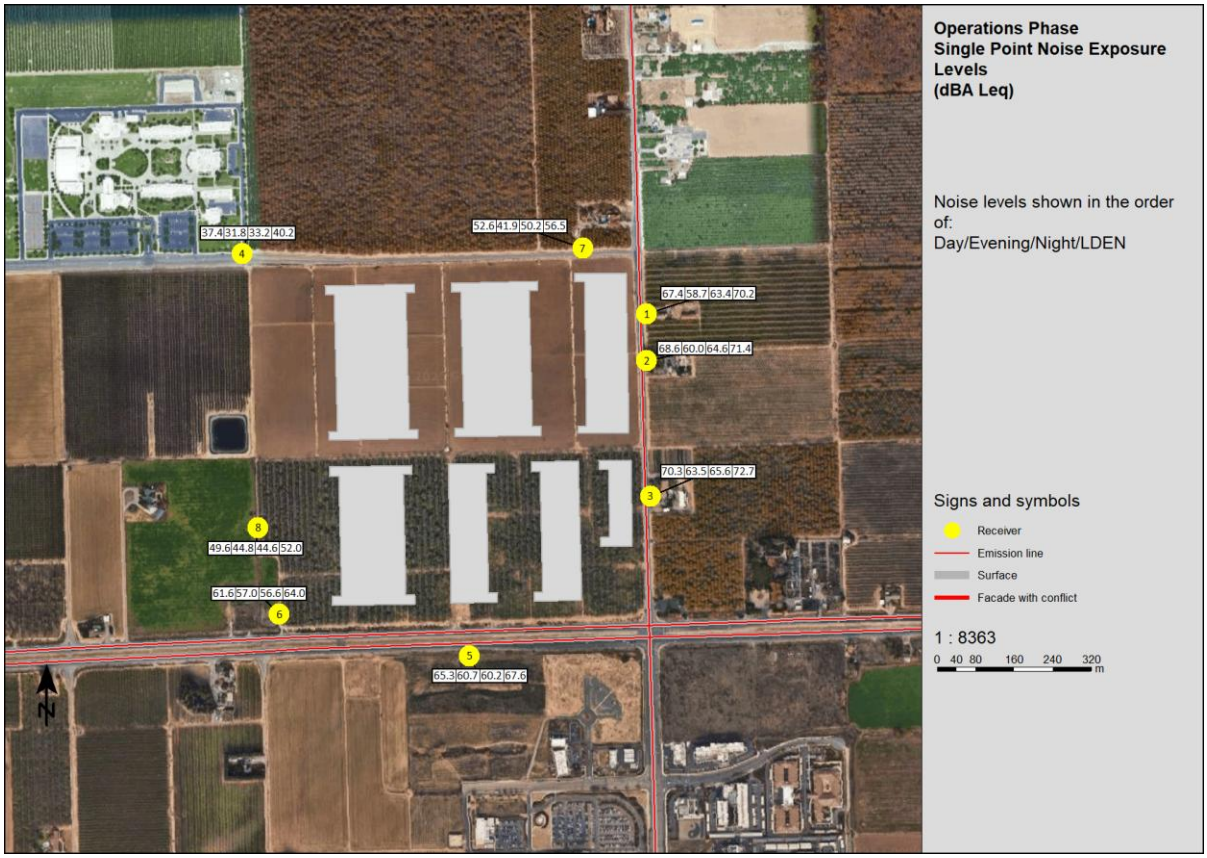


FIGURE-9: PROJECT PARKING LOT AND ROADWAY NOISE LEVELS SHOWN AS NOISE CONTOURS

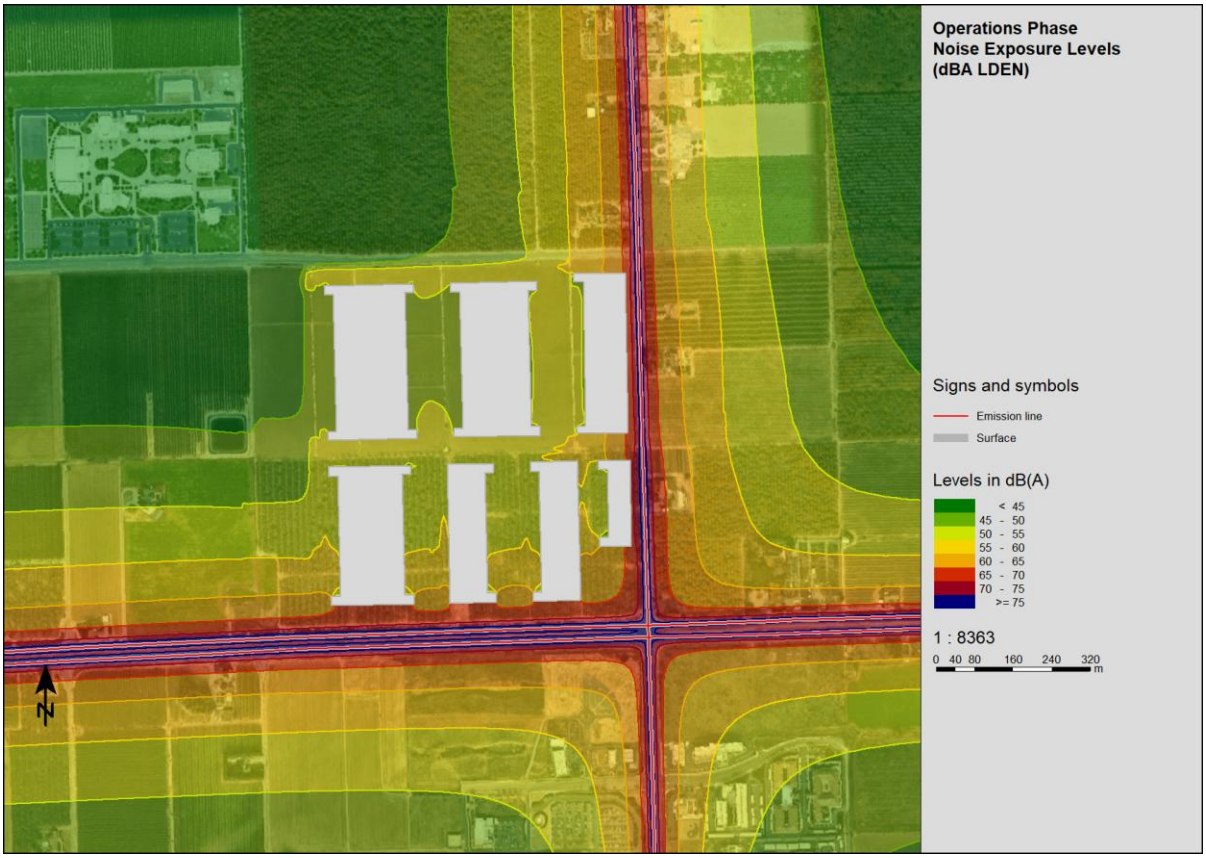


FIGURE-10: CUMULATIVE ROADWAY NOISE LEVELS SHOWN AT SINGLE POINTS

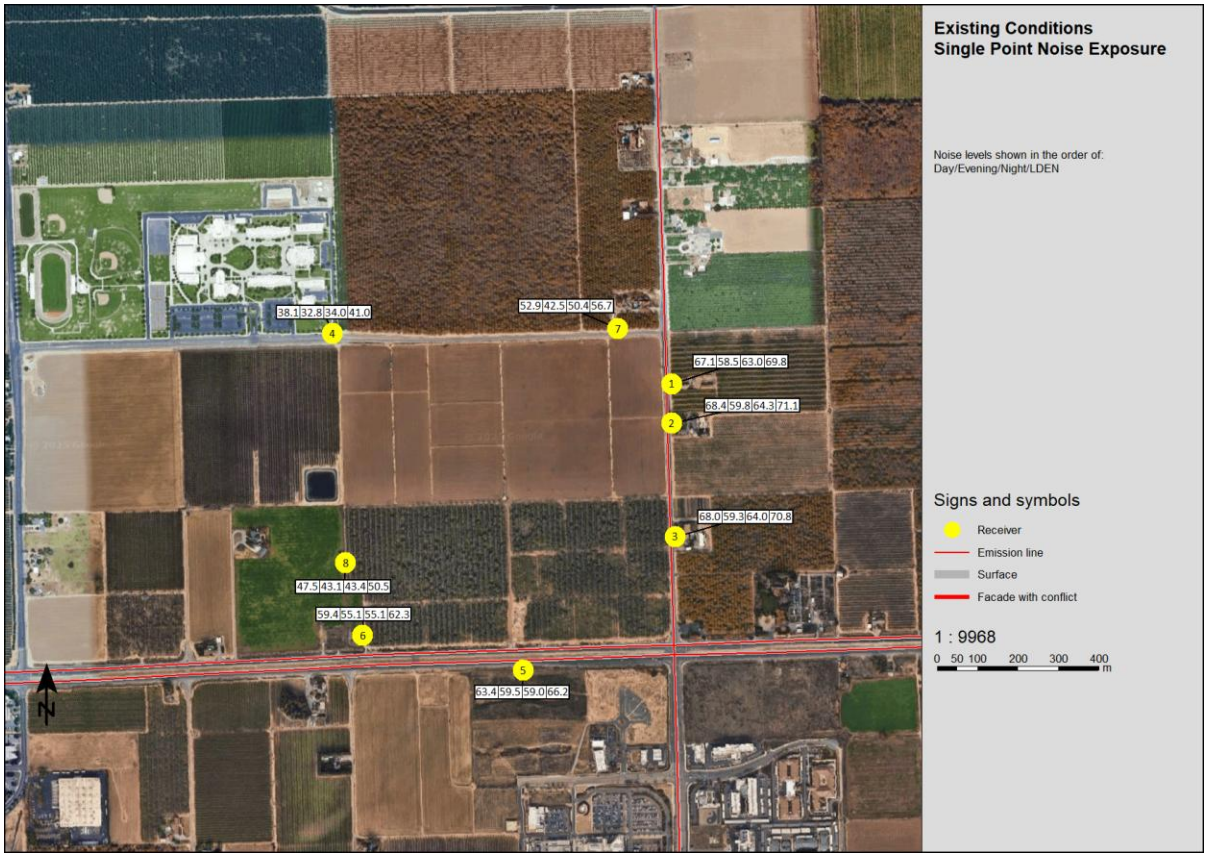


FIGURE-11: CUMULATIVE ROADWAY NOISE LEVELS SHOWN AS NOISE CONTOURS

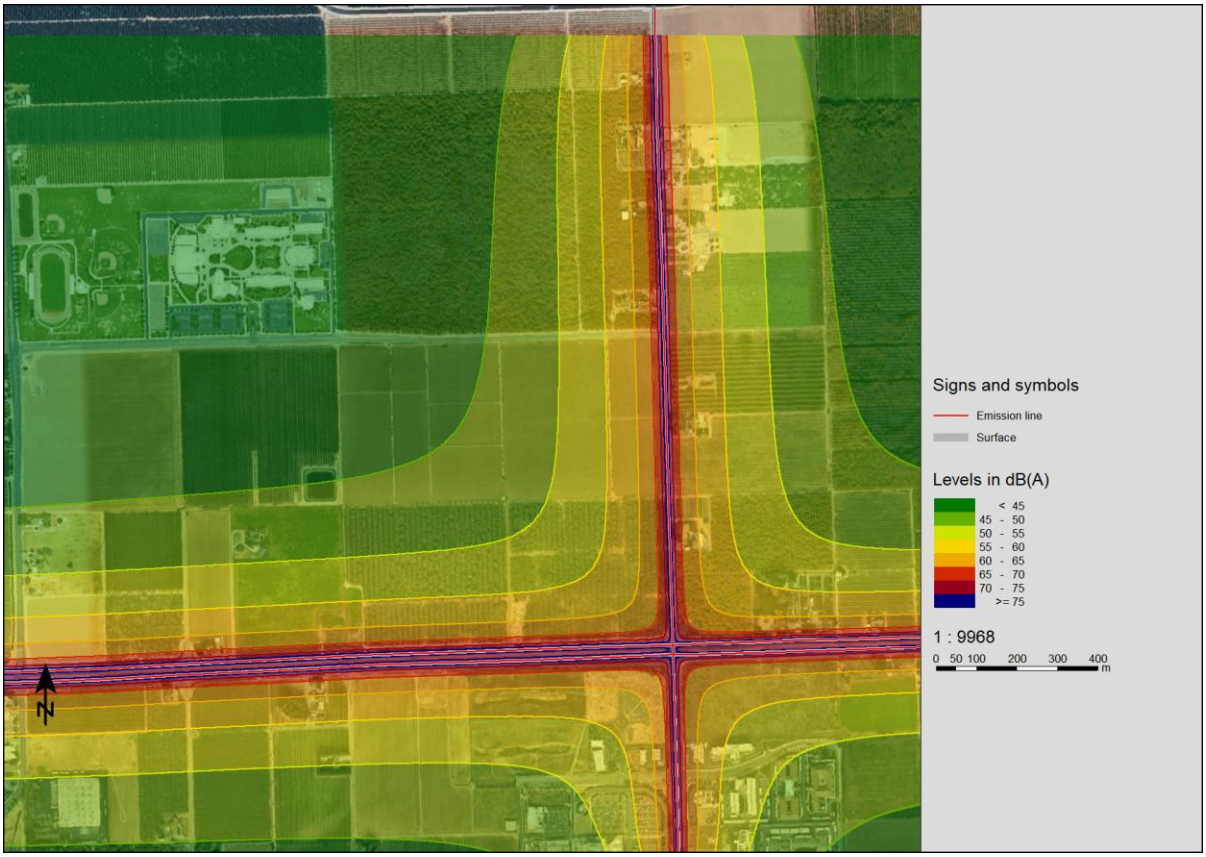


FIGURE-12: EXISTING NOISE LEVELS SHOWN LEVELS SHOWN AT SINGLE POINTS

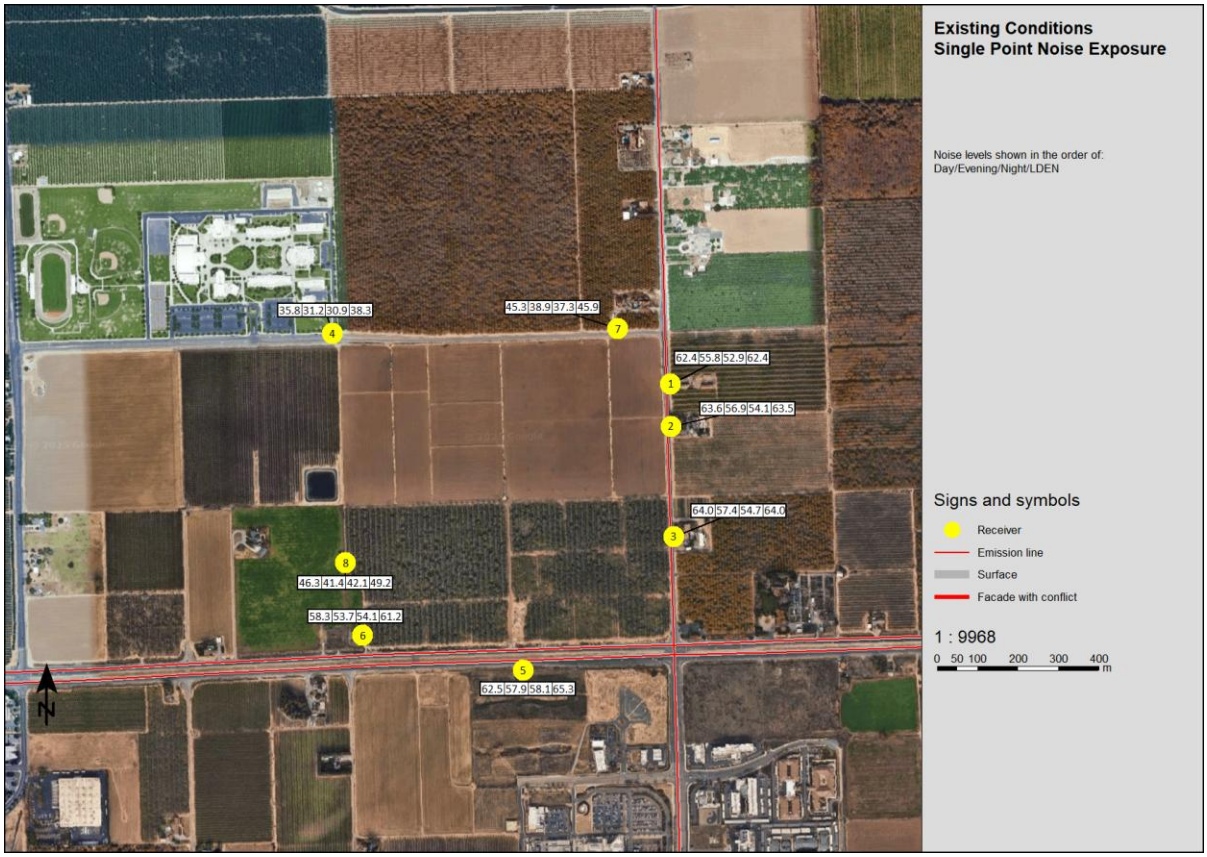


FIGURE-13: EXISTING NOISE LEVELS SHOWN AS NOISE CONTOURS



Vibration Impacts

- Generation of excessive groundborne vibration or groundborne noise levels;

The proposed Project would not generate or expose persons or structures to excessive groundborne vibration from the construction phase. Pile driving, blasting, and vibratory rollers are generally the sources of the most severe vibration during construction. Neither pile driving nor blasting would be used during Project construction. Conventional construction equipment would be used for grading and building construction activities.

Table 8 summarizes typical vibration levels measured during construction activities for various vibration-inducing pieces of equipment.

TABLE 8 VIBRATION LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment		ppv at 25 ft (in/sec)
Pile driver (impact)	upper range	1.518
	typical	0.644
Pile driver (sonic)	upper range	0.734
	typical	0.170
Vibratory roller		0.210
Large bulldozer		0.089
Caisson drilling		0.089
Loaded trucks		0.076
Jackhammer		0.035
Small bulldozer		0.003
ppv: peak particle velocity; ft: feet; in/sec: inches per second.		

Source: Caltrans 2020; FTA 2018.

Grading, and construction would occur up to the property lines and, as noted above, some land uses are relatively close to the property lines. Table 9 shows the vibration annoyance criteria from construction-generated vibration activities proposed at the Project site and the Project related vibration level relative to residences near the Project site.

TABLE 9 VIBRATION ANNOYANCE ASSESSMENT AT NEAREST USES

	Vibration Level (ppv)			
	Nearest Building to the North of the Project Site	Nearest Building to the East of the Project Site	Nearest Building to the South of the Project Site	Nearest Building to the West of the Project Site
Equipment	**285 feet away**	**120 feet away**	**430 feet away**	**660 feet away**
Vibratory Roller/Compactor	0.01	0.02	0.00	0.00
Large bulldozer	0.00	0.01	0.00	0.00
Small bulldozer	0.0001	0.0003	0.0000	0.0000
Loaded trucks	0.00	0.01	0.00	0.00
Maximum	**0.01**	**0.02**	**0.00**	**0.00**
Annoyance Criteria	**0.1**	**0.1**	**0.1**	**0.1**
Exceeds Annoyance Criteria?	**No**	**No**	**No**	**No**
ppv: Peak Particle Velocity				

Source: FTA (Calculations can be found in Attachment B).

As shown in Table 9, vibration decibel levels would exceed the criteria threshold when construction activities occur under maximum (i.e., closest to the receptor) exposure conditions. Because vibration generated by construction equipment would be below the FTA's annoyance criteria, impacts for vibration annoyance at the nearest sensitive receptors would be less than significant.

Table 10, Structural Damage Criteria at Sensitive Uses, shows the peak particle velocity levels (ppv) relative to structural damage to sensitive uses from vibration activities.

TABLE 10 BUILDING DAMAGE ASSESSMENT AT NEAREST USES

	Vibration Levels (ppv)			
	Nearest Building to the North of the Project Site	Nearest Building to the East of the Project Site	Nearest Building to the South of the Project Site	Nearest Building to the West of the Project Site
Equipment	**285 feet away**	**120 feet away**	**430 feet away**	**660 feet away**
Vibratory Roller/Compactor	0.01	0.02	0.00	0.00
Large bulldozer	0.00	0.01	0.00	0.00
Small bulldozer	0.0001	0.0003	0.0000	0.0000
Loaded trucks	0.00	0.01	0.00	0.00
Maximum	**0.01**	**0.02**	**0.00**	**0.00**
Building Damage Criteria	**0.3**	**0.3**	**0.3**	**0.3**
Exceeds Building Damage Criteria?	**No**	**No**	**No**	**No**
ppv: peak particle velocity; Max: maximum; avg: average; ft: feet				

Source: FTA (Calculations can be found in Attachment B).

As shown in Table 10, all ppv levels would be below the building damage threshold at the nearest offsite buildings. As such, impacts related to the potential for cosmetic building damage would be less than significant.

Aircraft Noise Exposure

- 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 Project site is not located 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. The nearest airport to the Project site is the Modesto City-County Airport which is located approximately 6 miles to the southeast. In addition, the Project involves the development of land uses which are not considered to be noise sensitive. Therefore, it would not result in exposure of people residing or working the in the Project area to excessive noise levels. There would be no impact.

Cumulative Impacts

Cumulative impacts may occur if the Project along with related projects would result in combined impacts to the local area.

Construction Noise

The Project would be constructed in phases and would occur at various locations within the Project site. Noise associated with construction activities would be located and diminishes substantially within 1,000 feet of the a construction site. As such, it is unlikely that other related projects would occur within the same time frame and proximate to the Project site to substantially increase cumulative construction noise. As such, cumulative construction noise impacts would result in less than significant noise impacts.

Construction Vibration

The Project would generate vibration from construction equipment. Vibration from these activities would dissipate over very short distances of less than 50 feet from each piece of equipment. Construction of related projects would not occur within the same proximity of the Project. As such, cumulative construction impacts related to vibration would result in less than significant impacts.

Operations Noise

Onsite activities at the Project site are generally localized due to the infrequency of occurrence, the relative low magnitude of noise generated by vehicle travel and loading/unloading activities, as well as the Project buildings acting as sound barriers to offsite uses. As such, noise generated

by these activities are localized and the combination of noise generated by offsite uses would be limited by distance and the noise limits identified by the City's Municipal Code. As such, cumulative noise increases associated with the Project's onsite uses in conjunction with related projects would result in less than significant noise impacts.

As discussed previously, Dale Road would experience a substantial increase in vehicle traffic which would result in a significant cumulative noise impact. Because there would be no practical mitigation measures that would reduce traffic noise increases associated with traffic growth along Dale Avenue, cumulative traffic noise increases would result in unavoidable significant noise impacts.

Operations Vibration

Vibration generated by onsite operations at the Project would not involve sources of vibration that would result in perceptible levels of vibration at offsite uses. Trucks travelling along local roadways would not result in substantial levels of vibration due to air filled rubber tires unless there are roadway irregularities such as potholes. As such, vibration associated with the Project and related projects would result in less than significant vibration impacts.

REPORT PREPARERS

This document was prepared by De Novo Planning Group, Inc. under the direction of the City of Modesto. De Novo Planning Group staff participating in document preparation included the following:

- Tin Cheung, Principal Scientist
- Josh Smith, Senior Planner

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Appendix 1 – Noise Measurements:

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LARSON DAVIS
A PCB DIVISION

SoundExpert 821 Summary: 2025-07-17 13:28:05

User:

Location:

Job Description:

Notes:

Meter General Information

	Model	Serial
Meter	SoundExpert 821	40583
Preamplifier	PRM821	
Microphone	377B02	
Unique File Id	00C:00009E87:6808CB06:000003C0	
Issues	Error: Bad footer, expected Sound Records section, but found StartTagSeed section instead. File load partially successful, issues exist in the following sections and may have been omitted: Sound Record(s)	

Overall Measurement

Start Date & Time	2025-04-23 11:12:06			
Stop Date & Time	2025-04-24 12:54:34			
Run Time	01:42:28			
Pre-Calibration				
Date/Time	2025-04-23 10:44:39			
Calibrator Level	114.00 dB			
Meter Sensitivity	-26.32 dB re 1V/Pa			
Post-Calibration				
Date/Time	2025-04-24 12:57:10			
Calibrator Level	114.00 dB			
Meter Sensitivity	-26.15 dB re 1V/Pa			
Sensitivity Delta	0.17 dB			
	A	**C**	**Z**	
Lweq	65.6	69.5	78.5	
Lwpk	123.3 dB	122.9 dB	125.0 dB	
	2025-04-23 14:41:20	2025-04-23 14:41:20	2025-04-23 14:41:20	
LwSmin	37.6 dB	52.4 dB	55.5 dB	
	2025-04-23 17:45:14	2025-04-24 02:26:43	2025-04-24 00:33:18	
LwFmin	37.0 dB	50.2 dB	53.5 dB	
	2025-04-23 17:45:14	2025-04-23 17:46:27	2025-04-24 00:40:06	
LwImin	38.4 dB	54.7 dB	58.2 dB	
	2025-04-23 17:45:09	2025-04-24 00:05:14	2025-04-24 00:33:15	
LwSmax	104.4 dB	107.3 dB	107.3 dB	
	2025-04-23 14:41:20	2025-04-23 14:41:20	2025-04-23 14:41:20	
LwFmax	108.5 dB	111.1 dB	111.1 dB	
	2025-04-23 14:41:20	2025-04-23 14:41:20	2025-04-23 14:41:20	
LwImax	109.6 dB	112.0 dB	112.0 dB	
	2025-04-23 14:41:20	2025-04-23 14:41:19	2025-04-23 14:41:19	
w = frequency weighting (A, C or Z)				
Community Noise	**LDN**	**LDay (07:00-22:00)**	**LNight (22:00-07:00)**	
	dB	dB	dB	
	LDEN	**LDay (07:00-19:00)**	**LEve (19:00-22:00)**	**LNight (22:00-07:00)**
	dB	dB	dB	dB
LCeq - LAeq	3.8 dB			
LAleq	69.9 dB			
Overload Count	0			
Overload Duration	00:00:00			
	A	**C**	**Z**	
Under Range Peak	50.0 dB	50.0 dB	62.0 dB	
Under Range Limit	24.0 dB	27.0 dB	37.0 dB	
Noise Floor	17.0 dB	18.0 dB	25.0 dB	

Ln Percentiles

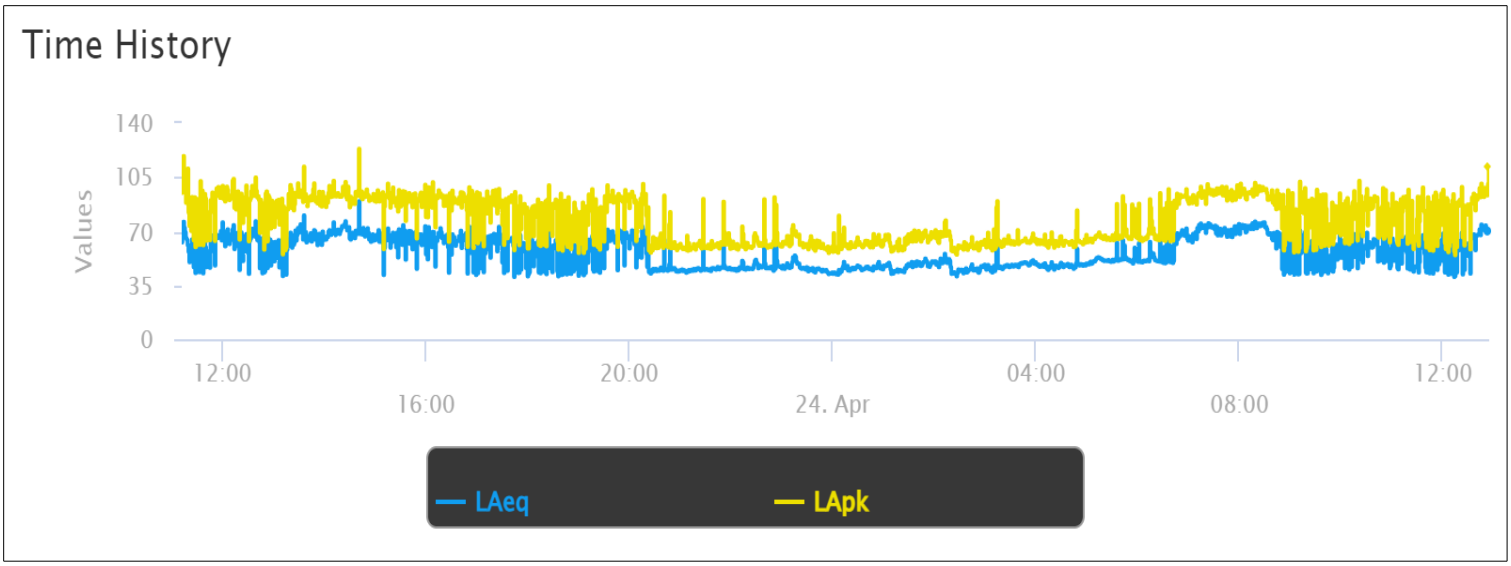
LAS 5.0	72.5 dB
LAS 10.0	68.1 dB
LAS 33.3	50.9 dB
LAS 50.0	47.7 dB
LAS 66.6	45.6 dB
LAS 90.0	42.8 dB

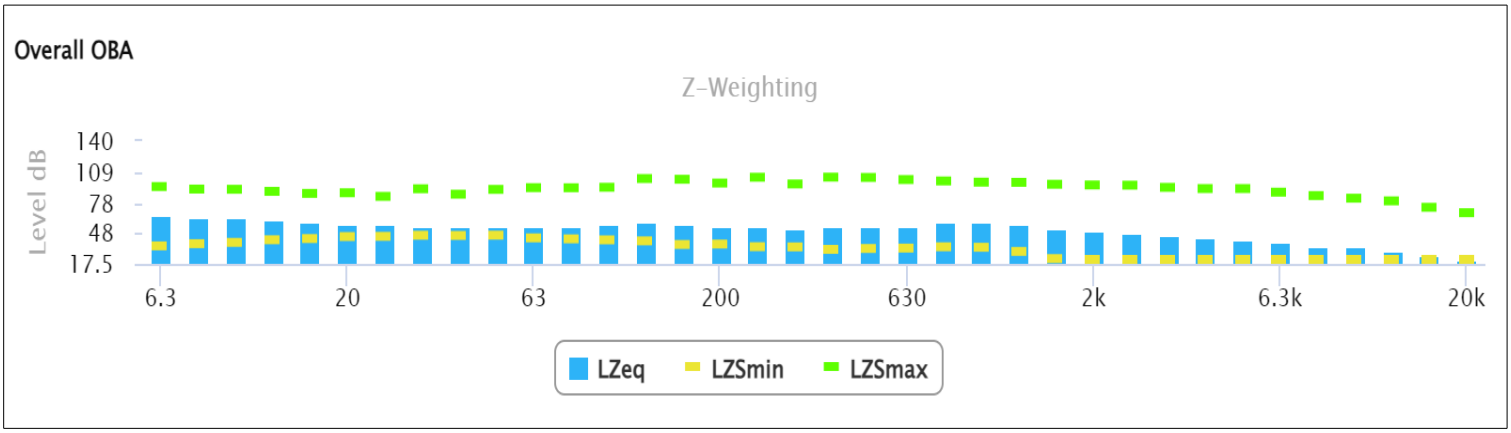
Exceedances

	Count	Duration
LAS > 85.0 dB	14	41
LAS > 95.0 dB	1	5
LCpk > 135.0 dB	0	0
LCpk > 137.0 dB	0	0
LCpk > 140.0 dB	0	0

Sound Exposure

SELA	115.3 dB
EA (Pa²s)	135.1 Pa²s
EA,8 h (Pa²s)	42.1 Pa²s
EA,40 h (Pa²s)	210.3 Pa²s
EA (Pa²h)	0.0 Pa²h
EA,8 h (Pa²h)	0.0 Pa²h
EA,40 h (Pa²h)	0.1 Pa²h





LARSON DAVIS
A PCB DIVISION

SoundExpert 821 Summary: 2025-07-17 13:25:38

User:

Location:

Job Description:

Notes:

Meter General Information

	Model	Serial
Meter	SoundExpert 821	40582
Preamplifier	PRM821	
Microphone	377B02	
Unique File Id	00C:00009E86:6808D305:00000669	

Overall Measurement

Start Date & Time	2025-04-23 11:46:13
Stop Date & Time	2025-04-24 13:05:52
Run Time	01:19:39
Pre-Calibration	
Date/Time	2025-04-23 11:40:24
Calibrator Level	114.00 dB
Meter Sensitivity	-25.91 dB re 1V/Pa
Post-Calibration	
Date/Time	2025-05-21 11:29:59
Calibrator Level	114.00 dB
Meter Sensitivity	-25.71 dB re 1V/Pa
Sensitivity Delta	0.06 dB

	A	C	Z
Lweq	54.8	63.2	78.0
Lwpk	123.9 dB	124.8 dB	127.6 dB
	2025-04-23 11:46:17	2025-04-23 11:46:17	2025-04-23 11:46:17
LwSmin	35.9 dB	53.8 dB	57.4 dB
	2025-04-24 12:07:37	2025-04-24 12:07:40	2025-04-24 00:33:16
LwFmin	35.4 dB	51.6 dB	54.8 dB
	2025-04-24 12:07:33	2025-04-23 12:30:59	2025-04-24 01:10:15
LwImin	37.0 dB	56.5 dB	59.9 dB
	2025-04-24 12:07:32	2025-04-24 00:42:12	2025-04-24 00:33:20
LwSmax	94.0 dB	93.5 dB	100.7 dB
	2025-04-23 11:48:39	2025-04-23 11:48:39	2025-04-23 11:46:30
LwFmax	101.2 dB	100.6 dB	106.4 dB
	2025-04-23 11:48:39	2025-04-23 11:48:39	2025-04-23 11:46:30
LwImax	104.2 dB	103.7 dB	109.5 dB
	2025-04-23 11:48:39	2025-04-23 11:48:39	2025-04-24 10:55:59

w = frequency weighting (A, C or Z)

Community Noise	**LDN**	**LDay (07:00-22:00)**	**LNight (22:00-07:00)**	
	dB	dB	dB	
	LDEN	**LDay (07:00-19:00)**	**LEve (19:00-22:00)**	**LNight (22:00-07:00)**
	dB	dB	dB	dB
LCeq - LAeq	8.4 dB			
LAleq	65.1 dB			
Overload Count	0			
Overload Duration	00:00:00			

	A	C	Z
Under Range Peak	50.0 dB	50.0 dB	62.0 dB
Under Range Limit	24.0 dB	27.0 dB	37.0 dB
Noise Floor	17.0 dB	18.0 dB	25.0 dB

Ln Percentiles

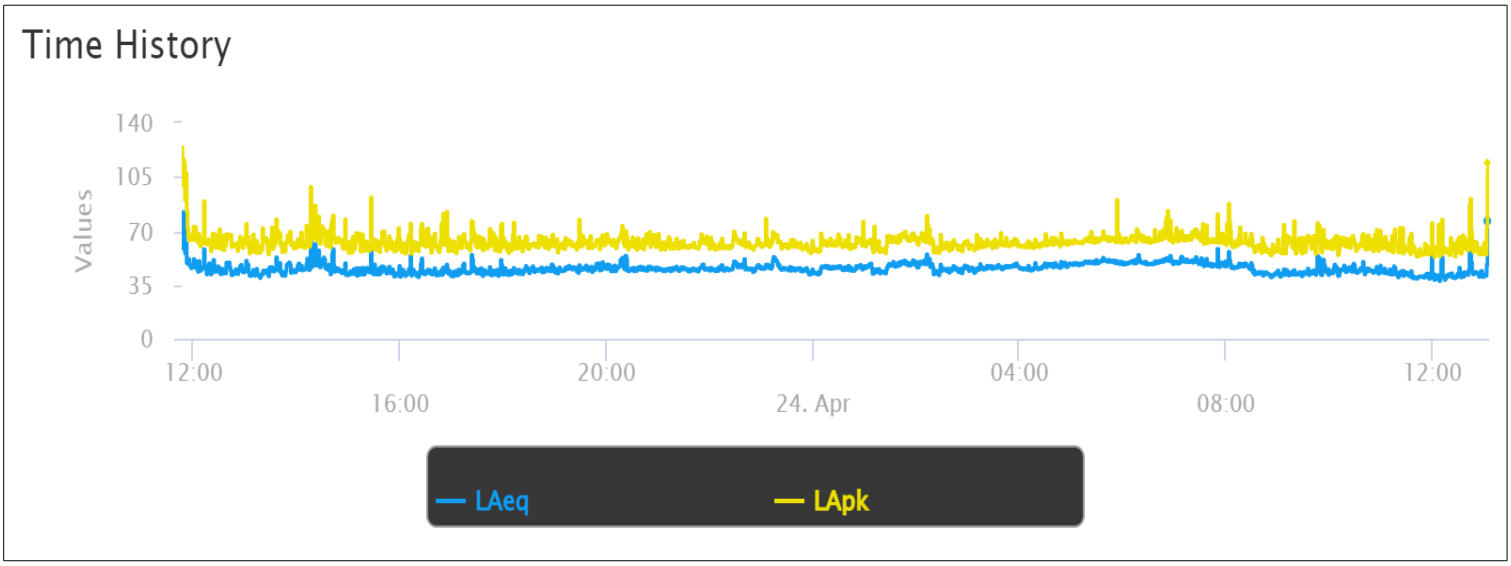
LAS 5.0	50.6 dB
LAS 10.0	49.5 dB
LAS 33.3	46.2 dB
LAS 50.0	44.8 dB
LAS 66.6	43.5 dB
LAS 90.0	41.0 dB

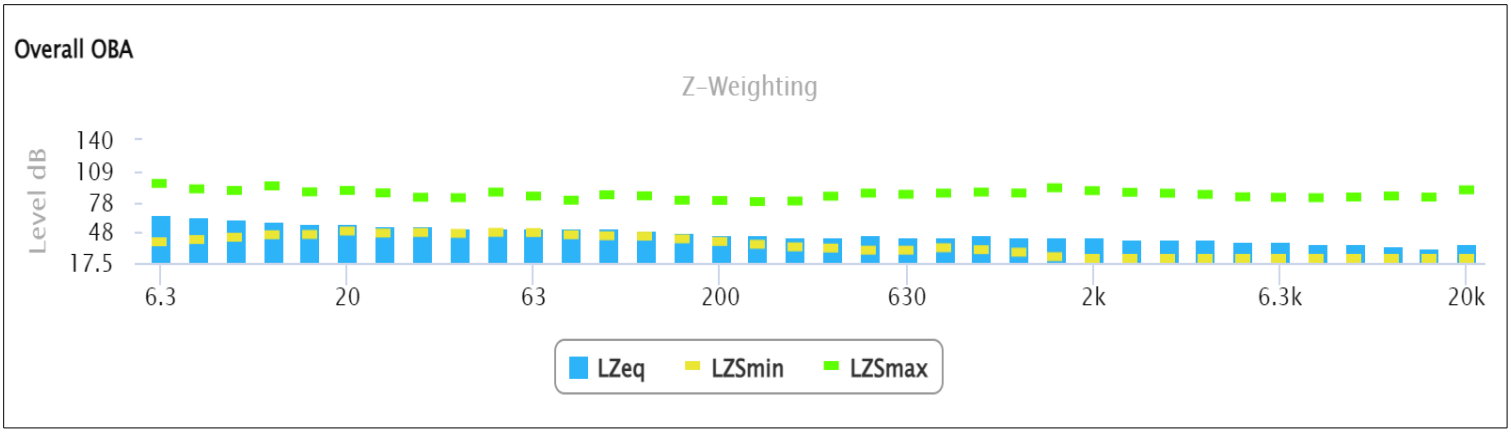
Exceedances

	Count	Duration
LAS > 85.0 dB	11	35
LAS > 95.0 dB	0	0
LCpk > 135.0 dB	0	0
LCpk > 137.0 dB	0	0
LCpk > 140.0 dB	0	0

Sound Exposure

SELA	104.4 dB
EA (Pa²s)	11.0 Pa²s
EA,8 h (Pa²s)	3.5 Pa²s
EA,40 h (Pa²s)	17.4 Pa²s
EA (Pa²h)	0.0 Pa²h
EA,8 h (Pa²h)	0.0 Pa²h
EA,40 h (Pa²h)	0.0 Pa²h





LARSON DAVIS
A PCB DIVISION

SoundExpert 821 Summary: 2025-07-17 13:38:07

User:

Location:

Job Description:

Notes:

Meter General Information

	Model	Serial
Meter	SoundExpert 821	40603
Preamplifier	PRM821	
Microphone	377B02	
Unique File Id	00C:00009E9B:6808D8C5:00000177	

Overall Measurement

Start Date & Time	2025-04-23 12:10:45
Stop Date & Time	2025-04-24 13:29:56
Run Time	01:19:11
Pre-Calibration	
Date/Time	2025-04-23 12:07:37
Calibrator Level	114.00 dB
Meter Sensitivity	-25.51 dB re 1V/Pa
Post-Calibration	
Date/Time	2025-04-24 13:32:03
Calibrator Level	114.00 dB
Meter Sensitivity	-25.48 dB re 1V/Pa
Sensitivity Delta	0.03 dB

	A	C	Z
Lweq	68.4	73.5	76.1
Lwpk	127.3 dB	127.0 dB	128.4 dB
	2025-04-23 12:12:08	2025-04-23 12:12:08	2025-04-23 12:12:08
LwSmin	39.7 dB	53.5 dB	56.8 dB
	2025-04-24 12:27:34	2025-04-24 00:58:54	2025-04-24 01:10:07
LwFmin	39.1 dB	52.0 dB	54.5 dB
	2025-04-24 12:27:34	2025-04-24 00:58:52	2025-04-24 00:34:59
LwImin	40.5 dB	55.9 dB	59.3 dB
	2025-04-24 12:27:34	2025-04-24 00:52:50	2025-04-24 01:10:07
LwSmax	97.8 dB	100.6 dB	100.7 dB
	2025-04-23 16:22:22	2025-04-23 16:22:23	2025-04-23 16:22:23
LwFmax	105.2 dB	104.7 dB	105.4 dB
	2025-04-23 12:11:14	2025-04-23 12:11:14	2025-04-23 12:11:14
LwImax	109.0 dB	108.5 dB	109.2 dB
	2025-04-23 12:11:14	2025-04-23 12:11:14	2025-04-23 12:11:14

w = frequency weighting (A, C or Z)

Community Noise	**LDN**	**LDay (07:00-22:00)**	**LNight (22:00-07:00)**	
	dB	dB	dB	
	LDEN	**LDay (07:00-19:00)**	**LEve (19:00-22:00)**	**LNight (22:00-07:00)**
	dB	dB	dB	dB
LCeq - LAeq	5.1 dB			
LAleq	72.4 dB			
Overload Count	0			
Overload Duration	00:00:00			

	A	C	Z
Under Range Peak	50.0 dB	50.0 dB	62.0 dB
Under Range Limit	24.0 dB	27.0 dB	37.0 dB
Noise Floor	17.0 dB	18.0 dB	25.0 dB

Ln Percentiles

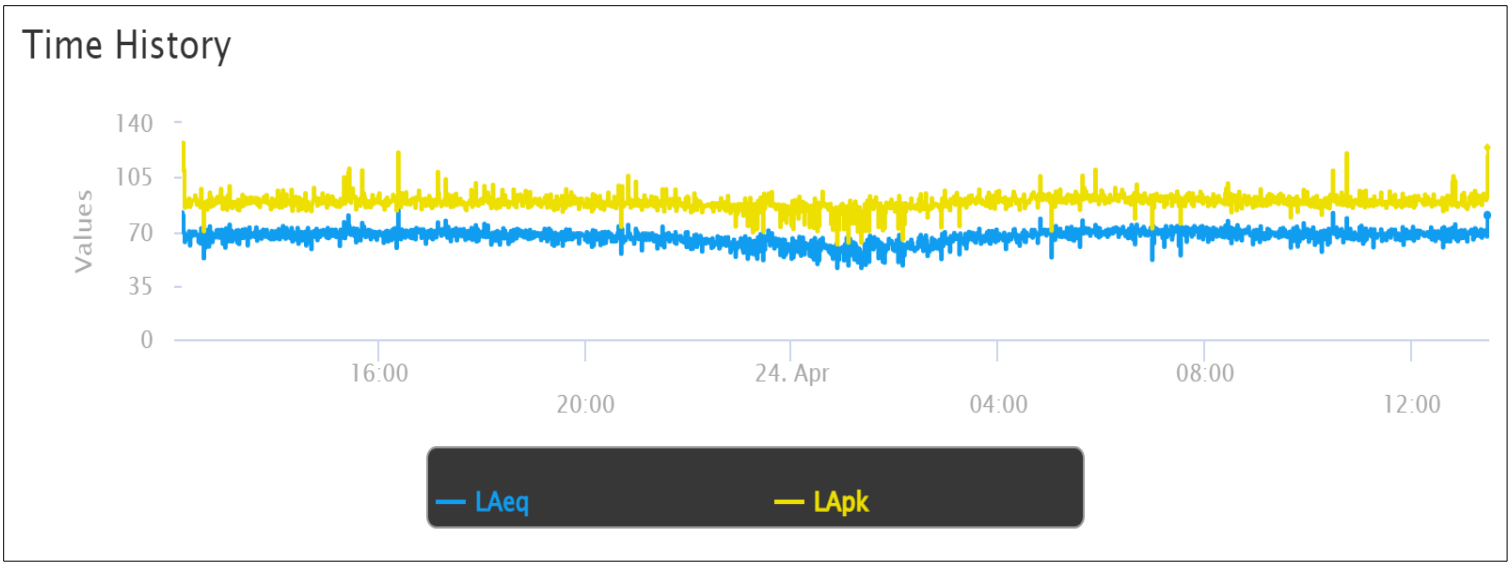
LAS 5.0	74.1 dB
LAS 10.0	72.5 dB
LAS 33.3	66.6 dB
LAS 50.0	61.2 dB
LAS 66.6	57.0 dB
LAS 90.0	49.4 dB

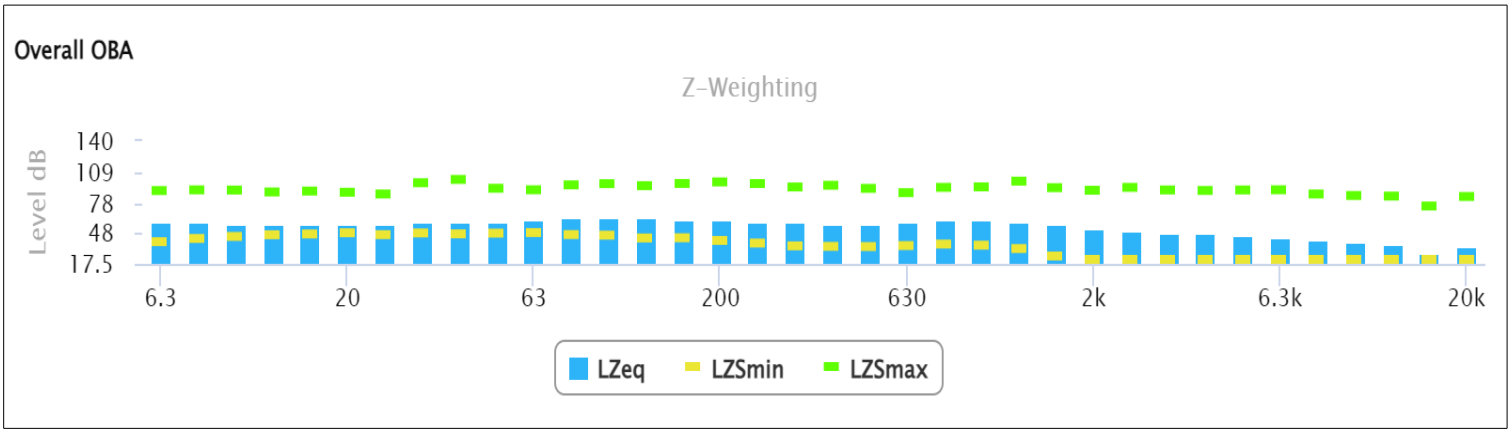
Exceedances

	Count	Duration
LAS > 85.0 dB	33	90
LAS > 95.0 dB	3	6
LCpk > 135.0 dB	0	0
LCpk > 137.0 dB	0	0
LCpk > 140.0 dB	0	0

Sound Exposure

SELA	118.0 dB
EA (Pa²s)	249.9 Pa²s
EA,8 h (Pa²s)	79.0 Pa²s
EA,40 h (Pa²s)	394.8 Pa²s
EA (Pa²h)	0.1 Pa²h
EA,8 h (Pa²h)	0.0 Pa²h
EA,40 h (Pa²h)	0.1 Pa²h





LARSON DAVIS
A PCB DIVISION

SoundExpert 821 Summary: 2025-07-17 13:57:59

User:

Location:

Job Description:

Notes:

Meter General Information

	Model	Serial
Meter	SoundExpert 821	40604
Preamplifier	PRM821	
Microphone	377B02	
Unique File Id	00C:00009E9C:6808DD2B:00000175	

Overall Measurement

Start Date & Time	2025-04-23 12:29:31
Stop Date & Time	2025-04-24 13:20:14
Run Time	00:50:04
Pre-Calibration	
Date/Time	2025-04-23 12:24:30
Calibrator Level	114.00 dB
Meter Sensitivity	-25.50 dB re 1V/Pa
Post-Calibration	
Date/Time	2025-04-24 13:23:27
Calibrator Level	114.00 dB
Meter Sensitivity	-25.37 dB re 1V/Pa
Sensitivity Delta	0.13 dB

	A	**C**	**Z**
Lweq	67.1	72.5	81.5
Lwpk	120.0 dB	122.7 dB	123.6 dB
	2025-04-23 14:41:58	2025-04-23 14:41:58	2025-04-23 14:41:58
LwSmin	38.7 dB	53.5 dB	56.1 dB
	2025-04-24 11:56:14	2025-04-24 00:35:04	2025-04-24 00:35:04
LwFmin	38.1 dB	52.1 dB	54.6 dB
	2025-04-24 11:56:13	2025-04-24 00:35:01	2025-04-24 00:35:01
LwImin	39.6 dB	55.6 dB	59.0 dB
	2025-04-24 11:56:14	2025-04-24 00:35:04	2025-04-24 00:35:04
LwSmax	98.0 dB	103.7 dB	105.9 dB
	2025-04-23 14:41:58	2025-04-23 14:41:58	2025-04-23 12:54:43
LwFmax	102.1 dB	107.2 dB	110.2 dB
	2025-04-23 14:41:58	2025-04-23 14:41:58	2025-04-23 12:54:43
LwImax	105.1 dB	109.2 dB	112.6 dB
	2025-04-23 14:41:58	2025-04-23 14:41:58	2025-04-23 12:54:43

w = frequency weighting (A, C or Z)

Community Noise	**LDN**	**LDay (07:00-22:00)**	**LNight (22:00-07:00)**	
	dB	dB	dB	
	LDEN	**LDay (07:00-19:00)**	**LEve (19:00-22:00)**	**LNight (22:00-07:00)**
	dB	dB	dB	dB
LCeq - LAeq	5.4 dB			
LAleq	71.1 dB			
Overload Count	0			
Overload Duration	00:00:00			

	A	**C**	**Z**
Under Range Peak	50.0 dB	50.0 dB	62.0 dB
Under Range Limit	24.0 dB	27.0 dB	37.0 dB
Noise Floor	17.0 dB	18.0 dB	25.0 dB

Ln Percentiles

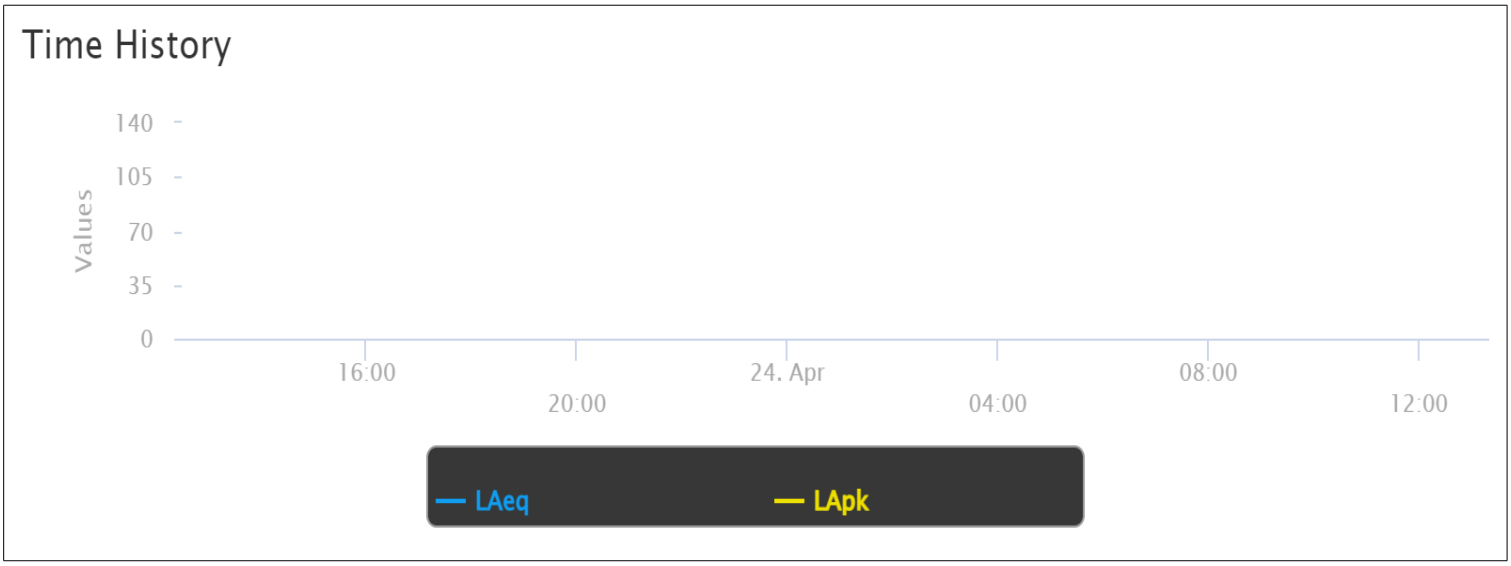
LAS 5.0	74.5 dB
LAS 10.0	72.3 dB
LAS 33.3	58.3 dB
LAS 50.0	52.0 dB
LAS 66.6	48.8 dB
LAS 90.0	44.8 dB

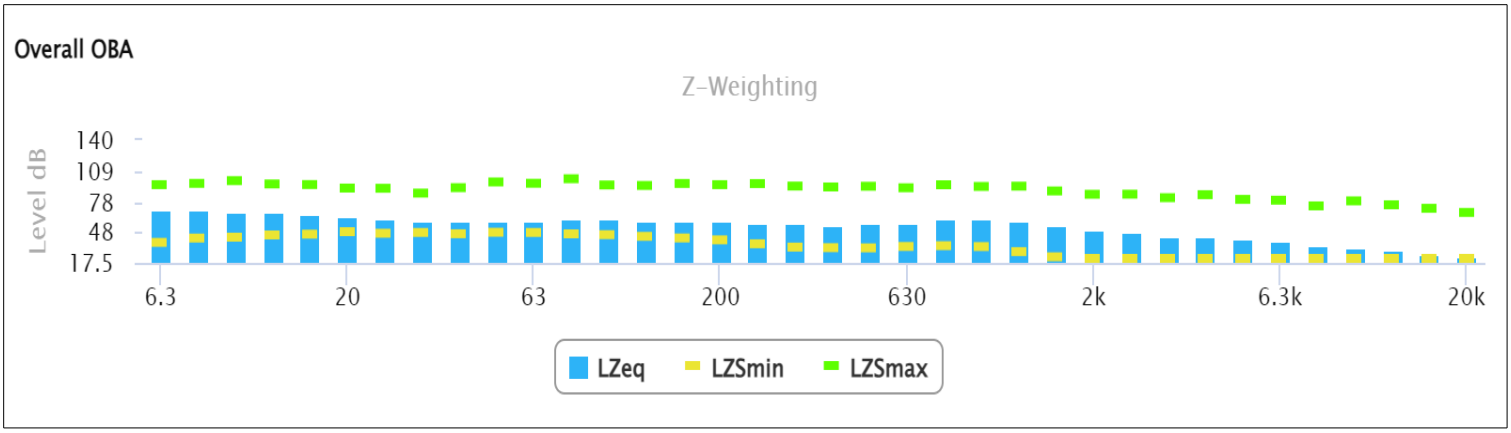
Exceedances

	Count	Duration
LAS > 85.0 dB	11	28
LAS > 95.0 dB	1	2
LCpk > 135.0 dB	0	0
LCpk > 137.0 dB	0	0
LCpk > 140.0 dB	0	0

Sound Exposure

SELA	116.6 dB
EA (Pa²s)	182.8 Pa²s
EA,8 h (Pa²s)	58.9 Pa²s
EA,40 h (Pa²s)	294.5 Pa²s
EA (Pa²h)	0.1 Pa²h
EA,8 h (Pa²h)	0.0 Pa²h
EA,40 h (Pa²h)	0.1 Pa²h





Appendix 2 – Construction Noise and Vibration Calculations:

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FTA General Assessment Construction Noise Levels (dBA Leq)

	North	East	South	West
Distance from Center	1,700	1,300	2,110	2,040
Demolition	0	0	0	0
Site Preparation	60	62	58	58
Grading	60	63	59	59
Building Construction	57	60	55	56
Paving	60	63	59	59
Architectural Coating	49	52	47	48
Maximum Construction Noise	**60**	**63**	**59**	**59**
FTA Construction Criterion	**80**	**80**	**80**	**80**
Exceeds Threshold	**No**	**No**	**No**	**No**

Minimum	47
Maximum	63

Results are conservative due to:
Assumed 100% utilization
FTA General Assessment method includes noise from the two highest equipment. This assessment includes all of the two highest categories of equipment.
FTA General Assessment method has a threshold of 90 dBA. The Detailed Assessment Threshold of 80 dBA used to provide a consevative analysis.

FTA Analysis Type **General Assessment** **Closest Land Use North of Site**

"Phase Name"	"Equipment Type"	"Fuel Type"	"Engine Tier"	"Number per Day"	Equipment Count (value)	RCNM Construction Equipment and Vehicles	Usage Factor	Reference SPL L_{REF} (dBA)	Distance to Receptor (ft)	Terrain Coefficient (dBA/ft)	Insertion Loss (dBA)	Window Loss (dBA)	Attenuated SPL L_{MAX} (dBA)	Attenuated SPL L_{EQ} (dBA)	Count RMS L_{MAX} (antilog)	Count RMS L_{EQ} (antilog)	Count SPL L_{MAX} (dBA)	Count SPL L_{EQ} (dBA)
Site Preparation	Rubber Tired Dozers	Diesel	Average	3	3	Tractor (rubber tire)	100%	84	1700	0.0000	0	0	53.4	53.4	6.52E+05	6.52E+05	58.1	58.1
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4	4	Backhoe (with loader)	100%	80	1700	0.0000	0	0	49.4	49.4	3.46E+05	3.46E+05	55.4	55.4
Grading	Graders	Diesel	Average	1	1	Grader	100%	85	1700	0.0000	0	0	54.4	54.4	2.74E+05	2.74E+05	54.4	54.4
Grading	Excavators	Diesel	Average	2	2	Excavator (hydraulic)	100%	85	1700	0.0000	0	0	54.4	54.4	5.47E+05	5.47E+05	57.4	57.4
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2	2	Backhoe (with loader)	100%	80	1700	0.0000	0	0	49.4	49.4	1.73E+05	1.73E+05	52.4	52.4
Grading	Scrapers	Diesel	Average	2	2	Scraper	100%	85	1700	0.0000	0	0	54.4	54.4	5.47E+05	5.47E+05	57.4	57.4
Grading	Rubber Tired Dozers	Diesel	Average	1	1	Tractor (rubber tire)	100%	84	1700	0.0000	0	0	53.4	53.4	2.17E+05	2.17E+05	53.4	53.4
Building Construction	Forklifts	Diesel	Average	3	3	Forklift (front end loader)	100%	80	1700	0.0000	0	0	49.4	49.4	2.60E+05	2.60E+05	54.1	54.1
Building Construction	Generator Sets	Diesel	Average	1	1	Generator (<25 KVA quiet design)	100%	70	1700	0.0000	0	0	39.4	39.4	8.65E+03	8.65E+03	39.4	39.4
Building Construction	Cranes	Diesel	Average	1	1	Crane	100%	85	1700	0.0000	0	0	54.4	54.4	2.74E+05	2.74E+05	54.4	54.4
Building Construction	Welders	Diesel	Average	1	1	Welding Machine (arc welding)	100%	70	1700	0.0000	0	0	39.4	39.4	8.65E+03	8.65E+03	39.4	39.4
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3	3	Backhoe (with loader)	100%	80	1700	0.0000	0	0	49.4	49.4	2.60E+05	2.60E+05	54.1	54.1
Paving	Pavers	Diesel	Average	2	2	Paver (asphalt)	100%	85	1700	0.0000	0	0	54.4	54.4	5.47E+05	5.47E+05	57.4	57.4
Paving	Paving Equipment	Diesel	Average	2	2	Paver (asphalt)	100%	85	1700	0.0000	0	0	54.4	54.4	5.47E+05	5.47E+05	57.4	57.4
Paving	Rollers	Diesel	Average	2	2	Roller	100%	85	1700	0.0000	0	0	54.4	54.4	5.47E+05	5.47E+05	57.4	57.4
Architectural Coating	Air Compressors	Diesel	Average	1	1	Compressor (air)	100%	80	1700	0.0000	0	0	49.4	49.4	8.65E+04	8.65E+04	49.4	49.4
						Ref. Dist. (ft)	**50**											

General Approach

Phase Name	∑RMS L_{MAX}	∑RMS L_{EQ}	∑SPL L_{MAX} (dBA)	∑SPL L_{EQ} (dBA)	Maximum Two Equipment
Demolition	0.00E+00	0.00E+00	--	**--**	-
Site Preparation	9.98E+05	9.98E+05	60.0	**60.0**	60.0
Grading	1.76E+06	1.76E+06	62.5	**62.5**	60.4
Building Construction	8.10E+05	8.10E+05	59.1	**59.1**	57.3
Paving	1.64E+06	1.64E+06	62.2	**62.2**	60.4
Architectural Coating	8.65E+04	8.65E+04	49.4	**49.4**	49.4

FTA Analysis Type	General Assessment	Closest Land Use East of Site

"Phase Name"	"Equipment Type"	"Fuel Type"	"Engine Tier"	"Number per Day"	Equipment Count (value)	RCNM Construction Equipment and Vehicles	Usage Factor	Reference SPL L_{REF} (dBA)	Distance to Receptor (ft)	Terrain Coefficient (dBA/ft)	Insertion Loss (dBA)	Window Loss (dBA)	Attenuated SPL L_{MAX} (dBA)	Attenuated SPL L_{EQ} (dBA)	Count RMS L_{MAX} (antilog)	Count RMS L_{EQ} (antilog)	Count SPL L_{MAX} (dBA)	Count SPL L_{EQ} (dBA)
Site Preparation	Rubber Tired Dozers	Diesel	Average	3	3	Tractor (rubber tire)	100%	84	1300	0.0000	0	0	55.7	55.7	1.11E+06	1.11E+06	60.5	60.5
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4	4	Backhoe (with loader)	100%	80	1300	0.0000	0	0	51.7	51.7	5.92E+05	5.92E+05	57.7	57.7
Grading	Graders	Diesel	Average	1	1	Grader	100%	85	1300	0.0000	0	0	56.7	56.7	4.68E+05	4.68E+05	56.7	56.7
Grading	Excavators	Diesel	Average	2	2	Excavator (hydraulic)	100%	85	1300	0.0000	0	0	56.7	56.7	9.36E+05	9.36E+05	59.7	59.7
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2	2	Backhoe (with loader)	100%	80	1300	0.0000	0	0	51.7	51.7	2.96E+05	2.96E+05	54.7	54.7
Grading	Scrapers	Diesel	Average	2	2	Scraper	100%	85	1300	0.0000	0	0	56.7	56.7	9.36E+05	9.36E+05	59.7	59.7
Grading	Rubber Tired Dozers	Diesel	Average	1	1	Tractor (rubber tire)	100%	84	1300	0.0000	0	0	55.7	55.7	3.72E+05	3.72E+05	55.7	55.7
Building Construction	Forklifts	Diesel	Average	3	3	Forklift (front end loader)	100%	80	1300	0.0000	0	0	51.7	51.7	4.44E+05	4.44E+05	56.5	56.5
Building Construction	Generator Sets	Diesel	Average	1	1	Generator (<25 KVA quiet design)	100%	70	1300	0.0000	0	0	41.7	41.7	1.48E+04	1.48E+04	41.7	41.7
Building Construction	Cranes	Diesel	Average	1	1	Crane	100%	85	1300	0.0000	0	0	56.7	56.7	4.68E+05	4.68E+05	56.7	56.7
Building Construction	Welders	Diesel	Average	1	1	Welding Machine (arc welding)	100%	70	1300	0.0000	0	0	41.7	41.7	1.48E+04	1.48E+04	41.7	41.7
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3	3	Backhoe (with loader)	100%	80	1300	0.0000	0	0	51.7	51.7	4.44E+05	4.44E+05	56.5	56.5
Paving	Pavers	Diesel	Average	2	2	Paver (asphalt)	100%	85	1300	0.0000	0	0	56.7	56.7	9.36E+05	9.36E+05	59.7	59.7
Paving	Paving Equipment	Diesel	Average	2	2	Paver (asphalt)	100%	85	1300	0.0000	0	0	56.7	56.7	9.36E+05	9.36E+05	59.7	59.7
Paving	Rollers	Diesel	Average	2	2	Roller	100%	85	1300	0.0000	0	0	56.7	56.7	9.36E+05	9.36E+05	59.7	59.7
Architectural Coating	Air Compressors	Diesel	Average	1	1	Compressor (air)	100%	80	1300	0.0000	0	0	51.7	51.7	1.48E+05	1.48E+05	51.7	51.7
						Ref. Dist. (ft)	**50**											

General Approach

Phase Name	∑RMS L_{MAX}	∑RMS L_{EQ}	∑SPL L_{MAX} (dBA)	∑SPL L_{EQ} (dBA)	Maximum Two Equipment
Demolition	0.00E+00	0.00E+00	--	**--**	-
Site Preparation	1.71E+06	1.71E+06	62.3	**62.3**	62.3
Grading	3.01E+06	3.01E+06	64.8	**64.8**	62.7
Building Construction	1.38E+06	1.38E+06	61.4	**61.4**	59.6
Paving	2.81E+06	2.81E+06	64.5	**64.5**	62.7
Architectural Coating	1.48E+05	1.48E+05	51.7	**51.7**	51.7

FTA Analysis Type	General Assessment	Closest Land Use South of Site

"Phase Name"	"Equipment Type"	"Fuel Type"	"Engine Tier"	"Number per Day"	Equipment Count (value)	RCNM Construction Equipment and Vehicles	Usage Factor	Reference SPL L_{REF} (dBA)	Distance to Receptor (ft)	Terrain Coefficient (dBA/ft)	Insertion Loss (dBA)	Window Loss (dBA)	Attenuated SPL L_{MAX} (dBA)	Attenuated SPL L_{EQ} (dBA)	Count RMS L_{MAX} (antilog)	Count RMS L_{EQ} (antilog)	Count SPL L_{MAX} (dBA)	Count SPL L_{EQ} (dBA)
Site Preparation	Rubber Tired Dozers	Diesel	Average	3	3	Tractor (rubber tire)	100%	84	2110	0.0000	0	0	51.5	51.5	4.23E+05	4.23E+05	56.3	56.3
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4	4	Backhoe (with loader)	100%	80	2110	0.0000	0	0	47.5	47.5	2.25E+05	2.25E+05	53.5	53.5
Grading	Graders	Diesel	Average	1	1	Grader	100%	85	2110	0.0000	0	0	52.5	52.5	1.78E+05	1.78E+05	52.5	52.5
Grading	Excavators	Diesel	Average	2	2	Excavator (hydraulic)	100%	85	2110	0.0000	0	0	52.5	52.5	3.55E+05	3.55E+05	55.5	55.5
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2	2	Backhoe (with loader)	100%	80	2110	0.0000	0	0	47.5	47.5	1.12E+05	1.12E+05	50.5	50.5
Grading	Scrapers	Diesel	Average	2	2	Scraper	100%	85	2110	0.0000	0	0	52.5	52.5	3.55E+05	3.55E+05	55.5	55.5
Grading	Rubber Tired Dozers	Diesel	Average	1	1	Tractor (rubber tire)	100%	84	2110	0.0000	0	0	51.5	51.5	1.41E+05	1.41E+05	51.5	51.5
Building Construction	Forklifts	Diesel	Average	3	3	Forklift (front end loader)	100%	80	2110	0.0000	0	0	47.5	47.5	1.68E+05	1.68E+05	52.3	52.3
Building Construction	Generator Sets	Diesel	Average	1	1	Generator (<25 KVA quiet design)	100%	70	2110	0.0000	0	0	37.5	37.5	5.62E+03	5.62E+03	37.5	37.5
Building Construction	Cranes	Diesel	Average	1	1	Crane	100%	85	2110	0.0000	0	0	52.5	52.5	1.78E+05	1.78E+05	52.5	52.5
Building Construction	Welders	Diesel	Average	1	1	Welding Machine (arc welding)	100%	70	2110	0.0000	0	0	37.5	37.5	5.62E+03	5.62E+03	37.5	37.5
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3	3	Backhoe (with loader)	100%	80	2110	0.0000	0	0	47.5	47.5	1.68E+05	1.68E+05	52.3	52.3
Paving	Pavers	Diesel	Average	2	2	Paver (asphalt)	100%	85	2110	0.0000	0	0	52.5	52.5	3.55E+05	3.55E+05	55.5	55.5
Paving	Paving Equipment	Diesel	Average	2	2	Paver (asphalt)	100%	85	2110	0.0000	0	0	52.5	52.5	3.55E+05	3.55E+05	55.5	55.5
Paving	Rollers	Diesel	Average	2	2	Roller	100%	85	2110	0.0000	0	0	52.5	52.5	3.55E+05	3.55E+05	55.5	55.5
Architectural Coating	Air Compressors	Diesel	Average	1	1	Compressor (air)	100%	80	2110	0.0000	0	0	47.5	47.5	5.62E+04	5.62E+04	47.5	47.5
						Ref. Dist. (ft)	**50**											

General Approach

Phase Name	∑RMS L_{MAX}	∑RMS L_{EQ}	∑SPL L_{MAX} (dBA)	∑SPL L_{EQ} (dBA)	Maximum Two Equipment
Demolition	0.00E+00	0.00E+00	--	**--**	-
Site Preparation	6.48E+05	6.48E+05	58.1	**58.1**	58.1
Grading	1.14E+06	1.14E+06	60.6	**60.6**	58.5
Building Construction	5.26E+05	5.26E+05	57.2	**57.2**	55.4
Paving	1.07E+06	1.07E+06	60.3	**60.3**	58.5
Architectural Coating	5.62E+04	5.62E+04	47.5	**47.5**	47.5

FTA Analysis Type **General Assessment** **Closest Land Use West of Site**

"Phase Name"	"Equipment Type"	"Fuel Type"	"Engine Tier"	"Number per Day"	Equipment Count (value)	RCNM Construction Equipment and Vehicles	Usage Factor	Reference SPL L_{REF} (dBA)	Distance to Receptor (ft)	Terrain Coefficient (dBA/ft)	Insertion Loss (dBA)	Window Loss (dBA)	Attenuated SPL L_{MAX} (dBA)	Attenuated SPL L_{EQ} (dBA)	Count RMS L_{MAX} (antilog)	Count RMS L_{EQ} (antilog)	Count SPL L_{MAX} (dBA)	Count SPL L_{EQ} (dBA)
Site Preparation	Rubber Tired Dozers	Diesel	Average	3	3	Tractor (rubber tire)	100%	84	2040	0.0000	0	0	51.8	51.8	4.53E+05	4.53E+05	56.6	56.6
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4	4	Backhoe (with loader)	100%	80	2040	0.0000	0	0	47.8	47.8	2.40E+05	2.40E+05	53.8	53.8
Grading	Graders	Diesel	Average	1	1	Grader	100%	85	2040	0.0000	0	0	52.8	52.8	1.90E+05	1.90E+05	52.8	52.8
Grading	Excavators	Diesel	Average	2	2	Excavator (hydraulic)	100%	85	2040	0.0000	0	0	52.8	52.8	3.80E+05	3.80E+05	55.8	55.8
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2	2	Backhoe (with loader)	100%	80	2040	0.0000	0	0	47.8	47.8	1.20E+05	1.20E+05	50.8	50.8
Grading	Scrapers	Diesel	Average	2	2	Scraper	100%	85	2040	0.0000	0	0	52.8	52.8	3.80E+05	3.80E+05	55.8	55.8
Grading	Rubber Tired Dozers	Diesel	Average	1	1	Tractor (rubber tire)	100%	84	2040	0.0000	0	0	51.8	51.8	1.51E+05	1.51E+05	51.8	51.8
Building Construction	Forklifts	Diesel	Average	3	3	Forklift (front end loader)	100%	80	2040	0.0000	0	0	47.8	47.8	1.80E+05	1.80E+05	52.6	52.6
Building Construction	Generator Sets	Diesel	Average	1	1	Generator (<25 KVA quiet design)	100%	70	2040	0.0000	0	0	37.8	37.8	6.01E+03	6.01E+03	37.8	37.8
Building Construction	Cranes	Diesel	Average	1	1	Crane	100%	85	2040	0.0000	0	0	52.8	52.8	1.90E+05	1.90E+05	52.8	52.8
Building Construction	Welders	Diesel	Average	1	1	Welding Machine (arc welding)	100%	70	2040	0.0000	0	0	37.8	37.8	6.01E+03	6.01E+03	37.8	37.8
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3	3	Backhoe (with loader)	100%	80	2040	0.0000	0	0	47.8	47.8	1.80E+05	1.80E+05	52.6	52.6
Paving	Pavers	Diesel	Average	2	2	Paver (asphalt)	100%	85	2040	0.0000	0	0	52.8	52.8	3.80E+05	3.80E+05	55.8	55.8
Paving	Paving Equipment	Diesel	Average	2	2	Paver (asphalt)	100%	85	2040	0.0000	0	0	52.8	52.8	3.80E+05	3.80E+05	55.8	55.8
Paving	Rollers	Diesel	Average	2	2	Roller	100%	85	2040	0.0000	0	0	52.8	52.8	3.80E+05	3.80E+05	55.8	55.8
Architectural Coating	Air Compressors	Diesel	Average	1	1	Compressor (air)	100%	80	2040	0.0000	0	0	47.8	47.8	6.01E+04	6.01E+04	47.8	47.8
						Ref. Dist. (ft)	**50**											

General Approach

Phase Name	∑RMS L_{MAX}	∑RMS L_{EQ}	∑SPL L_{MAX} (dBA)	∑SPL L_{EQ} (dBA)	Maximum Two Equipment
Demolition	0.00E+00	0.00E+00	--	**--**	-
Site Preparation	6.93E+05	6.93E+05	58.4	**58.4**	58.4
Grading	1.22E+06	1.22E+06	60.9	**60.9**	58.8
Building Construction	5.62E+05	5.62E+05	57.5	**57.5**	55.7
Paving	1.14E+06	1.14E+06	60.6	**60.6**	58.8
Architectural Coating	6.01E+04	6.01E+04	47.8	**47.8**	47.8

FTA Construction Equipment Vibration Reference Levels and Impacts - Common Equipment

Construction Equipment Type	Reference PPV at 25 feet (in/sec)	North Property Line Distance to Building (ft)	Eastern Property Line Distance to Building (ft)	Southern Property Line Distance to Building (ft)	Western Property Line Distance to Building (ft)
		285	120	430	660
Vibratory Roller/Compactor	0.210	0.01	0.02	0.00	0.00
Large Bulldozer/Crawler Tractor	0.089	0.00	0.01	0.00	0.00
Loaded Dump Trucks	0.076	0.00	0.01	0.00	0.00
Small Bulldozer/Excavator/Backhoe	0.003	0.0001	0.0003	0.0000	0.0000
Maximum Vibration Exposure Level (in/sec)		**0.01**	**0.02**	**0.00**	**0.00**
Building Damage Threshold (in/sec)		**0.2**	**0.2**	**0.2**	**0.2**
Human Annoyance Threshold (in/sec)		**0.1**	**0.1**	**0.1**	**0.1**
Potentially Significant?		**No**	**No**	**No**	**No**

Sources: FTA 2018 (Chapter 7.2, Tables 7-4 & 7-5, Equation 7-2), Caltrans 2020 (Table 5)

Appendix 3 – Parking and Traffic Noise Modeling:

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Scannell Existing
Receiver list

No.	Receiver name	Buildi side	Floor	Limit				Level				Conflict			
				Day	Evening	Night	Lden	Day	Evening	Night	Lden	Day	Evening	Night	Lden
				dB(A)				dB(A)				dB			
1	Dale 1	-	EG	55	-	-	-	62.4	55.8	52.9	62.4	7.4	-	-	-
2	Dale 2	-	EG	55	-	-	-	63.6	56.9	54.1	63.5	8.6	-	-	-
3	Dale 3	-	EG	55	-	-	-	64.0	57.4	54.7	64.0	9.0	-	-	-
4	Joseph Gregori High	-	EG	55	-	-	-	35.8	31.2	30.9	38.3	-	-	-	-
5	Kiernan Avenue	-	EG	-	-	-	-	62.5	57.9	58.1	65.3	-	-	-	-
6	Kiernan Avenue1	-	EG	-	-	-	-	58.3	53.7	54.1	61.2	-	-	-	-
7	Pirrone Road	-	EG	-	-	-	-	45.3	38.9	37.3	45.9	-	-	-	-
8	West Boundary	-	EG	55	-	-	-	46.3	41.4	42.1	49.2	-	-	-	-

Scannell Existing
Noise emissions of road traffic

Statio km	ADT Veh/24	Vehicles type	Vehicle name	Traffic values day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Contr devic	Cons Spee km/h	Affec veh. %	Road surface	Gradie Min / M %
Kiernan WB btwn Dale and Stoddard			Traffic direction: in entry direction									
0+00(	15305	Total	-	930	408	313	-	none	-	-	Average (of DGAC a	0.0
		Automobiles	-	886	400	297	80					
		Medium trucks	-	24	4	7	80					
		Heavy trucks	-	20	4	10	80					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					
Kiernan WB e/o Dale			Traffic direction: in entry direction									
0+00(	13571	Total	-	830	377	263	-	none	-	-	Average (of DGAC a	0.0
		Automobiles	-	791	371	249	80					
		Medium trucks	-	21	3	5	80					
		Heavy trucks	-	18	3	8	80					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					
1+20	13571	Total	-	830	377	263	-	none	-	-	Average (of DGAC a	0.0
		Automobiles	-	791	371	249	80					
		Medium trucks	-	21	3	5	80					
		Heavy trucks	-	18	3	8	80					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					
Kiernan EB w/o Dale			Traffic direction: in entry direction									
0+00(	15305	Total	-	930	408	313	-	none	-	-	Average (of DGAC a	0.0
		Automobiles	-	886	400	297	80					
		Medium trucks	-	24	4	7	80					
		Heavy trucks	-	20	4	10	80					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					
2+03	15305	Total	-	930	408	313	-	none	-	-	Average (of DGAC a	0.0
		Automobiles	-	886	400	297	80					
		Medium trucks	-	24	4	7	80					
		Heavy trucks	-	20	4	10	80					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					
Dale Road			Traffic direction: in entry direction									
0+00(	18429	Total	-	1212	499	236	-	none	-	-	Average (of DGAC a	0.0
		Automobiles	-	1188	496	230	64					
		Medium trucks	-	19	3	4	64					
		Heavy trucks	-	5	0	2	64					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					
0+56(	5675	Total	-	413	97	42	-	none	-	-	Average (of DGAC a	0.0
		Automobiles	-	405	97	41	80					
		Medium trucks	-	7	1	1	80					
		Heavy trucks	-	1	-	1	80					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					

Scannell Existing
Noise emissions of road traffic

Statio km	ADT Veh/24	Vehicles type	Vehicle name	Traffic values day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Contr devic	Cons Spee km/h	Affec veh. %	Road surface	Gradie Min / M %
Kiernan EB e/o Dale			Traffic direction: in entry direction									
0+00	13571	Total	-	830	377	263	-	none	-	-	Average (of DGAC a	0.0
		Automobiles	-	791	371	249	80					
		Medium trucks	-	21	3	5	80					
		Heavy trucks	-	18	3	8	80					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					

Scannell Operations
Noise emissions of parking lot traffic

Name	Parking bays	Movements			Corrections		Level	
		Day	Evening	Night	Parking lot type	dB(A)	Lw"(T) dB(A)	Lw"(N) dB(A)
Buildings 1 East and 2 West Parking	124.0	0.105	0.105	0.000		10.0	84.1	84.2
Bldg 1 West Parking	62.0	0.105	0.105	0.000		10.0	81.1	81.1
Bldg 2 East 3 West Parking	127.0	0.105	0.105	0.000		10.0	84.3	84.2
Bldg 4 West Parking	54.0	0.105	0.105	0.000		10.0	80.5	80.5
Bldg 4 East	54.0	0.105	0.105	0.000		10.0	80.5	80.5
Bldg 5 East and 6 West	108.0	0.105	0.105	0.000		10.0	83.6	83.6
Bldg 7 West	29.0	0.105	0.105	0.000		0.0	67.8	67.8
North Boundary	440.0	0.296	0.296	0.000		0.0	84.2	84.2
East Boundary1	63.0	0.296	0.296	0.000		0.0	75.7	75.7
East Boundary2	104.0	0.296	0.296	0.000		0.0	77.9	77.9
East Boundary3	128.0	0.296	0.296	0.000		0.0	78.8	78.8
East Boundary4	49.0	0.296	0.296	0.000		0.0	74.6	74.6
Central EW1	499.0	0.296	0.296	0.000		0.0	84.7	84.7
SouthBoundary1	17.0	0.296	0.296	0.000		0.0	70.0	70.0
SouthBoundary2	54.0	0.296	0.296	0.000		0.0	75.0	75.0
SouthBoundary3	55.0	0.296	0.296	0.000		0.0	75.1	75.1
SouthBoundary4	357.0	0.296	0.296	0.000		0.0	83.2	83.2
SouthBoundary5	359.0	0.296	0.296	0.000		0.0	83.3	83.3

Scannell Operations
Noise emissions of road traffic

Statio km	ADT Veh/24	Vehicles type	Vehicle name	Traffic values day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Contr devic	Cons Spee km/h	Affec veh. %	Road surface	Gradie Min / M %
Kiernan WB btwn Dale and Stoddard			Traffic direction: in entry direction									
0+00(	18843	Total	-	1165	487	364	-	none	-	-	Average (of DGAC a	0.0
		Automobiles	-	1074	463	337	80					
		Medium trucks	-	24	4	7	80					
		Heavy trucks	-	67	20	20	80					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					
Kiernan WB e/o Dale			Traffic direction: in entry direction									
0+00(	15079	Total	-	930	410	284	-	none	-	-	Average (of DGAC a	0.0
		Automobiles	-	882	402	269	80					
		Medium trucks	-	21	3	5	80					
		Heavy trucks	-	28	6	10	80					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					
1+20(	15078	Total	-	930	410	284	-	none	-	-	Average (of DGAC a	0.0
		Automobiles	-	882	402	269	80					
		Medium trucks	-	21	3	5	80					
		Heavy trucks	-	28	6	10	80					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					
Kiernan EB w/o Dale			Traffic direction: in entry direction									
0+00(	18843	Total	-	1165	487	364	-	none	-	-	Average (of DGAC a	0.0
		Automobiles	-	1074	463	337	80					
		Medium trucks	-	24	4	7	80					
		Heavy trucks	-	67	20	20	80					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					
Dale n/o Kiernan			Traffic direction: in entry direction									
0+00(	22975	Total	-	1514	601	301	-	none	-	-	Average (of DGAC a	0.0
		Automobiles	-	1490	597	294	64					
		Medium trucks	-	19	3	4	64					
		Heavy trucks	-	5	0	2	64					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					
0+56(	13766	Total	-	950	278	157	-	none	-	-	Average (of DGAC a	0.0
		Automobiles	-	905	265	148	80					
		Medium trucks	-	7	1	1	80					
		Heavy trucks	-	38	13	8	80					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					
0+94(	5675	Total	-	413	97	42	-	none	-	-	Average (of DGAC a	0.0
		Automobiles	-	405	97	41	80					
		Medium trucks	-	7	1	1	80					
		Heavy trucks	-	1	-	1	80					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					

Scannell Operations
Noise emissions of road traffic

Statio km	ADT Veh/24	Vehicles type	Vehicle name	Traffic values day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Contr devic	Cons Spee km/h	Affec veh. %	Road surface	Gradie Min / M %
Kiernan EB e/o Dale			Traffic direction: in entry direction									
0+00	15079	Total	-	930	410	284	-	none	-	-	Average (of DGAC a	0.0
		Automobiles	-	882	402	269	80					
		Medium trucks	-	21	3	5	80					
		Heavy trucks	-	28	6	10	80					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					

Scannell Operations
Receiver list

No.	Receiver name	Buildi side	Floor	Limit				Level				Conflict			
				Day	Evening	Night	Lden	Day	Evening	Night	Lden	Day	Evening	Night	Lden
				dB(A)				dB(A)				dB			
1	Dale 1	-	EG	55	-	-	-	62.6	56.0	53.5	62.7	7.6	-	-	-
2	Dale 2	-	EG	55	-	-	-	63.7	57.1	54.4	63.8	8.7	-	-	-
3	Dale 3	-	EG	55	-	-	-	69.4	64.2	62.1	70.5	14.4	-	-	-
4	Joseph Gregori High	-	EG	55	-	-	-	35.9	30.9	31.1	38.4	-	-	-	-
5	Kiernan Avenue	-	EG	-	-	-	-	64.7	60.1	59.4	66.9	-	-	-	-
6	Kiernan Avenue1	-	EG	-	-	-	-	61.0	56.4	55.8	63.3	-	-	-	-
7	Pirrone Road	-	EG	-	-	-	-	45.0	38.0	37.7	45.9	-	-	-	-
8	West Boundary	-	EG	55	-	-	-	49.1	44.2	43.9	51.3	-	-	-	-

APPENDIX E

CEQA Transportation Impact Analysis Report

Fehr & Peers

CEQA Transportation Impact Analysis Report for the Scannell Industrial Project

RS25-4405.00



Prepared for:
City of Modesto
De Novo Planning Group

Submitted on:
February 24, 2026

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Executive Summary

Study Purpose

This CEQA Transportation Impact Analysis (TIA) Report will serve as an appendix to the project's EIR. It focuses on the project's impacts to the transportation system based on its vehicle miles traveled (VMT). It also evaluates impacts to bicycle/pedestrian facilities, transit facilities and services, and roadway safety-related impacts including nonstandard design features.

A separate report, entitled *Local Transportation Analysis (LTA) for the Scannell Industrial Project* analyzes the effects of the proposed project on traffic operations at affected roadways and intersections. That report also evaluates the efficacy of potential operational improvements to address deficient operations. When Senate Bill (SB) 743 became effective statewide in 2020, it prohibited the use of automobile delay and level of service (LOS) from being used under CEQA as a performance measure to determine the transportation impacts of land development and transportation projects. The LTA focuses primarily on traffic operations and LOS and is therefore not used to identify significant impacts under CEQA.

Project Description

The proposed project would be situated on approximately 145 gross acres, bounded by Kiernan Avenue (State Route 219), Dale Road, and Pirrone Road. If approved, the project site would be annexed into the City of Modesto. Proposed land uses include:

- 2,503,230 square feet (sf) of industrial land uses; specific tenants have not yet been identified, therefore, a mix of the following industrial land uses were assumed for purposes of this study:
    - 667,528 sf of warehouse uses
    - 667,528 sf of manufacturing uses
    - 667,528 sf of distribution uses
    - 500,646 sf of cold storage uses
- Up to 1,963 off-street parking stalls for industrial uses
- Up to 788 off-street trailer parking stalls for industrial uses
- Approximately 121,450 square feet of developable land area is designated for retail development; specific tenants and uses have not yet been identified. For the purposes of this analysis, it is assumed that the following land uses could be accommodated within this area:
    - Gas station with 18 vehicle fueling positions and a 6,000-sf convenience store
    - Two fast-food restaurants with drive-through windows, each with 4,000 sf of building area, totaling 8,000 sf

Site access, including heavy truck access, is proposed via the following seven driveways:

- Two driveways on Kiernan Avenue (SR 219), including a signalized full-access western driveway and one unsignalized side-street-stop-controlled right-turn in and right-turn out access only eastern driveway

- Three driveways on Dale Road, the central driveway is proposed as a signalized full-access driveway, while the northern and southern driveways are unsignalized side-street-stop-controlled driveways limited to right-turn in and right-turn out access only
- Two unsignalized driveways on Pirrone Road, including a full-access side-street-stop-controlled western driveway and one side-street-stop-controlled right-turn in and right-turn out access only eastern driveway

The Project site plan proposes maintaining the existing property line boundaries and does not currently propose widening Kiernan Avenue (SR 219), Dale Road, or Pirrone Road. While the site plan does not currently depict sidewalk or bikeway frontage improvements, the project would implement any required frontage improvements as determined by the City of Modesto, even if such improvements are not shown on the site plan. For the purposes of this analysis, it is assumed that the project does not propose any sidewalk or bikeway frontage improvements as they are not currently specified on the project site plan.

Environmental (Existing) Setting

The transportation system in the project vicinity includes a network of freeways, arterials, and local roadways that serve a mix of rural, suburban, and commercial land uses. Major facilities include State Route 99 (SR 99), Kiernan Avenue (SR 219), and McHenry Avenue (SR 108), which provide regional connectivity and are designated as Surface Transportation Assistance Act (STAA) truck routes. Direct access to the project site is provided by Kiernan Avenue (SR 219) and Dale Road. Local truck route restrictions apply on several roads near the project site, including Dale Road and Stoddard Road.

Traffic counts collected in May 2025 show that Kiernan Avenue carries over 27,000 daily vehicles near the project site, with heavy-duty trucks comprising approximately 2.2% of the total. Dale Road carries significantly less traffic, ranging from 5,600 north of Kiernan Avenue (SR 219) to 18,400 vehicles per day south of Kiernan Avenue (SR 219), with low truck percentages.

The active transportation network within the immediate project area is limited. Class II bicycle lane exists along Kiernan Avenue (SR 219), but pedestrian facilities are largely absent. Existing pedestrian infrastructure is concentrated around intersections and recently developed parcels.

Stanislaus Regional Transit Authority (StanRTA) provides bus service in the area, with Route 48 serving nearby stops at Kaiser Hospital and Joseph A. Gregori High School, all within a 10-minute walk of the project site.

Key nearby land uses include Joseph A. Gregori High School, Stanislaus Elementary School, and the Kaiser Permanente Medical Center.

Project Travel Characteristics

It was necessary to determine the total number of expected trips generated (separately for passenger vehicles and trucks) as well as the distribution/assignment of those trips for all land uses. The trip generation of the warehouse component of the project was estimated based on a large database of traffic counts collected by Fehr & Peers in 2021 at warehouse buildings across San Joaquin County for the *San Joaquin Countywide Warehousing Travel Behavior Study*. The trip generation of the other project components was estimated using trip rates from the *Trip Generation Manual, 11th Edition*

(Institute of Transportation Engineers, 2021). **Table ES-1** displays the trip generation at project buildout.

Table ES-1. Proposed Project Trip Generation

Daily			AM Peak Hour			PM Peak Hour		
Autos	Heavy-Duty Trucks	Total	Autos	Heavy-Duty Trucks	Total	Autos	Heavy-Duty Trucks	Total
10,250	1,480	11,730	1.260	124	1,384	1,232	97	1,329

Source: Fehr & Peers, 2026.

Project-Specific Impacts and Recommended Mitigation Measures

Significance thresholds were developed based on Appendix G of the CEQA Guidelines. For VMT analysis, guidance from the *Technical Advisory on Evaluating Transportation Impacts in CEQA* (OPR, 2018) was used. The project's potential adverse effects were analyzed based on thresholds developed from these documents.

Table ES-2 summarizes the nine specific impact statements, indicates whether the impact is significant, and recommends mitigation measure(s) for significant impacts.

Table ES-2. Project-Specific Impacts and Mitigation Measures

ID	Topic	Significant Impact?	Recommended Mitigation Measure
TR-1	VMT Impacts Caused by Industrial Land Use	Yes	1a. Comply with SJVAPCD Rule 9410 (Employer Based Trip Reduction Program) 1b. Implement Transportation Demand Management (TDM) strategies consisting of: • Voluntary commute trip reduction (CTR) program • Employee parking cash-out program
TR-2	VMT Impacts Caused by Retail Land Use	No	None

ID	Topic	Significant Impact?	Recommended Mitigation Measure
TR-3	Conflicts with Adopted Policies, Plans, or Programs Regarding Bicycle or Pedestrian Facilities	Yes	3a. Construct sidewalk improvements along Kiernan Avenue (SR 219), Dale Road, and Pirrone Road frontages as well as Class II bicycle lane improvements along Dale Road and Pirrone Road frontages in accordance with City of Modesto design standards. 3b. Construct a crosswalk across the western leg of the Kiernan Avenue (SR 219)/Dale Road intersection in accordance with Caltrans design standards. 3c. Construct pedestrian crossing connecting the northwest corner of the project site and southeast corner of Joseph A. Gregori High School.
TR-4	Inadequate Transit Service to Meet Demand	No	None
TR-5	Increased Hazards due to Geometric Design Features	Yes	Construct access improvements per Caltrans standards on Kiernan Avenue (SR 219) and per City/County standards on Dale, Stoddard, and Pirrone Roads to accommodate STAA trucks, including pavement, turn storage, and signage enhancements required to adopt these segments into the local truck route network. Alternatively, if truck routes cannot be adopted along the identified Dale Road, Stoddard Road, and Pirrone Road segments, the project applicant shall limit heavy-truck access to the project site driveways on Kiernan Avenue (SR 219).
TR-6	Increased Hazards due to Incompatible Vehicle Fleet Mix	Yes	Same as improvements described above.
TR-7	Increased Hazards due to Incompatible Land Uses on Dale Road, Pirrone Road and Stoddard Road	Yes	Same as improvements described above.
TR-8	Increased Hazards due to State Highway System Intersection Queues Exceeding Available Storage	Yes	Construct capacity increasing improvements at the Dale Road/Kiernan Avenue (SR 219) and McHenry Avenue (SR 108)/Kiernan Avenue (SR 219) intersections to accommodate 95th percentile queues.

ID	Topic	Significant Impact?	Recommended Mitigation Measure
TR-9	Inadequate emergency access	Yes	Construct the on-site fire apparatus access road network in accordance with the City of Modesto Fire Code, subject to approval by the City of Modesto Fire Department.

Source: Fehr & Peers, 2026.

Cumulatively Considerable Impacts and Recommended Mitigation Measures

The cumulative setting considers substantial increases in planned land development within the Salida Community Plan Area, City of Modesto and its Sphere of Influence as well as various roadway improvements. The project's impacts were analyzed under cumulative conditions using the same significance thresholds identified above. A set of nine cumulative impact statements were developed. The impact conclusions and recommended mitigation measures are similar to those listed in **Table ES-2**.

Construction Impact Discussion

It is recommended that the project be conditioned to develop a Construction Traffic Management Plan. An important part of that plan will relate to construction staging and the need for travel lanes to remain open. That plan should include performance standards that should be met throughout project construction.

1. Introduction

This chapter describes this report's purpose, provides a brief overview of the proposed project, lists applicable transportation-related policies that pertain to the proposed project under the California Environmental Quality Act (CEQA), and summarizes the transportation-related comments made by organizations and agencies on the Notice of Preparation (NOP) for this Environmental Impact Report (EIR).

Report Purpose

This CEQA Transportation Impact Analysis (TIA) Report will serve as an appendix to the project's EIR. It focuses on the project's impacts to the transportation system based on its vehicle miles traveled (VMT). It also evaluates impacts to bicycle/pedestrian facilities, transit facilities and services, and roadway safety-related impacts including queuing and nonstandard design features.

A separate report titled *Local Transportation Analysis (LTA) for the Scannell Industrial Project* analyzes the effects of the proposed project on traffic operations at potentially affected roadways and intersections. That report also evaluates the efficacy of potential operational improvements to address deficient operations. When Senate Bill (SB) 743 became effective statewide in 2020, it prohibited the use of automobile delay and level of service (LOS) from being used under CEQA as a performance measure to determine the transportation impacts of land development and transportation projects. The LTA focuses primarily on traffic operations and LOS and is therefore not used to identify significant impacts under CEQA.

Project Overview

The Scannell Industrial Project encompasses approximately 145 acres located at the northwest corner of the Kiernan Avenue (SR 219)/ Dale Road intersection, within unincorporated Stanislaus County. The project site currently consists of active agricultural fields and orchards. According to the Modesto General Plan Land Use Map, the site is designated as part of the Salida Community Plan Area.

Figure 1 shows the regional setting and the location of the project site, including the intersection locations evaluated further as part of the separate LTA. **Figure 2** shows the project site plan and land use map, which includes:

- 2,503,230 square feet (sf) of industrial land uses; specific tenants have not yet been identified, therefore, a mix of the following industrial land uses were assumed for purposes of this study:
    - 667,528 sf of warehouse uses
    - 667,528 sf of manufacturing uses
    - 667,528 sf of distribution uses
    - 500,650 sf of cold storage uses
- Up to 1,963 off-street parking stalls for industrial uses
- Up to 788 off-street trailer parking stalls for industrial uses

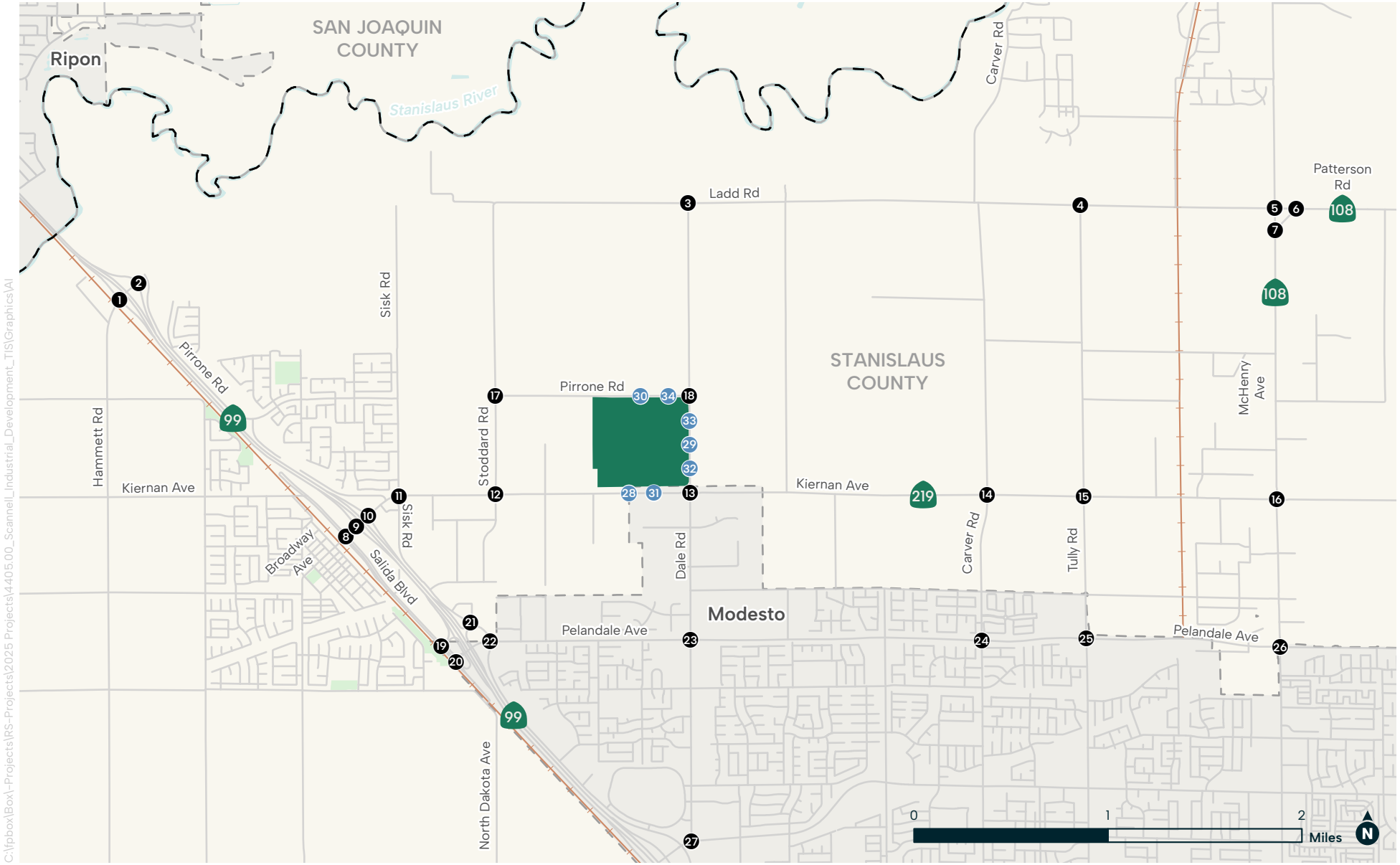
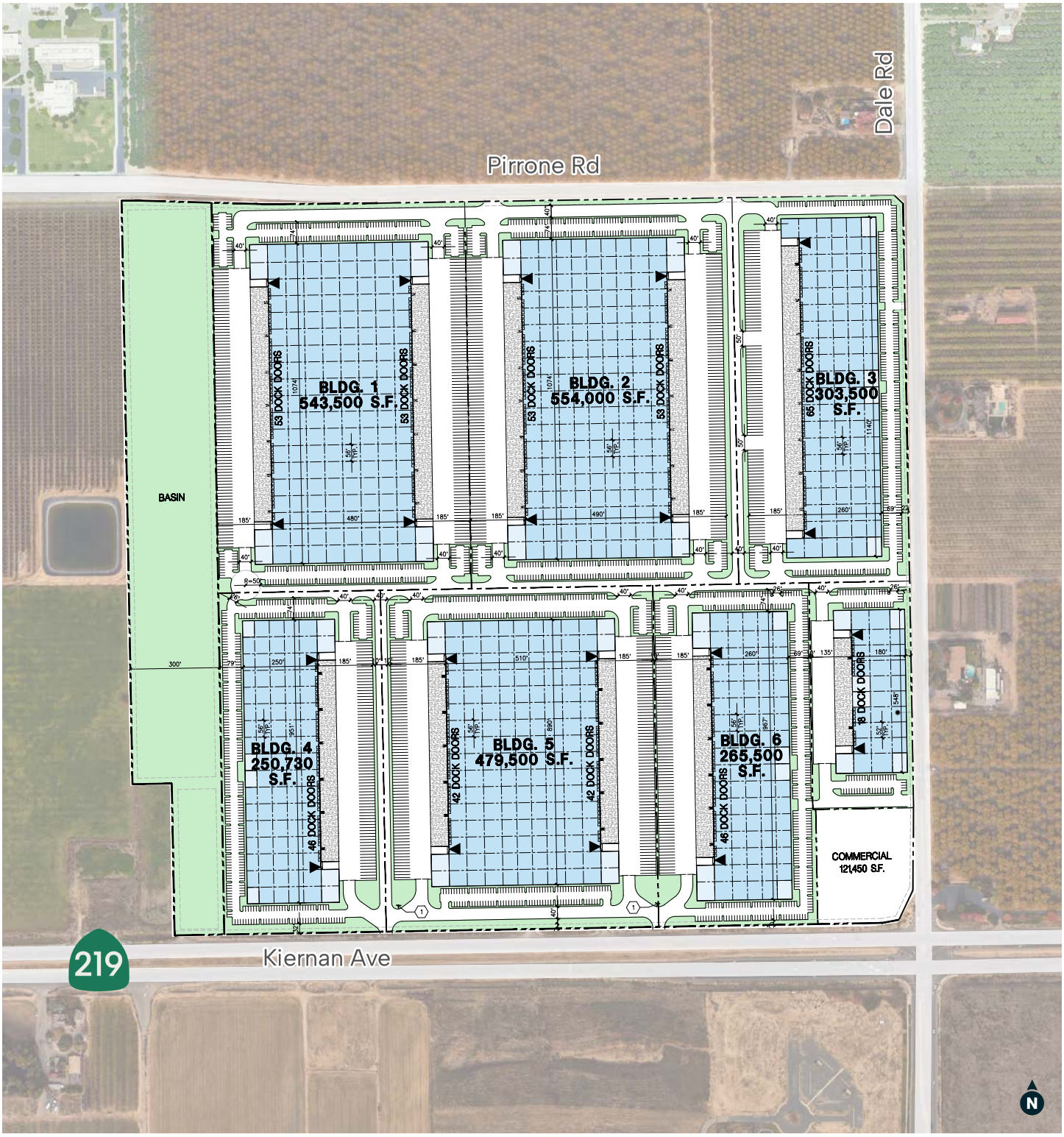


FIGURE 1

Project Location and Local Transportation Analysis Study Area

Fehr & Peers



Potential Office

Warehouse

Drive Thru Door

C:\fpbox\BoxA-Projects\RS-Projects\2025 Projects\4405.00_Scannell_Industrial_Development_TIS\Graphics\AI

FIGURE 2

Project Site Plan & Land Use Map

Source: De Novo Planning Group, 2025.

Fehr & Peers

- Approximately 121,450 square feet of developable land area is designated for retail development; specific tenants and uses have not yet been identified. For the purposes of this analysis, it is assumed that the following land uses could be accommodated within this area:
    - Gas station with 18 vehicle fueling positions and a 6,000-sf convenience store
    - Two fast-food restaurants with drive-through windows, each with 4,000 sf of building area, totaling 8,000 sf

Site access, including heavy truck access, is proposed via the following seven driveways:

- Two driveways on Kiernan Avenue (SR 219), including a signalized full-access western driveway and one unsignalized side-street-stop-controlled right-turn in and right-turn out access only eastern driveway
- Three driveways on Dale Road, the central driveway is proposed as a signalized full-access driveway, while the northern and southern driveways are unsignalized side-street-stop-controlled driveways limited to right-turn in and right-turn out access only
- Two unsignalized driveways on Pirrone Road, including a full-access side-street-stop-controlled western driveway and one side-street-stop-controlled right-turn in and right-turn out access only eastern driveway

The project site plan proposes maintaining the existing property line boundaries and does not currently propose widening Kiernan Avenue (SR 219), Dale Road, or Pirrone Road. While the site plan does not currently depict sidewalk or bikeway frontage improvements, the project would implement any required frontage improvements as determined by the City of Modesto, even if such improvements are not shown on the site plan. For the purposes of this analysis, it is assumed that the project does not propose any sidewalk or bikeway frontage improvements as they are not currently specified on the project site plan shown on **Figure 2**.

Applicable Transportation-Related Policies

This section presents potentially applicable federal, state, regional, and local regulatory requirements applicable to the project.

Pursuant to Senate Bill 743, Public Resources Code (PRC) Section 21099, and California Code of Regulations (CCR) Section 15064.3, generally, VMT has replaced congestion as the metric for determining transportation impacts under CEQA. Section 15064.3 of the CEQA Guidelines provides that VMT is the "most appropriate measure of transportation impacts" and mandates analysis of VMT impacts effective July 1, 2020. A project's effect on automobile delay is no longer a consideration when identifying a significant impact; therefore, the impact of the project on delay-based traffic operations is not addressed in this EIR.

Federal

Depending on the types of off-site improvements needed, policies of the Federal Highway Administration (FHWA) may be applicable.

Surface Transportation Assistance Act (STAA)

The STAA of 1982 allows large trucks to operate on the Interstate and certain primary routes called collectively the National Network. These trucks, referred to as STAA trucks, are longer than California legal trucks. As a result, STAA trucks have a larger turning radius than most local roads can

accommodate. On surface streets, STAA routes are designated either as Terminal or Service Access routes. Terminal routes are approved by the agency with jurisdiction over the roadway to enable the truck to reach its ultimate destination. Service Access routes allow STAA trucks to exit the interstate onto a local road, for one mile only, for food, fuel, lodging, or repair.

State

The State of California has enacted several pieces of legislation that outline the state's commitment to encourage land use and transportation planning decisions and investments that reduce VMT and contribute to reductions in greenhouse gas (GHG) emissions in line with state climate goals. Other recent state policies pertain to roadway safety.

Senate Bill 743

SB 743, passed in 2013, required the California Governor's Office of Planning and Research (OPR) to develop new guidelines that address transportation metrics under CEQA. Enacted as part of Senate Bill 743 (2013), PRC section 21099, subdivision (b)(1), directed the OPR to prepare, develop, and transmit to the Secretary of the Natural Resources Agency for certification and adoption proposed CEQA Guidelines addressing "criteria for determining the significance of transportation impacts of projects within transit priority areas. Those criteria shall promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses. In developing the criteria, [OPR] shall recommend potential metrics to measure transportation impacts that may include, but are not limited to, vehicle miles traveled, vehicle miles traveled per capita, automobile trip generation rates, or automobile trips generated."

Subdivision (b)(2) of PRC section 21099 further provides that "[u]pon certification of the guidelines by the Secretary of the Natural Resources Agency pursuant to this section, automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion shall not be considered a significant impact on the environment pursuant to [CEQA], except in locations specifically identified in the guidelines, if any."

OPR published its proposal for the comprehensive updates to the CEQA Guidelines in November 2017 which included proposed updates related to analyzing transportation impacts pursuant to Senate Bill 743. The updated CEQA Guidelines were adopted on December 28, 2018; and according to the new CEQA Guidelines Section 15064.3, VMT replaced congestion as the metric for determining transportation impacts. The guidelines state that "lead agencies may elect to be governed by these provisions of this section immediately. Beginning July 1, 2020, the provisions of this section shall apply statewide."

OPR published the *Technical Advisory on Evaluating Transportation Impacts in CEQA* ("*Technical Advisory*") in December 2018 to provide guidance to agencies implementing the new CEQA requirements.

Technical Advisory on Evaluating Transportation Impacts in CEQA (OPR, 2018)

The *Technical Advisory on Evaluating Transportation Impacts in CEQA* (OPR, 2018) ("*Technical Advisory*") provides advice and recommendations to CEQA lead agencies on how to implement the Senate Bill 743 changes. This includes technical recommendations regarding the assessment of VMT, thresholds of significance, VMT mitigation measures, and screening thresholds for certain land use projects. Lead agencies may consider and use these recommendations at their discretion and with

the provision of substantial evidence to support alternative approaches. The *Technical Advisory* describes considerations agencies may use in selecting VMT metrics, calculation methodologies, and significance thresholds. The *Technical Advisory* does not mandate the use of specific metrics, methodologies or significance thresholds, because agencies have discretion to select those that are appropriate for the local land use and transportation context.

The *Technical Advisory* identifies "screening thresholds" to quickly identify when a project should be expected to cause a less-than-significant impact without conducting a detailed VMT analysis. The *Technical Advisory* suggests that projects meeting one or more of the following criteria should be expected to have a less-than-significant impact on VMT.

- **Small projects** – projects consistent with a Sustainable Communities Strategy (SCS) and local general plan that generate or attract fewer than 110 trips per day.
- **Projects near major transit stops** – certain projects (residential, retail, office, or a mix of these uses) proposed within ½ mile of an existing major transit stop or an existing stop along a high-quality transit corridor.
- **Affordable residential development** – a project consisting of a high percentage of affordable housing may be a basis to find a less-than-significant impact on VMT.
- **Local-serving retail** – local-serving retail development tends to shorten trips and reduce VMT. The *Technical Advisory* encourages lead agencies to decide when a project will likely be local-serving, but generally acknowledges that retail development including stores larger than 50,000 square feet might be considered regional-serving. The *Technical Advisory* suggests lead agencies analyze whether regional-serving retail would increase or decrease VMT (i.e., not presume a less-than-significant).
- **Projects in low VMT areas** – residential and office projects that incorporate similar features (i.e., density, mix of uses, transit accessibility) as existing development in areas with low VMT will tend to exhibit similarly low VMT.

The *Technical Advisory* identifies recommended numeric VMT thresholds for office and retail projects.

- Office projects that would generate vehicle travel exceeding 15 percent below (i.e., greater than 85 percent of) existing regional VMT per employee may indicate a significant transportation impact.
- Retail projects (and other non-residential/non-office projects) that result in a net increase in total VMT may indicate a significant transportation impact.

The *Technical Advisory* offers guidance regarding the above project types because "they tend to have the greatest influence on VMT".

The *Technical Advisory* also provides guidance on impacts to transit. Specifically, the *Technical Advisory* suggests that lead agencies generally should not treat the addition of new transit users as an adverse impact. As an example, the *Technical Advisory* suggests that "an infill development may add riders to transit systems and the additional boarding and alighting may slow transit vehicles, but it also adds destinations, improving proximity and accessibility.

Regarding trucks, the *Technical Advisory* first points out that CEQA Section 15064 refers to automobiles when referencing VMT. The document then offers a definition that automobiles consist of on-road passenger vehicles, including cars and light duty trucks. It further states that "Heavy-duty

truck VMT could be included for modeling convenience and ease of calculation." No further guidance is provided relating to how to address travel impacts of trucks, though Appendix 1 (Considerations About Which VMT to Count) and Appendix 2 (Induced Travel: Mechanisms, Research, and Additional Assessment Approaches) repeatedly refer to automobiles (and do not mention trucks) when describing these topics.

Caltrans

Caltrans is responsible for planning, designing, constructing, operating, and maintaining the State Highway System (SHS). Any improvements or modifications to the SHS within the study area would need to be approved by Caltrans. The following Caltrans planning documents emphasize the State of California's focus on transportation infrastructure that supports mobility choice through multimodal options, smart growth, and efficient development:

- Smart Mobility Framework (Caltrans, 2010),
- Complete Streets Implementation Action Plan (Caltrans, 2010),
- California Transportation Plan 2040 (Caltrans, 2016),
- Strategic Management Plan 2015-2020 – 2019 Update (Caltrans, 2019),
- State Highway System Management Plan (Caltrans, 2019),
- VMT-Focused Transportation Impact Study Guide (Caltrans, 2020),
- Local Development Review (LDR) Safety Review Practitioner's Guidance (Caltrans, 2024),
- Caltrans 2024–2028 Strategic Plan (Caltrans, 2024),
- Intersection Safety and Operational Assessment Process Guide (Caltrans, 2024), and
- Standard Plans & Specifications (Caltrans, 2024)

Among these various reports, the following five documents are most applicable to the project.

VMT-FOCUSED TRANSPORTATION IMPACT STUDY GUIDE (TISG)

On May 20, 2020, the *VMT-Focused Transportation Impact Study Guide* (*TISG*) was adopted by Caltrans (2020). The *TISG* provides guidance on how Caltrans will review land use projects, with focus on VMT analysis and supporting state land use goals, state planning priorities, and GHG emission reduction goals; as well as identifying land use projects' possible transportation impacts to the State Highway System and potential non-capacity increasing mitigation measures. The *TISG* indicates that Caltrans intends to "transition away from requesting LOS or other vehicle operations analyses of land use projects," instead placing the focus on VMT and safety.

The *TISG* emphasizes that VMT analysis is Caltrans' primary review focus and references the *Technical Advisory* as a basis for the guidance in the *TISG*. Notably, the *TISG* recommends the use of the recommended thresholds in the *Technical Advisory* for land use projects. The *TISG* also references the *Technical Advisory* for screening thresholds that would identify projects and areas presumed to have a less-than-significant transportation impact. Caltrans supports streamlining for projects that meet these screening thresholds because they help achieve VMT reduction and mode shift goals.

LOCAL DEVELOPMENT REVIEW (LDR) SAFETY REVIEW PRACTITIONER'S GUIDANCE

The *Local Development Review (LDR) Safety Review Practitioners Guidance* (Caltrans, 2024) advises practitioners how to evaluate project-related safety impacts on the state highway system. It stops short of including specific thresholds of significance. The analytical approach described in the

guidance focuses on vulnerable road users (i.e., bicyclists and pedestrians) and underserved communities; enhancing safety for pedestrians, bicyclists, transit, and vehicular modes; and applying both reactive and systemic perspectives. Lastly, it reiterates Caltrans supports for shifting away from using delay-based metrics for analysis in CEQA.

The guidance outlines how queuing should be reviewed for traffic safety impacts. Appendix B "Freeway Exit-Ramp Queuing Analysis" provides practitioners with specific guidance on analysis of project effects on freeway off-ramp queuing. The following test is applied at freeway off-ramps:

- If the Project adds two or more car lengths to the ramp queue that will extend into the freeway mainline, then the location must be reviewed for traffic safety impacts. This review must evaluate speed differential between the off-ramp queue and the mainline of the freeway during the same period.

Traffic safety mitigation may be requested if freeway exit ramp queuing does not occur under the existing condition, but project-generated traffic volumes will cause a queue to extend onto the freeway mainline, creating a speed differential of 30 miles per hour (mph) or greater. When the speed differential increases above the 30-mph threshold, rear-end collisions increase resulting in an increase in severe injury and fatal collisions. Traffic safety mitigation shall not be requested under conditions where queuing already exists on a freeway exit ramp. The significance of that traffic safety impact by the project must be determined on a case-by-case basis.

The guidance does not offer any suggested practices for evaluating queuing at turn lanes on the state highway system. However, queues that spill out of a left-turn lane on a conventional highway can present similar safety concerns as a freeway off-ramp. They are therefore evaluated in this study in the same manner as off-ramps are treated. Vehicle queuing is analyzed using 95th percentile queues (from Simtraffic) for key turning movements at turn lanes and off-ramps on the state highway system. Since the queuing results are reported on state highway facilities, the precise (non-rounded) 95th percentile queue (in feet) is reported in accordance with Caltrans District 10 preferences.

Lastly, the guidance identifies the following six challenge areas as high priorities in California as they represent the greatest opportunity to reduce fatalities and severe injuries: lane departures, impaired driving, speed management, pedestrians, bicyclists, and intersection. This topic, which pertains to details related to the collision history on the state highway system near the project site, is analyzed in this report.

CALTRANS 2024-2028 STRATEGIC PLAN

The *Caltrans 2024–2028 Strategic Plan* lists Safety as its top goal through 2028. Caltrans has adopted the Safe System Approach which seeks to design roadway environments to mitigate human mistakes and account for injury tolerances to encourage safer behaviors and facilitate safe travel by the most vulnerable users.

INTERSECTION SAFETY AND OPERATIONAL ASSESSMENT PROCESS GUIDE (ISOAP)

In 2024 Caltrans adopted the *Intersection Safety and Operational Assessment Process Guide* (ISOAP), which presents a data-driven, performance-based framework incorporating the Safe System Approach to screen intersection strategies and identify optimal solutions for new or improved intersections on the SHS. ISOAP objectively helps select intersection control and geometric designs

for the expected users within the context of an intersection's location. Land use and place type are to be considered in determining appropriate intersection strategies.

ISOAP applies to new intersections or the major modification of existing intersections on the SHS, including but not limited to the following:

- Connecting a new public road, private road, or high-volume (average daily traffic volumes of 1,000 or greater) driveway to a state highway or a new interchange to a freeway.
- Changing the type of traffic control, such as from stop-control to signal-control or from a two-way stop to all-way stop.
- Installing a pedestrian hybrid beacon at an intersection.
- Making major physical changes to intersection approaches, including at ramp terminals, such as adding a leg to an intersection or widening to provide an additional through or turn lane.

Although not required for CEQA, an ISOAP evaluation must be completed and approved by Caltrans prior to obtaining an encroachment permit for improvements within the SHS.

CALTRANS STANDARD PLANS & SPECIFICATIONS

The *Caltrans 2024 Standard Plans* and *Caltrans 2024 Standard Specifications* define the technical criteria, procedures, and quality standards for all aspects of construction work on California's SHS and related infrastructure projects. They establish uniform requirements for materials, construction methods, testing, inspection, and workmanship to ensure consistency, quality, safety, and compliance with regulatory standards across all state highway and related infrastructure projects.

Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act Report

This report by the CA Department of Justice is meant to help lead agencies pursue CEQA compliance and promote environmentally-just development for warehouse project proposals. The document provides information on feasible best practices and mitigation measures. It describes how truck traffic from warehouses can present substantial safety issues, especially if truck traffic passes through residential areas, school zones, or other places where pedestrians are common. It recommends the following measures be considered for these conditions.

- Design, clearly mark, and enforce truck routes that keep trucks out of residential neighborhoods and away from other sensitive receptors.
- Install signs in residential areas noting that truck and employee parking is prohibited.
- Require preparation and approval of a truck routing plan describing the facility's hours of operation, types of items to be stored, and truck routing to and from the facility to designated truck routes that avoids passing sensitive receptors. The plan should hold facility operators responsible for violations of the truck routing plan, and a revised plan should be required from any new tenant that occupies the property before a business license is issued. The approving agency should retain discretion to determine if changes to the plan are necessary, including any additional measures to alleviate truck routing and parking issues that may arise during the life of the facility.
- Construct new or improved transit stops, sidewalks, bicycle lanes, and crosswalks, with special attention to ensuring safe routes to schools.
- Consult with the local public transit agency and secure increased public transit service to the project area.

- Designate areas for employee pickup and drop-off.
- Implement traffic control and safety measures, such as speed bumps, speed limits, or new traffic signs or signals.
- Place facility entry and exit points on major streets that do not have adjacent sensitive receptors.
- Restricting the turns trucks can make entering and exiting the facility to route trucks away from sensitive receptors.
- Construct roadway improvements to improve traffic flow.
- Prepare a construction traffic control plan prior to grading, detailing the locations of equipment staging areas, material stockpiles, proposed road closures, and hours of construction operations, and designing the plan to minimize impacts to roads frequented by passenger cars, pedestrians, bicyclists, and other non-truck traffic.

Regional

2022 Regional Transportation Plan/Sustainable Communities Strategy (StanCOG, 2022)

The Stanislaus Council of Governments (StanCOG) is comprised of the Stanislaus County and the cities of Ceres, Hughson, Modesto, Newman, Oakdale, Patterson, Riverbank, Turlock, and Waterford. StanCOG is the federally designated Metropolitan Planning Organization (MPO) and serves as the regional transportation planning agency and a technical and informational resource for these jurisdictions. In August 2022, StanCOG adopted the *2022 Regional Transportation Plan and Sustainable Communities Strategy* (*2022 RTP/SCS*, StanCOG). This document serves as the region's long-range transportation plan and provides guidance for decisions about transportation spending priorities.

Chapter 2 outlines goals for the *2022 RTP/SCS*. Goals and objectives that may be relevant to this study include:

- Goal 1: Mobility & Accessibility – Improve the ability of people and goods to move between desired locations and provide a variety of modal and mobility options.
- Goal 2: Social Equity – Promote equitable access to opportunities by ensuring all populations share in the benefits of transportation improvements and are provided a range of transportation and housing choices.
- Goal 3: Economic and Community Vitality – Foster job creation, business attraction, retention, and expansion by improving quality of life. Facilitate economic development and opportunities through infrastructure investments that support goods movement within and through the region, including but not limited to the county's strategic freight corridors.
- Goal 4: Sustainable Development Pattern – Provide a mix of land uses and compact development patterns and encourage infill development to preserve agricultural land and natural resources.
- Goal 5: Environmental Quality – Consider environmental impacts when making transportation investments and minimize impacts on clean air and natural resources. Support infrastructure investments that facilitate vehicle electrification and the provision of electrification infrastructure in public and private parking facilities and structures.

- Goal 6: Safety and Health – Operate and maintain the transportation system to ensure public safety and security; and improve the health of residents by improving air quality and providing more transportation options.
- Goal 7: System Preservation – Maintain transportation system in a state of good repair; and protect investment by maximizing use of existing transportation facilities.
- Goal 10: Congestion Management – Maintain or reduce congestion as compared to current levels.

2024 Congestion Management Process (StanCOG, 2024)

The Congestion Management Process (CMP) is a federally required, performance-based planning approach focused on achieving clear congestion management outcomes. StanCOG's 2024 CMP uses innovative transportation analytics leveraging big data from mobile phones. Developed collaboratively with local, state, and federal representatives, the 2024 CMP offers reliable, timely information on the current performance of Stanislaus County's transportation system to guide regional transportation planning and sustainable community strategies.

The 2024 CMP network includes Kiernan Avenue (SR 219) between SR 99 and McHenry Avenue (SR 108).

2024 Regional Transportation Improvement Program (StanCOG, 2024)

The *2024 Regional Transportation Improvement Program* (*2024 RTIP*, StanCOG) is a prioritized list of state highway and local road projects in Stanislaus County aimed at enhancing mobility, reducing congestion, and improving transportation-related air quality. Prepared by StanCOG every two years as required by state guidelines, the *2024 RTIP* supports the programming and implementation of transportation improvement projects over a 5-year programming period. According to the *2024 RTIP*, there are no transportation improvement projects funded for near-term implementation in the project vicinity.

2021 Non-Motorized Transportation Master Plan (StanCOG, 2021)

The *2021 Non-Motorized Transportation Master Plan* (StanCOG) presents strategies to support non-motorized travel in Stanislaus County including walking, bicycles, electric bikes, scooters, skateboards, wheelchairs, and other mobility devices. Building on the 2013 StanCOG Non-Motorized Transportation Master Plan, it introduces new tools and analyses to help prioritize regional projects that support the region's transportation goals and improve walking and biking networks. The Plan aims to assist StanCOG staff, the County, and local agencies in creating safe and accessible travel options for people of all ages and abilities, reducing reliance on cars.

The plan proposed to develop the Non-Motorized Transportation Backbone Network. The Backbone Network is a network of bicycling and pedestrian facilities that link major destinations and residential areas to areas of countywide significance, such as transit routes and employment centers.

The *2021 Non-Motorized Transportation Master Plan* includes a list of proposed non-motorized transportation improvements including the following in the vicinity of the project site:

- **Dale Road** (between Standiford and Pelandale Avenue) – Class IV separated bike lanes
- **Sisk Road** (between Briggsmore Avenue and Kiernan Avenue [SR 219]) - Class IV separated bike lanes

Both facilities are proposed as part of the regional backbone network, which provide connections to neighborhoods further south and east upon complete buildout of the network.

San Joaquin Valley Air Pollution Control District (SJVAPCD) Rule 9410

San Joaquin Valley Air Pollution Control District (SJVAPCD) Rule 9410 (eTrip) requires major employers (with 100 or more employees) in the region to develop and implement Transportation Demand Management (TDM) strategies. Adopted in 2009, the Employer Trip Reduction Implementation Plan (eTRIP) encourages employees to reduce single-occupancy vehicle trips, thus reducing pollutant emissions associated with work commutes. These strategies can include employee shuttles, staggered work hours, telecommuting options, transit subsidies, carpool/vanpool programs, and many other strategies. More information on this program can be found at: 4681 thru 4802 (valleyair.org). It is also discussed in more detail in Chapter 8 of the report.

Local

Goals, policies, and objectives from various planning documents published by the City of Modesto are relevant to the project. After this information is presented, planning documents and potentially applicable policies of the Stanislaus County are presented given its proximity to the project site.

City of Modesto General Plan (City of Modesto, 2019)

The *City of Modesto General Plan* (2019) provides a long-term framework and policy guide for the City's growth, development, and land use. It establishes goals, policies, and programs to guide the City's housing, transportation, economic development, public services, environmental protection, and quality of life. The *plan* aims to ensure safe and sustainable development that meets the needs of current and future residents while preserving the City's character and resources.

The *City of Modesto General Plan* Road Circulation Diagram shows the following major roadway improvements near the project site:

- **Pirrone Road extension** between Stoddard Road and Sisk Road (classified as a minor arterial, four-lane wide cross-section)
- **Hammett Road extension** between SR 99 and Stoddard Road (classified as a minor arterial, four-lane wide cross-section)
- **Dale Road widening** between Kiernan Avenue and Ladd Road (classified as a minor arterial, four-lane wide cross-section)

Relevant transportation policies outlined in the *City of Modesto General Plan* include:

- Policy V.A.1 Gap Closures: Identify gaps in the pedestrian and bicycle transportation systems and plan facilities to close those gaps.
- Policy V.A.2 Encourage Pedestrians and Bicycle Use: Streets, pedestrian paths, and bike paths contribute to a system of fully-connected routes to all destinations. Their designs encourage pedestrian and bicycle use when small and spatially defined by buildings, trees, and lighting, and when high-speed traffic is discouraged.
- Policy V.A.5 Mediating Mode Conflicts: In the case of conflict between motorized and non-motorized transportation modes, roadway or right-of-way features may be added or altered to protect pedestrians and bicyclists, consistent with Urban Area General Plan goals.

- Policy V.A.6 Level of Service and Mitigating Travel Demand: Level of Service and Quality of Service (see Tables V-1 and V-2, respectively) for all transportation modes (vehicle, transit, bicycle and pedestrian) on City roadways should be improved over time consistent with the financial resources reasonably available to the City and without unreasonably burdening property owners or developers. On roadways where the automobile LOS is expected to be level F, consider mitigation measures other than road widening, such as the addition of bicycle lanes, improved pedestrian access, improved transit service, and the establishment of walkable development patterns to improve the quality of service for all travel modes.
- Policy V.B.2 Traffic Study: If required, a Comprehensive Traffic Study should conform to the City of Modesto *Traffic Impact Study Criteria*. These *Criteria* will be amended to reflect general plan goals and policies, including definition of metrics for all both motorized and non-motorized transportation modes.
- Policy V.C.5 Travel Mitigation Outside of Downtown: Outside of the downtown area, consider and balance the effects of automobile traffic mitigation on non-automobile travel – particularly in areas where the city is attempting to improve conditions that support non-automobile travel – when considering solutions to traffic circulation problems.
- Policy V.C.6 Prioritizing Transportation Investments: Strive to achieve quality of service, as depicted in Table V-2 (FDOT Figure 1-2, 2009) for each non-automobile travel mode appropriate to the location in the City.
    1. Downtown Area: Pedestrian and bus quality of service should be A/B. Bicycle quality of service should be C/D or better. *(Air quality, public health, energy conservation, environmental justice)*
    2. Baseline Developed Area: Pedestrian quality of service should be C/D on arterial streets and A/B on local and collector streets. Bicycle quality of service should be A/B on local and collector streets, C/D on arterial streets, and E/F on expressways. Bus quality of service should range from C/D to E/F, depending upon boardings. Consider improving accessibility along impacted routes by implementing Transportation Demand Management strategies.
- Policy V.D.1 Median Refuges: Add median refuges along arterials and four-lane collectors in areas where pedestrian traffic is to be facilitated to give pedestrians a safe halfway point for street crossings.
- Policy V.D.2 Bulbouts: Add sidewalk bulbouts in areas where pedestrian traffic is to be facilitated to reduce crossing distance and improve visibility of pedestrians to other roadway users.
- Policy V.D.5 ADA Compliance: Construct or modify curbramps and sidewalks to comply with the Americans with Disabilities Act.
- Policy V.D.7 Street Trees: Plant and maintain large species trees along streets to separate pedestrians from moving traffic for safety and to create an inviting walking environment.
- Policy V.E.3 Opportunities to Add Bicycle Facilities: When streets are repaired or resurfaced, add bicycle facilities to those streets as appropriate with striping, stencils, and/or signage.
- Policy V.E.8 Bicycles at Signalized Intersections: Protected intersection design features, bike boxes and bicycle detection systems may be used to delineate bicycle facilities, improve safety, and allow bicycle traffic to trigger the green phase of a traffic signal. In accordance with California Vehicle Code Section 21450.5, sensors that detect the presence of a waiting bicycle should be added to signalized intersections when signals are installed, upgraded and/or maintained. Other markings and signage may be used as approved by the City Engineer.

- Policy V.F.3 Minimum Service Density: Provide service on a half-mile grid where feasible to make the service as accessible as possible. Newly developing areas should provide a street pattern capable of accommodating transit service on a half-mile grid. Sidewalks should be provided in the development of new roadway systems to accommodate bus stops, and to minimize walking distance between them.
- Policy V.F.7 Bus Pullouts: Consider Bus pullouts with new development in the Planned Urbanizing Area to support transit passenger loading and unloading.
- Policy V.F.8 Park-and-Ride: Work with new development to provide park-and-ride spaces to promote and support transit ridership.
- Policy V.H.1 Roadway Facilities, Defined: The roadway network consists of the facility types listed below. Figures V-1 through V-6 of the General Plan constitute the Transportation Diagram, which describes the proposed general location and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other facilities within the Modesto Urban Area.
    1. Freeway – This classification defines the highest volume, total access–control highways with high design speeds (55–65 mph).
    2. State Highway – This classification applies to streets that are acquired, laid-out, constructed, improved, or maintained as a state highway pursuant to constitutional or legislative authorization. This facility type can be designated a freeway, expressway, arterial, or other roadway classification.
    3. Expressway – The purpose of an expressway is to facilitate automobile and transit trips across town rapidly. Bicycles can be accommodated. Pedestrians are generally not expected. Expressways should have signalized intersections or roundabouts at arterial streets (one mile apart) and right-turn-only access to collector streets (one-half mile apart). The City Engineer has authority to design Expressway intersections (within City right-of-way), consistent with provisions contained within the City's Standard Specifications, on a case-by-case basis. Expressways may include Class I, II or IV bicycle facilities. Driveway access from fronting properties should not be allowed without specific authorization from the City Council (see Policy V.H.15).
    4. Arterial Street – Arterials allow movement of people by all modes and provide safe and convenient access to businesses for people using any travel mode. Arterial streets may be classified either as principal or minor arterials. A principal arterial typically has six lanes, while a minor arterial has four lanes. All arterials should have on-street bicycle facilities. Driveway access from fronting properties should be designed according to the City's Standard Specifications.
    5. Collector Street – Collectors are primarily lined with residential development and serve a function similar to that of local streets, but with higher traffic volumes. Collector streets serve pedestrian and bicycle traffic, as well as automobiles and sometimes transit. Collectors may be classified either as "major" or "minor;" a major collector typically has four lanes, while a minor collector has two lanes. Driveway access from fronting properties should be designed according to the City's Standard Specifications.
    6. Local Street – The primary purpose of local streets is to connect people to their neighbors and neighborhood. Cars are not excluded, but they are not the focus of transportation. Driveway access from fronting properties should be designed according to the City's Standard Specifications.
- Policy V.H.2 Level of Service: LOS "D" is the threshold of significance for measuring traffic impacts.

- Policy V.H.3 Coordinate Planning Efforts. Coordinate the City's streets and highways system with Caltrans', the County's, and other jurisdictions' existing facilities and plans.
- Policy V.H.5 Driveway Consolidation. Consolidate driveways to reduce potential vehicle-pedestrian conflicts.
- Policy V.H.8 Intersection Control: The type(s) of intersection control(s) (e.g. traffic signal, traffic circle, roundabout, etc.) will be determined by the City Engineer at the time of project design.
- Policy V.H.9 Standard Specifications. The City's Standard Specifications Manual applies to the construction of new roadway facilities. More design detail is provided in the City's adopted *Standard Specifications*.
- Policy V.H.13 Truck Routes. Evaluate the need to identify new truck routes and the potential abandonment of existing truck routes due to increased truck traffic, increased size of trucks, and conflicts with pedestrian-oriented areas and noise-sensitive land uses.
- Policy V.H.15 Expressways: This classification defines high-volume, access-controlled roadways. Expressway locations / alignments are shown in the Circulation and Transportation Diagram, Figures V-1 and V-2. Street Details in the City of Modesto's Standard Specifications illustrate the intersection cross-section requirements for expressway intersections with arterial and collector streets, which are summarized on the following exhibit within this policy. This General Plan provides for expressways throughout the City. Continue to include these expressways in the Circulation and Transportation plan and to implement them in cooperation with the development community according to applicable design standards.
    1. Regulate and limit the number and design of expressway access locations in order to ensure the overall operational viability of expressways in the community.
    2. Any consideration of access to expressways is contingent on the ability of an applicant to provide a properly designed solution consistent with the adopted City standard specifications for access to expressways. The City Engineer may approve variations and deviations from adopted standard specifications pursuant to Section 7-1.701(I)(2) of the Municipal Code.
    3. Any access to expressways from private parcels will be at the sole expense of the property owner, including any reconstruction of the expressway that may be necessitated.
    4. Expressway access to non-residential uses may be allowed on a case-by-case basis per the following criteria:
        - When an applicant demonstrates to the City Council's satisfaction that economic purposes are clearly restricted by denial of access to a particular parcel, and when the applicant demonstrates to the City Council's satisfaction that there are either no or only highly restrictive alternative access solutions available to a particular parcel; or,
        - For infill site developments, when an applicant demonstrates to the City Council's satisfaction that the economic benefits derived from development of the remnant parcel override the need to limit access to that parcel; or,
        - It is recognized that City of Modesto emergency facilities, such as police and fire stations, may be located on expressways and that direct access would be desirable. In these cases, direct access is allowed subject to approval by the City Engineer. Design of such access should have City Council approval prior to implementation.
    5. The City has adopted access management policies that include design standards for expressway access (General Plan Amendment 2001-02, August 28, 2001, modified by

General Plan Amendment 2010-01). The purpose of the guidelines and design standards is to provide safe ingress and egress to adjacent parcels while at the same time not degrading the carrying capacity, flow, and efficiency of the expressway

The Community Development chapter of the General Plan discusses potential growth through the annexation of the *Salida Community Plan* (Stanislaus County, 2007) area, an unincorporated area north of the Modesto city limits. The plan states that if the Salida Comprehensive Planning District is annexed to the City of Modesto, the City of Modesto does not propose to change any land use designations as defined in the *Salida Community Plan* (Stanislaus County, 2007), and that the *Salida Community Plan* should continue to guide growth and development for the area if annexed.

As previously noted, Senate Bill 743 prohibits the use of automobile delay and LOS as performance measures for determining transportation impacts under CEQA. Therefore, General Plan policies focused on intersection LOS significance thresholds were not evaluated as part of this EIR and were instead evaluated in a separate, non-CEQA LTA report.

2024 City of Modesto Non-Motorized Transportation Plan (City of Modesto, 2024)

The *City of Modesto Non-Motorized Transportation Plan* (City of Modesto, 2024) is a strategic framework aimed at improving and promoting walking, biking, and other forms of non-motorized travel within the city. It focuses on enhancing safety, connectivity, accessibility, and infrastructure to encourage residents to choose active transportation modes, thereby supporting healthier lifestyles, reducing traffic congestion, and minimizing environmental impacts. The plan outlines specific projects, policies, and programs designed to create a more pedestrian- and bicycle-friendly community in Modesto. Relevant transportation policies and actions outlined in the Plan include:

- Policy 1: Integrate bicycle and pedestrian network and facility needs into all City planning documents and capital improvement projects.
    - Action 1.5: Ensure that all traffic impact studies, analyses of proposed street changes, and development projects address impacts on bicycling and walking facilities.
- Policy 3: Design a low-stress bikeway network to serve people of all ages and abilities.
    - Action 3.1: Design a network of continuous low-stress bikeways as identified in this Plan.
- Policy 4: Design a connected, convenient, and comfortable pedestrian network to serve people of all ages and abilities.
    - Action 4.1: Include sidewalks on all new or retrofitted roadways.
    - Action 4.6: Plan and develop well-connected streets, sidewalks, and pathways that provide the most direct paths of travel for pedestrians. Provide connections between or through cul-de-sacs and remove barriers to walking where feasible.
- Policy 9: Ensure that bicyclists and pedestrians have accommodation in construction zones.
    - Action 9.1: Incorporate routine accommodation for pedestrian and bicycle facilities when roadway or other construction work disrupts typical uses of sidewalks, trails, and on-street bicycle facilities.
- Policy 10: Maintain designated facilities to be comfortable and free of hazards to people walking and bicycling.
    - Action 10.2: Trim overhanging and encroaching vegetation to maintain a clear travel path along pedestrian and bicycle facilities.
    - Action 10.5: Incorporate maintenance needs into the design of separated bikeways and trails to ensure proper maintenance after construction.

- Policy 13: Increase bicycling and walking through targeted marketing and promotion.
    - Action 13.2: Encourage major employers to continue, develop, or expand bicycle promotion programs for their employees. Recognize companies designated as a Bicycle Friendly Business by the League of American Bicyclists.
    - Action 13.5: Work with major employers to set up and maintain Transportation Demand Management programs.

The *City of Modesto Non-Motorized Transportation Plan* includes a list of proposed non-motorized transportation improvements including the following in the vicinity of the proposed project:

- **Dale Road** between Pelandale Avenue and Kiernan Avenue (SR 219) – Class I shared-use path
- **Water Lateral Number Six** (between Sisk and Prescott Road) – Class I shared-use path; this facility is parallel to Bangs Avenue and connects to the Bangs Avenue/Dale Road intersection in the vicinity of the project site.

Kiernan Business Park Specific Plan (City of Modesto, 2022)

The *Kiernan Business Park Specific Plan* (City of Modesto, 2022) outlines plans for the development of approximately 614 acres south of Kiernan Avenue (SR 219) between Stoddard Road and American Avenue for business park and industrial uses with some additional medical, retail, office, and residential uses. The specific plan specifies planned roadway improvements within and around the vicinity.

The *Kiernan Business Park Specific Plan* (City of Modesto, 2022) includes a list of proposed transportation improvements including the following in the vicinity of the proposed project:

- **Dale Road** (Kiernan Avenue [SR 219] to Pelandale Avenue) – Widen to a six-lane principal arterial, and develop a Class I off-street bike path on each side of the roadway between Kiernan Avenue and Bangs Avenue/Lateral Number Six
- **Kiernan Avenue** (Stoddard Road to American Avenue) – Widen to a six-lane expressway with Class II bike lanes
- **Pelandale Avenue** (Dale Road to American Avenue) – Construct a Class I off-street bike path
- **Quinturn Lane** (Kiernan Avenue to southern terminus) – Widen to a four-lane minor arterial with Class II bicycle lanes and a signalized intersection at Kiernan Avenue (SR 219) and connection to Chapman Road and Healthcare Way.

City of Modesto Standard Specifications (City of Modesto, 2014)

The City of Modesto *Standard Specifications* establishes uniform requirements and guidelines for construction, materials, and workmanship in public works projects within the city. These specifications ensure consistency, quality, safety, and compliance with applicable regulations throughout the planning, design, and construction phases of municipal infrastructure and development projects. The *Standard Specifications* include design specifications for roadways, including bike and pedestrian facilities, and specifications for driveways and restaurant drive-through lanes.

Stanislaus County General Plan (Stanislaus County, 2015)

The *Stanislaus County General Plan* (Stanislaus County, 2015) establishes a framework to guide the physical development and growth of the County over the next 20 years. It outlines goals, policies, and programs related to land use, housing, transportation, noise, safety, agriculture, and environmental protection. The plan plans for development that meets the needs of current and future residents while balancing economic, social, and environmental factors.

Relevant transportation policies noted in the *Stanislaus County General Plan* (Stanislaus County, 2015) include:

- Policy 5: Transportation requirements shall be considered during planning, design and construction of commercial and industrial development to address safety, mobility, and accessibility needs.
    1. Roadways constructed in zoning districts that allow industrial and commercial uses shall be designed and constructed to accommodate truck traffic. The minimum roadway in commercial zones shall be a Minor Collector (Urban/Rural) and a Minor Collector (Industrial) shall be the minimum required right-of-way width in industrial zones.
    2. Prior to approving new industrial and commercial development, provisions will be made to ensure that roadways providing primary access to these developments from Interstate and state highways are designed and constructed to the standards necessary to accommodate truck traffic.
    3. Industrial and commercial development shall be planned so that vehicle access on local roadways through residential areas is avoided.
    5. Off-street truck parking standards shall be developed to ensure that adequate off-street parking is provided in new or expanding industrial and commercial development. Commercial developments serving travelers on SR 99, Interstate 5 (I-5), or other roadways carrying substantial truck traffic shall be required to include sufficient truck parking in their off-street parking plans and encouraged to provide facilities to accommodate long-term truck parking. Zoning Ordinance provisions for Off-Street Parking Requirements and the Standards and Specifications Manual shall be amended, as necessary, to require truck parking as appropriate in new commercial and industrial developments.
    6. On-street truck parking shall be discouraged where such parking restricts adequate sight distances, detracts from the visual aesthetics of the area, or poses a potential hazard to motorists, bicyclists, or pedestrians.
- Policy 6: The County shall strive to reduce motor vehicle emissions and vehicle miles traveled (VMT) by encouraging the use of alternatives to single occupant vehicles.
    5. Developers will construct or pay the cost of new pedestrian pathways, bikeways, rideshare facilities, transit amenities, and other improvements necessary to serve the development and to mitigate impacts to the existing circulation system caused by the development.
- Policy 8: Promote public transit as a viable transportation choice.
    3. Ensure that provisions are made in proposed development for access to current and future public transit services. In particular, continuous segments of walls or fences should not impede pedestrian access to Expressways, Principal and Minor Arterials, and Major and Minor Collectors with transit service.

Salida Community Plan (Stanislaus County, 2007)

The *Salida Community Plan* (Stanislaus County, 2007) outlines a framework for the development of approximately 4,600 acres Salida, CA, which is a census-designated place in unincorporated Stanislaus County. The plan outlines a mix of land uses and transportation enhancements to support the economic vitality and growth of the Salida area.

According to the *Salida Community Plan*, the proposed project site is designated for Business Park land uses. The plan also identifies the following planned improvements within the vicinity of the project site:

- New east-west expressway connecting Hammett Road to Dale Road north of Pirrone Road, including a new intersection at Stoddard Road; the expressway could ultimately be 10 lanes wide, with a right-of-way width of approximately 224 feet. The expressway would likely be constructed in phases and widened over time to respond to demand for increased capacity, as determined by traffic studies, and available funding.
- Pirrone Road extension between Sisk Road and Stoddard Road, Pirrone Road is planned as a four-lane facility at building within the study area.
- Pirrone Road between Dale Road and Sisk Road should provide a 125-foot right-of-way width that includes either an eight-foot Class I shared-use path or a six-foot Class II bike lane and a five-foot separated sidewalk on each side.
- Widen Dale Road to four lanes between Kiernan Avenue (SR 219) and the future east-west expressway north of Pirrone Road; provide 125-foot right-of-way width that includes either an eight-foot Class I shared-use path or a six-foot Class II bike lane and a five-foot separated sidewalk on each side.
- Widen Dale Road to four lanes between Kiernan Avenue (SR 219) and the future east-west expressway north of Pirrone Road; provide 125-foot right-of-way width that includes either an eight-foot Class I shared-use path or a six-foot Class II bike lane and a five-foot separated sidewalk on each side.
- Widen Stoddard Road to four lanes between Kiernan Avenue (SR 219) and Ladd Road; provide 125-foot right-of-way width that includes either an eight-foot Class I shared-use path or a six-foot Class II bike lane and a five-foot separated sidewalk on each side.
- Widen Sisk Road to four lanes between Kiernan Avenue (SR 219) and the future east-west expressway north of Pirrone Road; provide 110-foot right-of-way width.
- Right-of-way width for collector streets within land areas designated for planned industrial or business park uses should total 80 feet and consist of 34 feet of travel lanes and a six-foot attached sidewalk on each side of the centerline.

Transportation-Related Comments on the NOP of the EIR

Comments Received

A number of agencies and individuals provided written comments on the Notice of Preparation (NOP) for the Scannell Industrial Development. Those comments that are transportation-related and may necessitate analysis under CEQA are summarized below.

Agency Comments

CITY OF MODESTO PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT

"The EIR should analyze all adjacent transportation facilities and intersecting street network to determine the level of impact on these facilities and surrounding communities. The location- specific impacts should be quantified, and necessary improvements (mitigation) should be described in detail, along with a determination of the Project's fair share of participation and/or financial contribution to mitigate resulting impacts. Kiernan Avenue, Dale Road, Pelandale Avenue, Broadway Avenue, and Highway 99 intersections are likely to be impacted by future increased traffic volumes resulting from the proposed project, especially from trucks traveling to and from a 24/7 facility and employee-generated trips for ~1,000 employees. Additionally, there is a Kaiser Permanente hospital with an Emergency Room located just south of the intersection of Kiernan Avenue and Dale Road; impacts of congestion on access to and from this facility should be analyzed…

In addition to the above issues that directly impact Modesto, the EIR should also include a thorough analysis of the following issue areas that the City of Modesto believes are of particular importance for this major expansion:

- …Cumulative impacts, due to the significant increase in warehouse, distribution, and manufacturing space adjacent to the City of Modesto's Sphere of Influence and existing Kiernan Business Park Specific Plan Area."

STANISLAUS COUNTY DEPARTMENT OF PUBLIC WORKS

"The applicant shall meet with the Department of Public Works for a Transportation Impact Report scoping meeting. All access locations and internal circulation roads should be coordinated with Public Works during the preparation of the Environmental Impact Report.

The conceptual site plan included with the Notice of Preparation needs to be revised to meet Stanislaus County Public Works Standards minimum spacing and access requirements.

To maintain safe transportation and circulation within the County network, the following corridors, including intersections, should be evaluated for project impacts related to traffic safety and operations per the Stanislaus County General Plan:

1. SR 99/Kiernan Avenue Interchange
2. SR 99/Hammett Road Interchange
3. Kiernan Avenue
4. Dale Road
5. Stoddard Road
6. McHenry Avenue
7. Pirrone Road – Sisk Road to Stoddard Rd
8. Pirrone Road – Stoddard Rd to Dale Rd

Study locations should be approved by Public Works prior to analysis to ensure project has fully evaluated it's impacts."

SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT (SJVAPCD)

"1c) Project Trip Length for HHD Truck Travel

The County's environmental review should adequately characterize and justify an appropriate trip length distance for off-site HHD truck travel to and from the Project site. Based on the following factors: 1) the Project consists of a warehouse/distribution center that is expected to generate a high volume of HHD truck trips, and 2) HHD trucks generally travel further distances for distribution. The District recommends the environmental review include a discussion characterizing an appropriate trip length distance for HHD truck travel, and reflect such appropriate distance supported by project-specific factors.

6) Truck Routing

Truck routing involves the assessment of which roads Heavy Heavy-Duty (HHD) trucks take to and from their destination, and the emissions impact that the HHD trucks may have on residential communities and sensitive receptors. The Project consists of warehouse, distribution and manufacturing space that will generate HHD truck travel,

The District recommends the County evaluate HHD truck routing patterns for the Project, with the aim of limiting exposure of residential communities and sensitive receptors to emissions. This evaluation would consider the current truck routes, the quantity and type of each truck (e.g., Medium Heavy-Duty, HHD, etc.), the destination and origin of each trip, traffic volume correlation with the time of day or the day of the week, overall Vehicle Miles Traveled (VMT), and associated exhaust emissions. The truck routing evaluation would also identify alternative truck routes and their impacts on VMT and air quality."

Public Comments

- "These are properties we have had every intention of farming for many years, and it seems very probable that this project will add much more traffic to both Dale Road and Pirrone Road.
  Gregori High School is across from this project diagonally at its northwest corner. The traffic in the morning and afternoon on both Dale and Pirrone backup to the point, it's difficult to get trucks back into our nursery on the east side of Dale Road…
  I would also request that, if this project is approved, a stop light is installed at Dale Road and Pirrone and at the major truck entrance into the project off Dale Road to manage the very significant school traffic before and after school hours. The traffic routinely backs up from the stop light at Kiernan Ave. (St. Rt. 219) back to Pirrone Road. This would block access by trucks that would desire to make a left turn into the new project…
  In order to alleviate this problem and reduce somewhat inconvenience to all the parents of school children and the community, I would hope the County would require significant widening of Dale Road to provide 2 lanes for north bound and south bound traffic and a left turn lane into the project for truck traffic turning left off of Dale Road. It probably should also be required that St. Rt. 219 be widened to 6 lanes to handle increased traffic."
- "…A warehouse is going to significantly contribute to congestion on Dale Road and Kiernan."
- "Building a 1,000-worker industrial and warehouse complex in a rural county raises concerns about increased traffic congestion and strain on the transportation infrastructure. This is especially worrisome because the environmental report only considers a limited 145-acre area, potentially underestimating the full impact of the development on the surrounding transportation network, which encompasses the entire 3,383-acre master planned site… Increased traffic from the entire project could have a cumulative impact on congestion and infrastructure in the surrounding area."

- "The submitted plans for proposed project also creates traffic hazards and congestion due to the arrangement and placement of three driveways on Dale Road, and four driveways on Kiernan Ave…
  To address the traffic hazards and congestion expected from the positioning of three driveways on Dale Road and four driveways on Kiernan Ave, the project should be required to implement a driveway configuration where all access points serving the project area lead onto a unified internal private collector road. This collector road would then smoothly and gradually merge onto the existing public road through a single, controlled point. This measure will enhance traffic safety and promote smoother traffic flow on the existing roads."
- "I do have concerns over the proposed development. They are as follows:…
  4. We have concerns over the increased traffic of heavy transport vehicles, will there be an added frontage road or permanent merging lane for truck traffic heading to SR 99 to help mitigate traffic congestion instead of using the 2 current intersections (Dale/Kiernan and Stoddard/Kiernan)?
  5. The increased traffic of potentially 1,000 employees and their additional 1,000 vehicles.
  7. Traffic at the Dale/Kiernan intersection, we already have a severe slug of traffic during school morning and afternoon times, I expect this to get worse with the additional amount of people going to work in this direction. That intersection will be impacted more especially Dale/Kiernan and Stoddard/Kiernan.
  8. Safety of students and people bicycling/walking to school trying to navigate through all this traffic seems dangerous. Now adding a distribution center with heavy-duty truck trailer traffic just seems like an accident waiting to happen with people using the bicycle lane…
  12. Kiernan Road expansion? The road has already been widening years ago and property was acquired from the farmers. Some homes are uncomfortably close to the road now. Added traffic, you would eventually need to widen the road more.
  13. Farm vehicles on roads will now navigate additional big truck traffic…

  I express concerns that this development will only hinder travel times to the hospital and schools and pose additional impact to the already congested Stoddard and Dale intersections."
- "I oppose the project site for the Salida Business Park (SCP-BP) and Planned Industrial (SCP-PI) for the following reasons:
  - the negative impact in traffic flow along Kiernan Ave"
- "It was explained to me when Pirrone went through to connect the new Gregori High School that it would be used as an access road for school buses and school services. As everyone knows, getting onto Dale Road during morning or afternoon student pick up times is virtually impossible for farming or residents. Pirrone is a major artery to deliver students to and from school."
- "I don't think that area can handle the traffic without something new being done to the roads to deal with the new traffic.
  I think there should be many conditions given before this project is approved, if it is. 1. No truck stop next to the high school. 2. Improved roads that can handle the extra traffic…"
- "The safety of young drivers commuting to school amidst increased traffic, especially from larger vehicles like trucks, is a valid concern. Addressing potential congestion issues and ensuring safe transportation routes for students should be a priority."

Response to Comments

Concerns related to roadway geometrics and safety impacts are addressed throughout this CEQA analysis. Comments related to traffic congestion and delays are no longer studied in EIRs for significant impacts as a consequence of Senate Bill 743 becoming effective statewide in 2020. Instead, project effects on traffic congestion and vehicular delays were studied as part of a separate LTA report.

The SJVAPCD comment letter requested trip length information for off-site heavy-duty truck travel. This information is included in other sections of the EIR based on resources described in this report. However, the heavy-duty truck trip length data itself is not included in this report as heavy-duty truck VMT is not analyzed under CEQA for transportation.

2. Environmental (Existing) Setting

This chapter describes the existing transportation system including the roadway, bicycle, pedestrian, and transit facilities in the project vicinity.

Roadway System

The roadway system in the project vicinity consists of a series of freeways, highways, expressways and surface streets (See **Figure 1**).

- **State Route 99 (SR 99)** – A six-lane freeway with a posted speed limit of 70 MPH within the study area. SR 99 provides inter-city connections throughout the Central Valley, including to nearby cities such Stockton, Turlock, and Merced. The freeway extends between US 50 in Sacramento to I-5 in Kern County. SR 99 is also designated as a Surface Transportation Assistance Act (STAA) truck route.
- **Kiernan Avenue (SR 219)** – SR 219 is a four-to-six lane east-west state highway with a posted speed limit of 55 MPH. This roadway is classified as an expressway between Stoddard Road and McHenry Avenue. Kiernan Avenue (SR 2199) is also designated as a STAA truck route.
- **McHenry Avenue (SR 108)** – A north-south roadway that extends from SR 120 in Escalon to its terminus at Needham Street/Downey Avenue in central Modesto. SR 108 aligns with McHenry Avenue between its terminus in Modesto to just south of Ladd Road, where SR 108 diverts onto a leg of Patterson Road to the east. McHenry Avenue is a four-to-six lane, principal arterial roadway between Granger Avenue and Kiernan Avenue (SR 219). McHenry Avenue is generally a two-lane facility north of Kiernan Avenue (SR 219).
- **Patterson Road (SR 108)** – A two-lane, east-west roadway classified as a minor arterial by Stanislaus County. SR 108 aligns with Patterson Road between McHenry Avenue and Callander Avenue in the City of Riverbank.
- **Broadway Avenue** – A two-lane, minor arterial roadway through Salida's main commercial district with a posted speed limit of 25 MPH. The roadway extends approximately a half-mile from the interchange of Kiernan Avenue (SR 219) and SR 99 to western terminus at Finney Road. The road is separated by a raised center median with angled parking along most of the opposite curb.
- **Carver Road** – A two-lane, north-south minor collector roadway with a posted speed limit of 30 MPH. The roadway extends over 3.5 miles through northwest Modesto, connecting 9th Street to Kiernan Avenue (SR 219), before continuing further north as a local roadway serving rural residential land uses.
- **Dale Road** – A north-south principal arterial connecting Standiford Avenue to the south and Ladd Road to the north. The roadway is four-to-six lanes wide with a posted speed limit of 35 MPH. Speeds increase to 40 MPH between Bangs Avenue and Kiernan Avenue (SR 219). North of Kiernan Avenue (SR 219), the roadway narrows to a minor arterial with two-lanes of travel and no posted speed limit.
- **Hammett Road** – A two-lane, north-south minor arterial roadway with no posted speed limit that extends through primarily agricultural land west of Modesto. It connects Pirrone Road and Beckwith Road with a full-access connection to SR 99 near the Pirrone Road terminus.
- **Ladd Road** – A two-lane, east-west minor arterial roadway with no posted speed limit that connects Stoddard Road to McHenry Avenue. Ladd Road serves mostly agricultural uses and rural residential properties.

- **Pelandale Avenue** – A six-lane, east-west roadway connecting SR 99 to McHenry Avenue (SR 108). Pelandale Avenue is a principal arterial roadway with a posted speed limit of 45 MPH between SR 99 and Dale Road, and an expressway between Dale Road to McHenry Avenue (SR 108) with a posted speed limit of 50 MPH. Pelandale Avenue is a designated City of Modesto truck route.
- **Pirrone Road** – A two-to-four-lane, east-west minor arterial roadway with a posted speed limit of 40 MPH. Pirrone Road is fragmented into two segments: a western segment between SR 99 and Sisk Road, and an eastern segment between Stoddard Road and Dale Road. The eastern segment narrows to a two-lane roadway east of Joseph A. Gregori High School.
- **Salida Boulevard** – A north-south minor arterial roadway with a posted speed limit of 45 MPH. Salida Boulevard runs parallel to SR 99 between the state highway and the Union Pacific Railroad tracks, and serves many commercial and heavy commercial uses.
- **Sisk Road** – A four-lane, north-south minor arterial roadway with posted speed limit of 40 MPH. The roadway parallels SR 99 between Carpenter Road and Kiernan Avenue (SR 219), before diverting north to its terminus at the Modesto Main Canal. Sisk Road narrows to two lanes north of Pelandale Avenue and continues as a two-lane minor collector north of Kiernan Avenue (SR 219).
- **Stoddard Road** – A two-lane, north-south minor arterial roadway with no posted speed limit that connects Bangs Avenue to Ladd Road. Stoddard Road expands to accommodate an additional northbound lane between Kiernan Avenue and the northern boundary of Joseph A. Gregori High School.
- **Tully Road** – A north-south roadway that connects 9th Street in central Modesto to Ladd Road. Tully Road is a four-lane minor arterial roadway between 9th Street and Standiford Avenue, and continues north of Standiford Avenue as a four-lane principal arterial. Tully Road narrows to two-lane principal arterial between Pelandale Avenue and SR 219 and continues north as a local roadway facility serving more rural residential uses.

Truck Routes

STAA truck routes allow large trucks to operate on the interstate freeway system and certain primary routes. On surface streets, STAA routes are designated either as Terminal or Service Access routes. Terminal routes are approved by the agency with jurisdiction over the roadway to enable the truck to reach its ultimate destination. Service Access routes allow STAA trucks to exit the interstate onto a local road, for one mile only, for food, fuel, lodging, or repair.

SR 99 is a National Network STAA route, an interstate truck route located approximately 1.5 miles from the project site. SR 219 (Kiernan Avenue) and SR 108 (McHenry Avenue) are designated as Terminal Access STAA routes, providing connections to the project site from surrounding truck routes.

Additionally, the City of Modesto has jurisdiction to designate additional truck routes along its surface streets. Local truck routes within the project vicinity include Pelandale Avenue between SR 99 and McHenry Avenue, Standiford Avenue/Sylvan Avenue between SR 99 and Claus Road, and Tully Road between Pelandale Avenue and 9th Street. Trucks traveling along these routes may be subject to additional restrictions such as size and weight limits. All STAA and local truck routes are shown on **Figure 3**. Commercial vehicles over seven tons are currently prohibited along Ladd Road west of McHenry Avenue. The same restriction applies for Dale Road, Stoddard Road, Carver Road, and Tully Road between Kiernan Avenue and Ladd Road, as well as Pirrone Road between Stoddard and Dale Road.

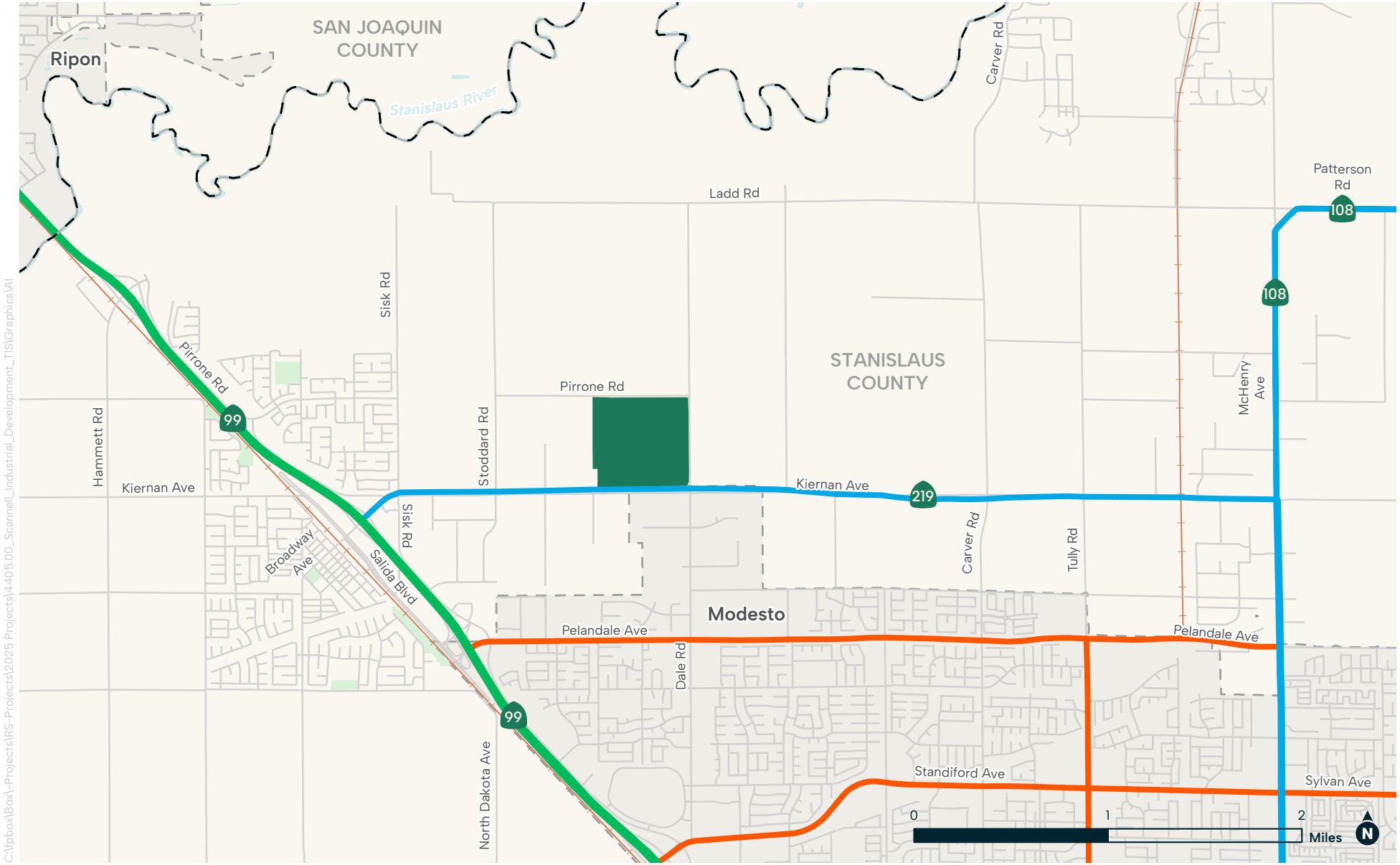


FIGURE 3

Study Area Truck Routes

Fehr & Peers

Existing Traffic Volumes

Average Daily Traffic (ADT) counts were collected at the four locations listed in **Table 1** over a 48-hour period on May 20 and 21, 2025. Data collection occurred under typical conditions—local schools were in session, weather was clear, and no unusual traffic patterns were observed. The counts included both total traffic volumes and axle counts, gathered during two midweek days. **Table 1** summarizes the ADT as well as the percentages of medium and heavy-duty trucks.

Table 1. Average Daily Traffic & Truck Percentages

Segment	Average Daily Traffic	Medium Truck Percentage[1]	Heavy-Duty Truck Percentage[2]
Kiernan Ave (SR 219) between Quinturn Ln & Dale Rd	30,610	2.4%	2.2%
Kiernan Ave (SR 219) between Dale Rd & American Ave	27,140	2.2%	2.2%
Dale Rd between Kiernan Ave (SR 219) & Pirrone Rd	5,680	1.5%	0.1%
Dale Rd between Kiernan Ave (SR 219) & Healthcare Wy	18,430	1.5%	0.4%

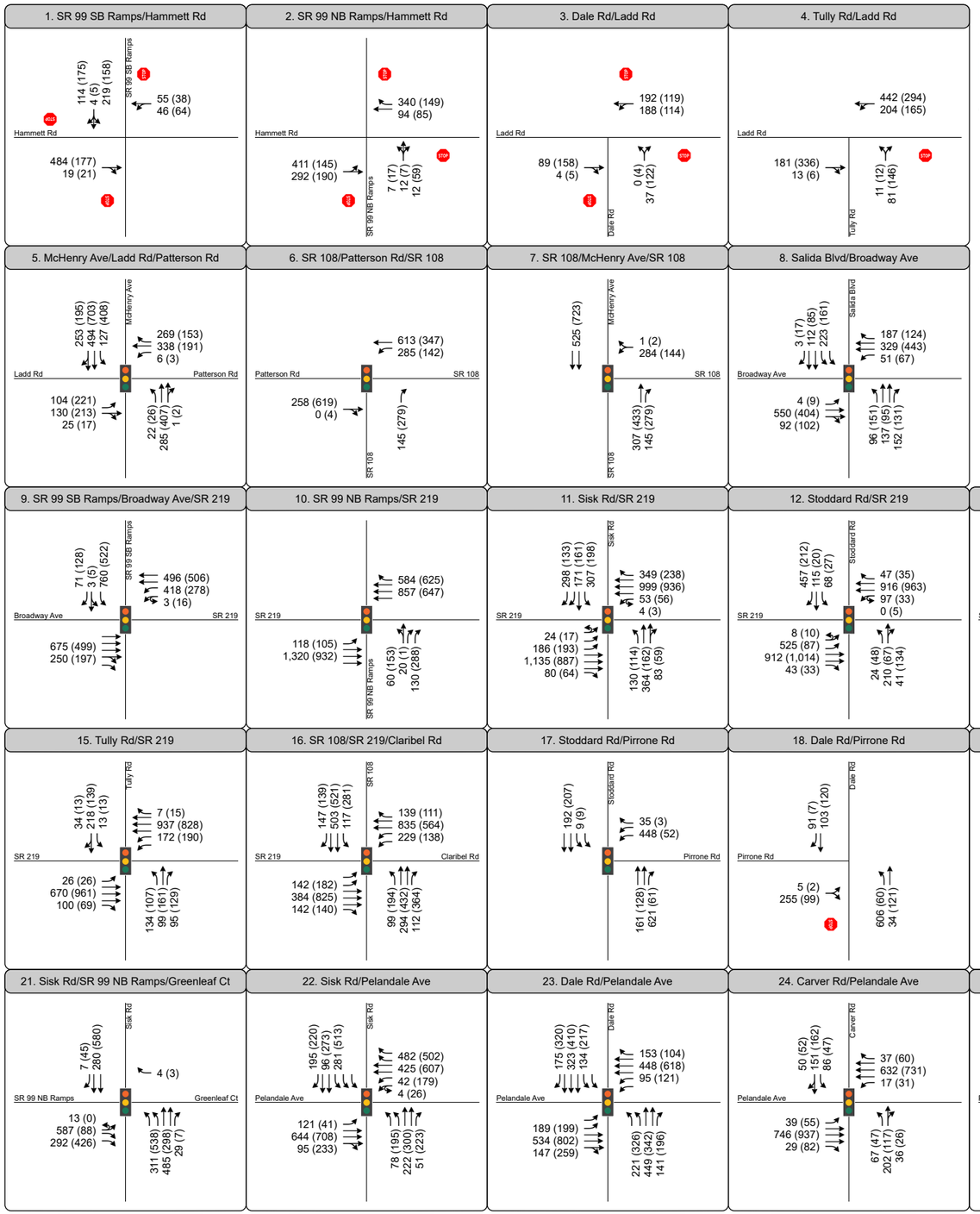
Notes:
1. Medium trucks are defined as two-axle box trucks.
2. Heavy-duty trucks are defined as three or more axle-vehicles.

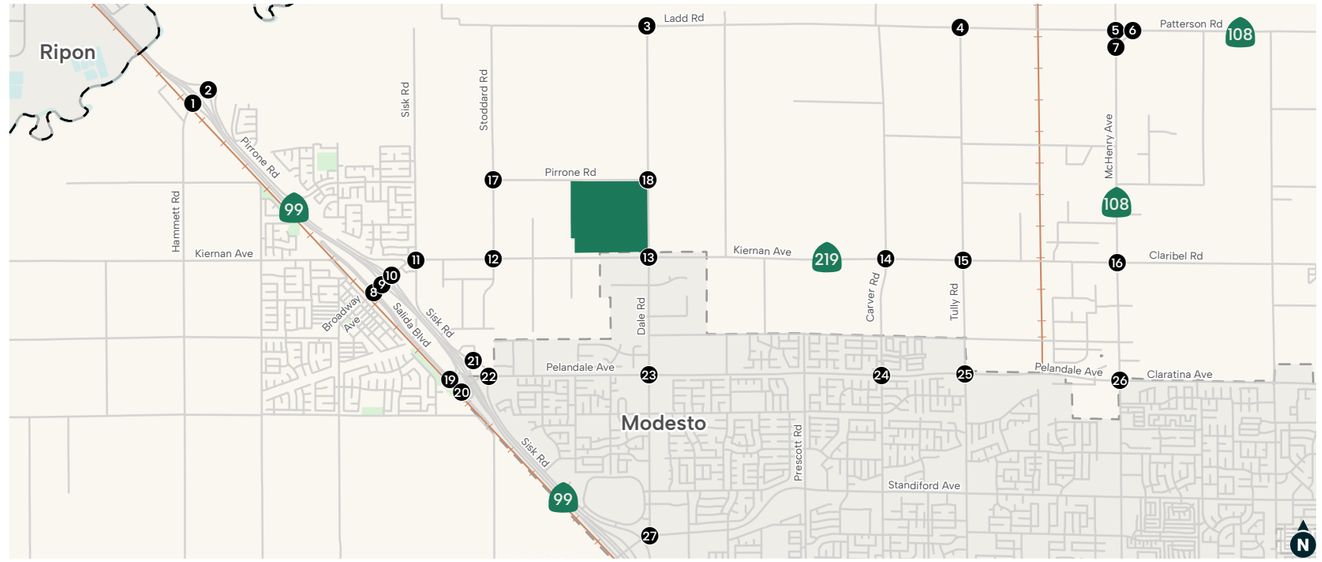
Source: Fehr & Peers, data collected May 20 and 21, 2025.

The existing AM and PM peak hour volumes for study intersections evaluated in the separate non-CEQA LTA report, are shown in **Figure 4**. Intersection volumes shown in **Figure 4** were collected in either May 2024 or May 2025 while local schools were in session, which most intersection data gathered in May 2025.

Existing Vehicle Queues

Vehicle queuing was analyzed for freeway off-ramps and SHS surface street intersections that could potentially be impacted by the project. Traffic volumes, lane configurations, vehicle fleet mix, traffic controls, and many other inputs are entered into a Simtraffic microsimulation model, which then reports the 95th percentile queues for critical movements. This queue, which is often used for design purposes (along with the need for deceleration) represents the length of queued traffic for which there is a 5% or less chance that the actual queue would be greater. Because trucks represent a considerable portion of the vehicle fleet mix in the project vicinity, the proportion of trucks and their average lengths were entered into the model. The methodology is consistent with procedures described in the *Highway Capacity Manual* (HCM, Transportation Research Board, 2022). Since the queuing results are reported on state highway facilities, the precise (non-rounded) 95th percentile queue (in feet) is reported in accordance with Caltrans District 10 guidance.





Turning Movement
AM (PM) Peak Hour Traffic Volume
Traffic Signal
Stop Sign
Study Intersection
Project Site
Railroad
Park
City Boundary
County Boundary

FIGURE 4

Intersection Lane Configurations, Traffic Controls & Peak Hour Volumes – Existing Conditions

Fehr & Peers

G:\GIS\RS\RS2544405_Scannell_Industrial_Development_TIS\RS2544405_Scannell_Industrial_Development_TIS.aprx

The SimTraffic models were validated to existing conditions using performance metrics such as volume served and 95th percentile queue length. Consistent with Caltrans District 10 requirements, SimTraffic analysis results are the average of 12 SimTraffic runs.

The following SHS intersections were selected for vehicle queuing analysis based on their expected usage by Project-related trips:

6. Patterson Road/SR 108 – westbound (WB) left-turn lane
7. McHenry Avenue/Patterson Road/SR 108 – northbound (NB) right-turn lane
9. SR 99 southbound (SB) Ramps/Kiernan Avenue (SR 219) – SR 99 SB off-ramp
10. SR 99 NB Ramps/Kiernan Avenue (SR 219) – SR 99 NB off-ramp
11. Sisk Road/Kiernan Avenue (SR 219) – westbound (WB) right-turn lane and left-turn lane
12. Stoddard Road/Kiernan Avenue (SR 219) – eastbound (EB) left-turn lane; WB left-turn and right-turn lanes
13. Dale Road/Kiernan Avenue (SR 219) – eastbound (EB) left-turn and right-turn lanes; WB right-turn lane
14. Carver Road/Kiernan Avenue (SR 219) – EB right-turn lanes
15. Tully Road/Kiernan Avenue (SR 219) – EB right-turn lane
16. McHenry Avenue (SR 108)/Kiernan Avenue (SR 219)/Claribel Road - EB left-turn and right-turn lanes, NB left-turn lane, SB right-turn lane
19. Sisk Road/SR 99 NB Ramps – SR 99 NB off-ramp
26. Pelandale Avenue/McHenry Avenue (SR 108) – SB left-turn lane

Although the City of Modesto staff did not identify the SR 99 NB Ramps/Beckwith Road-Standiford Avenue as a study intersection, the off-ramp queue was evaluated using the existing traffic volumes and lane configuration data collected for the ongoing traffic operations analysis prepared for the Beckwith/Standiford Multimodal Safety and Complete Streets Improvement Project Approval/ Environmental Document (PA/ED) phase. The SR 99/Beckwith Road–Standiford Avenue ramp-terminal intersections were included in the SimTraffic model used to evaluate operations at the Dale Road/Standiford Avenue study intersection due to the short spacing between the study intersection and the SR 99 ramps.

The lane configurations and existing AM and PM peak hour volumes at each intersection listed above, in addition to all other study intersections evaluated in the separate non-CEQA LTA report, are shown in **Figure 4**. **Table 2** presents the 95th percentile queue summary for off-ramp movements and study-intersection turning movements along the State Highway System (SHS) that would experience project-added trips. Off-ramps and turning movements without project-added trips are not reported. As shown in **Table 2**, the following movements experience 95th percentile queue lengths that exceed the available storage length under existing AM and/or PM peak hour conditions:

- **McHenry Avenue (SR 108)/Kiernan Avenue (SR 219)/Claribel Road (#16)**: 95th percentile queues exceed the NB left-turn storage length during the AM and PM peak hours
- **Pelandale Avenue/McHenry Avenue (SR 108, #26)**: 95th percentile queues exceed the SB left-turn storage length during the PM peak hour

Detailed intersection analysis worksheets are provided in **Appendix A**.

Table 2. 95th Percentile Queue Length Summary – Existing Conditions

ID	Intersection	Lead Agency	Movement[1]	Storage Length (ft)	Existing 95th Percentile Queue Length (ft)	
					AM	PM
6.	Patterson Rd/SR 108	Caltrans	WBL	525	124	99
7.	McHenry Ave/SR 108	Caltrans	NBR	460	-	-
9.	SR 99 SB Ramps/ Kiernan Ave (SR 219)	Caltrans	Off-Ramp	1,120	363	235
10.	SR 99 NB Ramps/ Kiernan Ave (SR 219)	Caltrans	Off-Ramp	1,260	114	172
11.	Sisk Rd/ Kiernan Ave (SR 219)	Caltrans	WBR	525	170	102
			WBL	735	105	99
12.	Stoddard Rd/ Kiernan Ave (SR 219)	Caltrans	EBL	1,000	339	90
			WBL	620	150	65
			WBR	640	60	32
13.	Dale Rd/ Kiernan Ave (SR 219)	Caltrans	EBL	555	54	55
			EBR	700	302	153
14.	Carver Rd/ Kiernan Ave (SR 219)	Caltrans	EBR	580	69	52
15.	Tully Rd/ Kiernan Ave (SR 219)	Caltrans	EBR	355	74	53
16.	McHenry Ave (SR 108) /Kiernan Ave (SR 219)	Caltrans	EBL	765	120	132
			EBR	650	92	74
			SBR	535	95	80
			NBL	140	**160**	**244**
21.	Sisk Rd/ SR 99 NB Ramps	Caltrans	Off-Ramp	1,475	422	111
26.	Pelandale Ave/ McHenry Ave (SR 108)	Caltrans	SBL	175	137	**346**
--	SR 99 NB Ramps/ Beckwith Rd/ Standiford Ave	Caltrans	Off-Ramp	1,025	146	319

Notes: **Bold** font denotes movements where storage length is exceeded.

1. EB = eastbound; WB = westbound; NB = northbound; SB = southbound; L= left-turn; T = through; R = right-turn

Source: Fehr & Peers, 2026.

Active Transportation System

There is an existing 10-foot wide Class II on-street bicycle lane on Kiernan Avenue (SR 219) along the project frontage. The *City of Modesto Non-Motorized Transportation Plan* (City of Modesto, 2024) identified the facility as a high-stress facility, suitable only for the most confident cyclists. There are no bicycle facilities along the project frontage on Dale Road.

Kiernan Avenue is part of the State Highway System which falls under the jurisdiction of Caltrans. Although no pedestrian facilities are provided along the project frontage, walking is permitted adjacent to the roadway. ADA accessible curb ramps are provided on each corner of the Kiernan Avenue/Dale Road intersection. However, only the southwest corner of the intersection provides an existing sidewalk connection. Crosswalks are provided along the north, east, and south legs of the intersection.

Caltrans considers bicycle and pedestrian improvements along Kiernan Avenue to be a high-priority item to meet active transportation and safety goals. Additionally, the *City of Modesto Non-Motorized Transportation Plan* (City of Modesto, 2024) proposes several bicycle network expansion and enhancement projects across the City, including a Class I shared-use bike and pedestrian path along Dale Road between Pelandale Avenue and Kiernan Avenue (SR 219).

Dale Road and Kiernan Avenue are key roadway corridors that connect local communities to Joseph A. Gregori High School and Stanislaus Elementary School within the study area. Pedestrian and bicyclist activity along the project site frontages is currently low, primarily due to the lack of dedicated pedestrian and bicycle infrastructure. Bicycle use is generally limited to recreational riders along Kiernan Avenue (SR 219).

Recent development projects along Dale Road, south of Kiernan Avenue, constructed sidewalk improvements along their respective frontages. Each new development has contributed to expanding pedestrian infrastructure in the area.

Transit System

Transit service is provided by Stanislaus Regional Transit Authority (StanRTA). StanRTA operates a fixed-route, Paratransit, and Dial-a-Ride bus service with stops throughout Stanislaus County. There are two nearby transit stops at Kaiser Hospital and Gregori High School, each located approximately a quarter-mile or less from the project site. Route 48 provides weekday and Saturday fixed route service to the transit stops with 60-minute headways, and a shorter Sunday service is also provided with 60-minute headways.

Table 3. Nearby Transit Routes

Route	Route Limits	Nearest Stop (Distance from Project Site)	Weekdays		Saturday		Sunday	
			Hours	Headway (min)	Hours	Headway (min)	Hours	Headway (min)
48	Modesto Transit Center to Salida	Gregori High School (115 ft)	6:30 AM – 7:45 PM	60	7:30 AM – 7:40 PM	60	8:30 AM – 5:35 PM	60

Source: Routes and Schedules provided via StanRTA, visited on July 2025.

Nearby Schools & Hospitals

Schools

There are two schools located within the project vicinity: Joseph A. Gregori High School (also referred to as Gregori High School) and Stanislaus Elementary School.

Joseph A. Gregori High School is located on the northeast corner of Stoddard Road and Pirrone Road. The project site is located directly southeast from the school. Gregori High School serves over 2,300 students in the Modesto City Schools district, including students from the communities of Salida, Del Rio, and many neighborhoods north of Standiford Avenue in Modesto. On regular school days, regular instruction begins at 8:30 AM and concludes at 3:30 PM. The school features two parking lots and a total of five driveway entrance and exit points along Pirrone Road. The main entrance is a three-legged, signalized intersection that provides entrance to both lots and exit from the western lot. An additional driveway access to the west and to the east of the main entrance provide entry and exit to each lot. The remaining driveway accesses are for a private access roadway that circuits clockwise around the main campus and connects to additional parking located at the northern and eastern areas before exiting on Pirrone Road at the eastern campus boundary. Along the high school frontage on Pirrone Road, two bus stops are provided on the northern segment and one stop is provided along the southern segment.

Stanislaus Elementary School is located north of Kiernan Avenue (SR 219) approximately a quarter-mile west of Carver Road and just over one mile to the east from the project site. Stanislaus Elementary School is part of the Stanislaus Union School District and serves K-6 students from Del Rio and communities north of Pelandale Avenue in Modesto between Quinturn Lane and Skittone Road. On regular school days, instruction begins at 7:50 AM and concludes at 2:00 PM. The campus features one parking lot on opposite sides of the campus, with a frontage road-style connection between the lots. The driveway for the east lot is a right-in-right-out access with a deceleration lane approaching from the east. The west lot intersects Kiernan Avenue as a three-legged, signalized intersection.

Hospitals

A Kaiser Permanente hospital is located along Dale Road between Kiernan Avenue (SR 219) and Bangs Avenue. The medical center includes a pharmacy, emergency services and ambulance bay, and medical office buildings. The main entrance to the hospital campus is at the intersection of Kaiser Drive/Dale Road, a four-legged, signalized full-access intersection. The intersection of Dale Road/Bangs Avenue, a signalized intersection on the southeast corner or the campus, provides additional access for vehicles entering the medical center from the north or exiting the campus to the south (right-turn in/right-turn out only access). An internal private roadway connects the various parking throughout the medical center, providing circulation around the campus separate from the public roadway network. Bus stops with turnouts, benches and shelters are located on both sides of Dale Road along the hospital frontage.

3. Project Travel Characteristics

This chapter presents the proposed project's land uses and expected travel characteristics.

Project Description

Figure 2 shows the project site plan and land use map, which includes:

- 2,503,230 square feet (sf) of industrial land uses; specific tenants have not yet been identified, therefore, a mix of the following industrial land uses were assumed for purposes of this study:
    - 667,528 sf of warehouse uses
    - 667,528 sf of manufacturing uses
    - 667,528 sf of distribution uses
    - 500,646 sf of cold storage uses
- Up to 1,963 off-street parking stalls for industrial uses
- Up to 788 off-street trailer parking stalls for industrial uses
- Approximately 121,450 square feet of developable land area is designated for retail development; specific tenants and uses have not yet been identified. For the purposes of this analysis, it is assumed that the following land uses could be accommodated within this area:
    - Gas station with 18 vehicle fueling positions and a 6,000-sf convenience store
    - Two fast-food restaurants with drive-through windows, each with 4,000 sf of building area, totaling 8,000 sf

Site access, including heavy truck access, is proposed via the following seven driveways:

- Two driveways on Kiernan Avenue (SR 219), including a signalized full-access western driveway and one unsignalized side-street-stop-controlled right-turn in and right-turn out access only eastern driveway
- Three driveways on Dale Road, the central driveway is proposed as a signalized full-access driveway, while the northern and southern driveways are unsignalized side-street-stop-controlled driveways limited to right-turn in and right-turn out access only
- Two unsignalized driveways on Pirrone Road, including a full-access side-street-stop-controlled western driveway and one side-street-stop-controlled right-turn in and right-turn out access only eastern driveway

The project site plan proposes maintaining the existing property line boundaries and does not currently propose widening Kiernan Avenue (SR 219), Dale Road, or Pirrone Road. While the site plan does not currently depict sidewalk or bikeway frontage improvements, the project would implement any required frontage improvements as determined by the City of Modesto, even if such improvements are not shown on the site plan. For the purposes of this analysis, it is assumed that the project does not propose any sidewalk or bikeway frontage improvements as they are not currently specified on the project site plan shown on **Figure 2**.

Project Trip Generation

Project trips were estimated using a combination of warehouse trip rates derived from the *San Joaquin Countywide Warehousing Data Collection and Travel Behavior Study* (Fehr & Peers, 2021) that collected data at 39 warehousing buildings across San Joaquin County in June 2021 and trip rates published in the *Trip Generation Manual 11th Edition* (Institute of Transportation Engineers, ITE, September 2021).

Because specific tenants have not yet been identified for the industrial or retail uses, the following mix of land uses were assumed for purposes of the trip generation analysis:

- 667,528 sf of warehouse uses
- 667,528 sf of manufacturing uses
- 667,528 sf of distribution uses
- 500,650 sf of cold storage
- Gas station with 18 vehicle fueling positions and 6,000 sf convenience store
- 8,000 sf of fast-food restaurant(s) with drive-through

San Joaquin Countywide Warehousing Data Collection and Travel Behavior Study (Fehr & Peers, 2021)

This study, henceforth referenced as the *San Joaquin Countywide Warehousing Travel Behavior Study* is being introduced in the midst of the proposed project's trip generation discussion because this study was a fundamental part of estimating the proposed project's travel characteristics for warehousing land uses. Although the study was completed for sites in San Joaquin County, the findings are applicable to Stanislaus County given its similar land use and transportation network context. The San Joaquin County focused study is described in detail below.

Fehr & Peers undertook the *San Joaquin Countywide Warehousing Travel Behavior Study* in 2021 to better understand the travel behavior of existing warehousing buildings across San Joaquin County. It was prepared in response to an initial review of local and regional planning efforts, which had revealed a lack of data and understanding of the travel characteristics of these types of facilities. This data was used to estimate the trips generated by the warehousing component of the project.

Fehr & Peers collected 72 hours of driveway vehicle classification count data at 39 warehousing buildings across San Joaquin County in June 2021.[1] The data collection was performed by National Data & Surveying Services (NDS) using cameras to count and classify vehicles entering and exiting the individual building driveways. The 39 warehousing buildings totaled over 25.7 million square feet, representing roughly 28% of all warehousing building space in San Joaquin County based on Colliers 21Q1 estimates. This data was used to develop weighted average trip generation rates per thousand square feet (ksf) for warehousing uses in San Joaquin County including within the cities of Tracy,

[1] Six of the 39 sites listed in Image 1 were also counted in June 2019 prior to the onset of the COVID-19 pandemic. Together, they total just over 5 million square feet of warehouse space. Comparison of the June 2021 to June 2019 trip generation totals revealed that the June 2021 weighted average daily trip rate was 16% greater than the June 2019 rate. This implies that the use of trip generation data collected during the COVID-19 pandemic did not understate trips (and if anything, resulted in a more conservative trip generation total due to increased ecommerce during the pandemic).

Stockton, Lathrop, Manteca, and Lodi. The 39 warehousing buildings, including their occupying tenant, type of warehouse, and square footage, are shown in **Image 1** below.

City	Customer	Prologis	# Driveways	Type	Square Feet
Lathrop	California Logistics	Yes	3	Warehouse	1,235,000
Lathrop	Tesla, Inc.	Yes	1	Manufacturing	92,747
Manteca	Ford Motor Company	Yes	2	Warehouse	608,860
Stockton	Innovel Solutions Inc	Yes	2	Warehouse	780,393
Tracy	UPS Supply Chain	Yes	2	Warehouse	795,732
Stockton	Pratt Corrugated Holdings	Yes	2	Warehouse	350,892
Stockton	HJ Heinz	Yes	2	Warehouse	500,199
Stockton	Prism Team Services, Inc.	Yes	3	Warehouse	443,640
Tracy	Leggett & Platt	Yes	1	Warehouse	158,065
Tracy	Orchard Supply Company	Yes	2	Warehouse	346,524
Stockton	Fox Head, Inc.	Yes	2	Warehouse	388,000
Stockton	General Mills Sales, Inc.	Yes	2	Warehouse	735,980
Stockton	Amazon.com Services, Inc.	Yes	2	Warehouse	388,183
Stockton	Pitney Bowes	Yes	2	Warehouse	186,944
Stockton	Niagara Bottling, LLC	Yes	1	Warehouse	512,000
Stockton	Homesite Services, Inc.	Yes	1	Warehouse	39,200
Stockton	Masonite Corporation	Yes	2	Warehouse	180,000
Stockton	Kraft Foods Group, Inc.	Yes	1	Warehouse	351,788
Stockton	Coastal Pacific Food	Yes	1	Warehouse	500,004
Tracy	Restoration Hardware	Yes	4	Warehouse	283,712
Tracy	IPC Best Buy	Yes	5	Warehouse	641,364
Lathrop	Wayfair	No	2	Warehouse	1,167,000
Lathrop	Home Depot	No	1	Distribution Center	953,000
Lodi	Pacific Coast Producers	No	4	Warehouse	1,500,000
Lodi	Dart Container	No	2	Warehouse	340,000
Manteca	Lowes	No	3	Warehouse	570,000
Stockton	Dollar Tree	No	1	Warehouse	855,000
Manteca	UPS	No	2	Warehouse	560,000
Manteca	Cargill Food	No	2	Warehouse	350,000
Stockton	KeHE Distributors	No	2	Warehouse	770,000
Tracy	International Paper	No	1	Warehouse	375,000
Tracy	IPC Zinus	Yes	2	Warehouse	664,333
Tracy	IPC Medline	Yes	3	Warehouse	1,005,500
Tracy	IPC Smuckers	Yes	3	Warehouse	403,560
Tracy	IPC Amazon	Yes	4	Warehouse	1,001,449
Tracy	PP Costco	No	2	Warehouse	1,161,306
Tracy	PP Safeway	No	4	Warehouse	2,200,000
Tracy	NEI Amazon	Yes	3	Fulfillment	1,124,921
Tracy	NEI Crate & Barrel	Yes	5	Warehouse	1,225,680
	Total		89		25,745,976

Image 1: Specific warehouses (including location, tenant and size) counted as part of San Joaquin Countywide Warehousing Travel Behavior Study

Trip generation data collected at each warehouse was classified as generated either by autos (which include light and medium duty trucks) and heavy-duty trucks, which are defined as having three or more axles. **Table 4** shows the average trip generation rates (per 1,000 sf, or ksf) that were observed for daily, AM peak hour, and PM peak hour conditions.

Table 4. Average Warehousing Trip Rates per KSF

Source	Vehicular Type	Daily	AM Peak Hour	PM Peak Hour
All 39 Buildings	Autos	1.07 (70%)	0.15 (83%)	0.19 (91%)
	Trucks[1]	0.45 (30%)	0.03 (17%)	0.02 (9%)
	Total	1.52	0.18	0.21

Notes:

1. Trucks refer to heavy-duty (i.e., three or more axle-vehicles only) vehicles. Medium-duty trucks (e.g., two-axle box trucks) are included in the auto category because they, like autos, are not affected by vehicle weight restrictions on certain study roadways. Medium-duty trucks are also not classified as "heavy vehicles" by the Highway Capacity Manual (HCM).

Source: Fehr & Peers, data collected in June 2021.

Table 4 indicates that heavy-duty trucks (with 3 or more axles) represented about 30% of all daily trips generated by warehousing uses. However, during the AM and PM peak hours, trucks represented only 17% and 9% of total trips generated, respectively. This occurs for two primary reasons. First, the AM and PM peak hours experience surges in employee arrivals/departures, resulting in a higher percentage of passenger vehicles. Second, the temporal distribution of arriving/departing truck trips across a typical weekday shows surges during the mid-morning and early afternoon periods (i.e., outside of the traditional AM and PM peak hours). Refer to **Images 2** and **3** for hourly auto and truck arrival/departure profiles from the *San Joaquin Countywide Warehousing Travel Behavior Study*. The project's warehousing uses are expected to have similar temporal travel behavior characteristics.

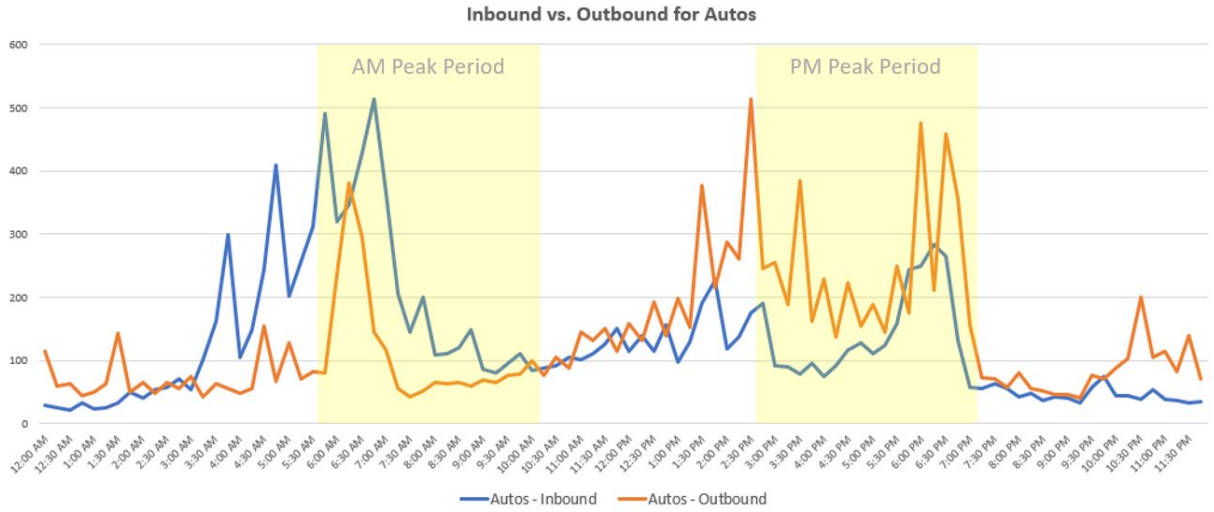


Image 2: Temporal Arrival and Departure Patterns of Autos
(source: *San Joaquin Countywide Warehousing Travel Behavior Study*)

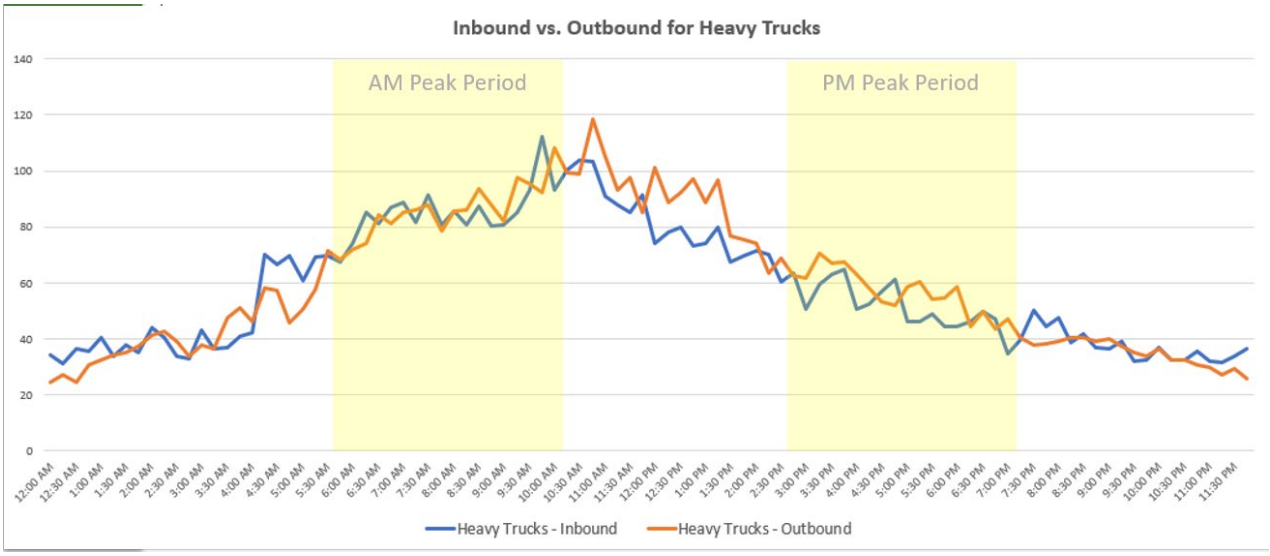


Image 3: Arrival and Departure Patterns of Heavy-Duty Trucks
(source: *San Joaquin Countywide Warehousing Travel Behavior Study*)

Trip General Manual 11th Edition (ITE, 2021)

Trip rates from *Trip Generation Manual 11th Edition* (ITE, 2021) were used to estimate daily and peak hour trip generation for the remaining industrial and retail land uses. The following ITE land use categories are applicable to the proposed Project:

- **Manufacturing (ITE Land Use Code 140)** – This land use includes facilities where raw materials or components are transformed into finished products. These sites vary in size and complexity and often include production, assembly, and packaging operations.
- **High-Cube Parcel Hub Warehouse (ITE Land Use Code 156)** – These are short-term, automated warehouses that function as regional or local freight forwarding centers. They handle time-sensitive shipments and typically support ground parcel delivery services.
- **High-Cube Cold Storage Warehouse (ITE Land Use Code 157)** – This land use refers to temperature-controlled, automated warehouses used for the short-term storage and distribution of perishable goods.
- **Gasoline/Service Station with Convenience Market (ITE Land Use Code 945)** – This land use combines a fueling station with a convenience store ranging between 5,500 – 10,000 sf in building area. These facilities serve both local and pass-through traffic, offering fuel, snacks, beverages, and other quick-purchase items.
- **Fast-Food Restaurant with Drive-Through (ITE Land Use Code 934)** – This land use includes quick-service restaurants that offer drive-through service. These establishments are designed for high customer turnover and typically feature limited indoor seating, a focus on takeout orders, and extended operating hours.

Daily, AM, and PM peak hour total vehicle trip generation estimates for the Project are summarized in **Table 5**, while heavy-duty truck trip generation estimates are provided in **Table 6**.

As shown in **Table 5**, the Project is expected to generate 1,384 net new trips during the AM peak hour, 1,329 net new trips during the PM peak hour, and 11,730 net new daily trips after accounting for internalized and pass-by trips (see proceeding section for more information). As shown in **Table 6**, the Project is also estimated to generate 124 heavy-duty truck trips during the AM peak hour, 97 truck trips during the PM peak hour, and 1,480 daily truck trips.

Table 5. Project Trip Generation – All Vehicles

Land Use	Quantity	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Warehouse[1]	667.53 ksf	1,010	78	42	120	56	84	140
Manufacturing[2]	667.53 ksf	3,170	345	109	454	153	341	494
Distribution[3]	667.53 ksf	3,090	234	233	467	290	137	427
Cold-Storage[4]	500.65 ksf	1,060	28	27	55	30	30	60
Gas Station with Convenience Store[5]	18 fueling positions	6,220	284	285	569	242	242	484
Fast-Food Restaurant with Drive-Through[6]	8.00 ksf	3,740	182	175	357	137	127	264
Gross Project Trips		*18,290*	*1,151*	*871*	*2,022*	*908*	*961*	*1,869*
Trip Adjustments								
Internal Capture[7]		-80	-16	-16	-32	-16	-16	-32
Pass-By Trips[8]		-6,480	-303	-303	-606	-254	-254	-508
Total Trip Reductions		*-6,560*	*-319*	*-319*	*-638*	*-270*	*-270*	*-540*
Total External Trips		*18,210*	*1,135*	*855*	*1,990*	*892*	*945*	*1,837*
Net-New External Project Trips		**11,730**	**832**	**552**	**1,384**	**638**	**691**	**1,329**

Notes:

1. Warehouse data based on trip rates from the *San Joaquin Countywide Warehousing Data Collection and Travel Behavior Study*:
    a. Daily: 1.52 trips per ksf
    b. AM Peak Hour: 0.18 trips per ksf (65% in, 35% out)
    c. PM Peak Hour: 0.21 trips per ksf (40% in, 60% out)
2. Manufacturing building trip rates based on ITE Land Use Code 140 (manufacturing):
    a. Daily: 4.75 trips per ksf
    b. AM Peak Hour: 0.68 trips per ksf (76% in, 24% out)
    c. PM Peak Hour: 0.74 trips per ksf (31% in, 69% out)
3. Distribution building trip rates based on ITE Land Use Code 156 (high-cube parcel hub warehouse):
    a. Daily: 4.63 trips per ksf
    b. AM Peak Hour: 0.70 trips per ksf (50% in, 50% out)
    c. PM Peak Hour: 0.64 trips per ksf (68% in, 32% out)
4. Cold-storage building trip rates based on ITE Land Use Code 157 (high-cube cold storage warehouse):
    a. Daily: 2.12 trips per ksf
    b. AM Peak Hour: 0.11 trips per ksf (50% in, 50% out)
    c. PM Peak Hour: 0.12 trips per ksf (50% in, 50% out)
5. Gas Station trip rates based on ITE Land Use Code 945 (gas station w/ 5.5 – 10 ksf convenience store):
    a. Daily: 345.75 trips per vehicle fueling positions
    b. AM Peak Hour: 31.60 trips per vehicle fueling positions (50% in, 50% out)
    c. PM Peak Hour: 26.90 trips per vehicle fueling positions (50% in, 50% out)
6. Fast food restaurant trip rates based on ITE Land Use Code 934 (fast-food restaurant w/ drive-thru):
    a. Daily: 467.48 trips per ksf
    b. AM Peak Hour: 44.61 trips per ksf (51% in, 49% out)
    c. PM Peak Hour: 33.03 trips per ksf (52% in, 48% out)
7. Internal trips estimated using the MXD+ tool.
8. Based ITE *Trip Generation Manual 11th Edition* (ITE, September 2021) pass-by rate: gas station with convenience store(75% daily and PM, 76% AM) and fast-food restaurant with drive-thru (50% daily and AM, 55% PM)

Source: Fehr & Peers, 2026.

Table 6. Project Trip Generation – Heavy-Duty Trucks

Land Use	Quantity	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Warehouse[1]	667.53 ksf	340	10	10	20	10	10	20
Manufacturing[2]	667.53 ksf	300	11	9	20	8	12	20
Distribution[3]	667.53 ksf	390	30	30	60	27	13	40
Cold-Storage[4]	500.65 ksf	370	5	10	15	8	7	15
Gas Station with Convenience Store[5]	18 fueling positions	60	2	4	6	1	1	2
Fast-Food Restaurant with Drive-Through[6]	8.00 ksf	20	2	1	3	0	0	0
Total Truck Trips		**1,480**	**60**	**64**	**124**	**54**	**43**	**97**

Notes:

1. Warehouse data based on trip rates from the *San Joaquin Countywide Warehousing Data Collection and Travel Behavior Study*:
    a. Daily: 0.52 trips per ksf
    b. AM Peak Hour: 0.03 trips per ksf (49% in, 51% out)
    c. PM Peak Hour: 0.03 trips per ksf (51% in, 49% out)
2. Manufacturing building trip rates based on ITE Land Use Code 140 (manufacturing):
    a. Daily: 0.45 trips per ksf
    b. AM Peak Hour: 0.03 trips per ksf (56% in, 44% out)
    c. PM Peak Hour: 0.03 trips per ksf (41% in, 59% out)
3. Distribution building trip rates based on ITE Land Use Code 156 (high-cube parcel hub warehouse):
    a. Daily: 0.58 trips per ksf
    b. AM Peak Hour: 0.09 trips per ksf (50% in, 50% out)
    c. PM Peak Hour: 0.06 trips per ksf (68% in, 32% out)
4. Cold-storage building trip rates based on ITE Land Use Code 157 (high-cube cold storage warehouse):
    a. Daily: 0.75 trips per ksf
    b. AM Peak Hour: 0.03 trips per ksf (33% in, 67% out)
    c. PM Peak Hour: 0.03 trips per ksf (50% in, 50% out)
5. Gas Station trip rates based on ITE Land Use Code 945 (gas station w/ convenience store and 18 – 24 vehicle fueling positions):
    a. Daily: 9.07 trips per convenience store ksf
    b. AM Peak Hour: 0.97 trips per convenience store ksf (33% in, 67% out)
    c. PM Peak Hour: 0.32 trips per convenience store ksf (48% in, 52% out))
6. Fast food restaurant trip rates based on ITE Land Use Code 934 (fast-food restaurant w/ drive-thru):
    a. Daily: 1.92 trips per ksf
    b. AM Peak Hour: 0.35 trips per ksf (55% in, 45% out)
    c. PM Peak Hour: 0.08 trips per ksf (50% in, 50% out)

Source: Fehr & Peers, 2025.

Internal & Pass-By Trip Adjustments

Adjustments for internal and pass-by trips were applied to estimate the net new trips that the Project would add to the surrounding transportation network.

Internal trips are those that occur entirely within a mixed-use development or large site. For example, a person walking from their warehouse job to a fast-food restaurant within the proposed Project site, or filling up their vehicle at the gas station prior to leaving home from work. Since these trips do not use the external road network, they are typically subtracted from total trip generation estimates to avoid overestimating traffic volumes at the Project driveways.

Fehr & Peers used the MXD+ tool to estimate internal trips. Originally developed in 2013, MXD+ is based on methodologies from the ITE *Trip Generation Manual*, the *National Cooperative Highway Research Program (NCHRP) Report 684* (Transportation Research Board, 2011), and studies led by the U.S. Environmental Protection Agency (EPA). The tool was revalidated in 2020 to ensure continued accuracy. Using MXD+, Fehr & Peers estimates that the Project would generate up to 80 daily, 32 AM and PM peak hour internal trips.

Pass-by trips refer to vehicles already traveling on adjacent roadways that make an intermediate stop at a site while en route to a primary destination. These trips are considered part of existing traffic, as they would have passed by the site regardless of the new development. Pass-by trips often represent a significant portion of trip generation for shopping centers.

In transportation impact assessments, pass-by trips are included in the analysis at project site driveway but are not assigned to off-site intersections, since they do not represent new trips on the broader network. The *ITE Trip Generation Manual, 11th Edition* (ITE, September 2021) estimates the following average pass-by rates for proposed retail uses:

- **Gasoline/Service Station with Convenience Market (ITE Land Use Code 945)** – 76% during the AM peak hour and 75% during the PM peak hour.
- **Fast-Food Restaurant with Drive-Through (ITE Land Use Code 934)** – 50% during the AM peak hour and 55% during the PM peak hour.

While daily pass-by rate data is not provided in the ITE manual, Fehr & Peers assumed that 75% of daily trips are pass-by trips for gas stations with convenience stores, and 50% for fast-food restaurants with drive-through service.

As shown in **Table 5**, approximately 606 AM peak hour trips, 508 PM peak hour trips, and 6,480 daily trips are classified as pass-by trips, representing more than 65 percent of the total trips generated by the proposed retail land uses.

Project Trip Distribution

Trip distribution refers to the directional pattern of travel to and from the project site. It identifies where project generated trips will originate and terminate, helping to inform likely travel routes. To estimate trip distribution, the Stanislaus Council of Governments (StanCOG) travel demand model, last updated for the 2022 Regional Transportation Plan and Sustainable Communities Strategy (StanCOG, 2022), was used. This model incorporates countywide land use and transportation network assumptions for both a base year (2019) and a cumulative year (2046). Compared to the more regional San Joaquin Council of Governments (SJCOG) travel demand model, the StanCOG model offers greater local detail, making it better suited for developing forecasts at the neighborhood or community level. As a result, the StanCOG base year model was applied to estimate project trip distribution under existing conditions and the cumulative year (2046) StanCOG model was applied to estimate cumulative year (2050) trip distribution for the project.

Fehr & Peers compared the AM and PM peak hour project trip distribution from the StanCOG base year model to trip distribution data obtained from StreetLight Data, Inc. for the Blue Diamond manufacturing and distribution facility located at 4800 Sisk Road in Modesto, California, approximately one mile west of the project site. StreetLight Data sources are derived from location-based services (LBS) and use advanced machine learning algorithms to analyze travel behavior across the country. [2] The existing Blue Diamond industrial facility represents a comparable land use to the proposed industrial uses at the project site and offers insight into worker trip distribution patterns during the AM and PM peak hours.

One notable difference between the StanCOG model and the StreetLight Data evaluation was the estimated share of trips to and from SR 99 north of Stanislaus County. The StanCOG model estimated fewer than 10% of trips in this direction, while the StreetLight Data evaluation indicated closer to 15%. As a result, the trip distribution assumptions for SR 99 north were adjusted to reflect a 15% distribution for the project's industrial uses.

Trip distribution for industrial uses is illustrated in **Figure 5**, while distribution for retail uses is shown in **Figure 6**. Trip distribution for heavy-duty trucks was based on the existing truck network surrounding the Project site. Kiernan Avenue (SR 219) and McHenry Avenue (SR 108) are designated as Terminal Access Routes under the Surface Transportation Assistance Act (STAA) classification system, while SR 99 is classified as a National Network Route. As shown in **Figure 7**, Project-related truck trips would distribute to the surrounding STAA truck network.

The difference in trip distribution results between the StanCOG base year (2019) and cumulative year (2046) models was applied to the existing trip distribution assumptions shown in **Figure 5** and **Figure 6** to develop the cumulative (2050) project trip distribution assumptions for industrial uses shown in **Figure 8** and for retail uses shown in **Figure 9**.

The 2022 RTP/SCS cumulative model and trip distribution assumptions account for the following planned future roadway improvements:

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[2] StreetLight Data, Inc. processes approximately 40 billion anonymized location records per month from smart phones and navigation devices in connected cars and trucks and uses machine learning to transform these records into aggregated and normalized route-based travel patterns. Data is validated using permanent traffic counters and embedded sensors, and normalized with multiple data sources, including parcel data, digital road network data, and census information.

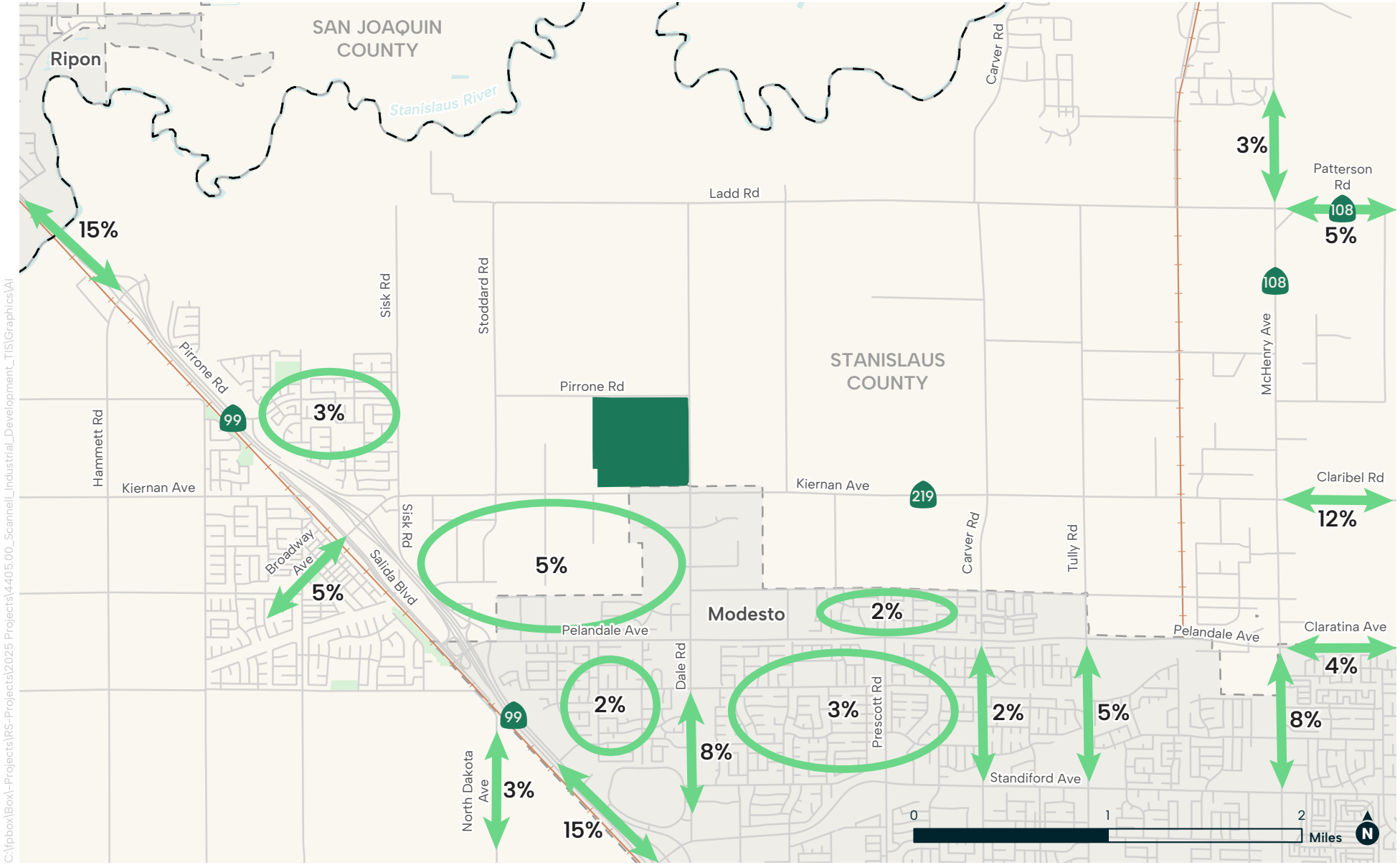


FIGURE 5

Existing Project Trip Distribution – Industrial Land Uses

Fehr & Peers

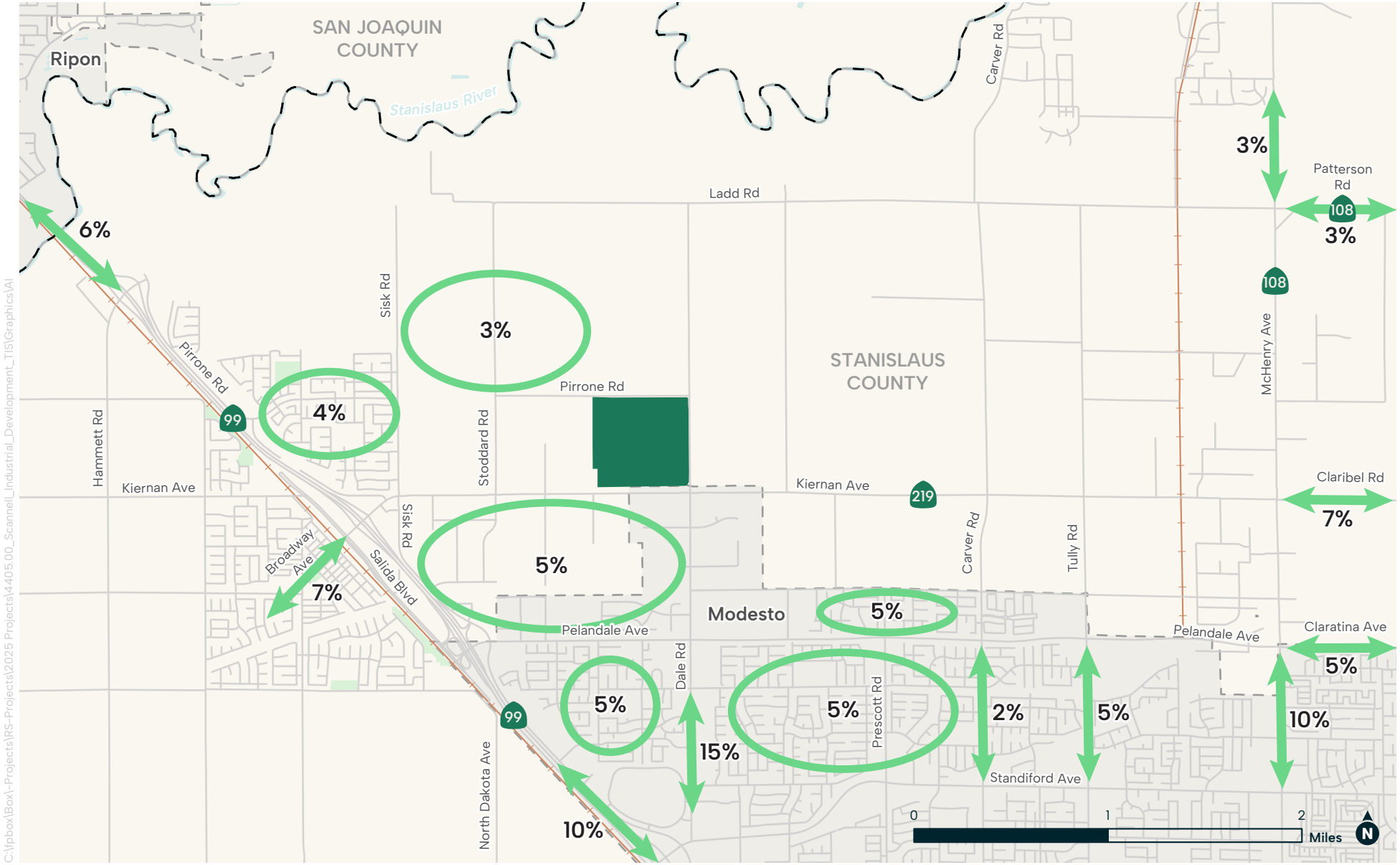


FIGURE 6

Existing Project Trip Distribution – Retail Land Uses

Fehr & Peers

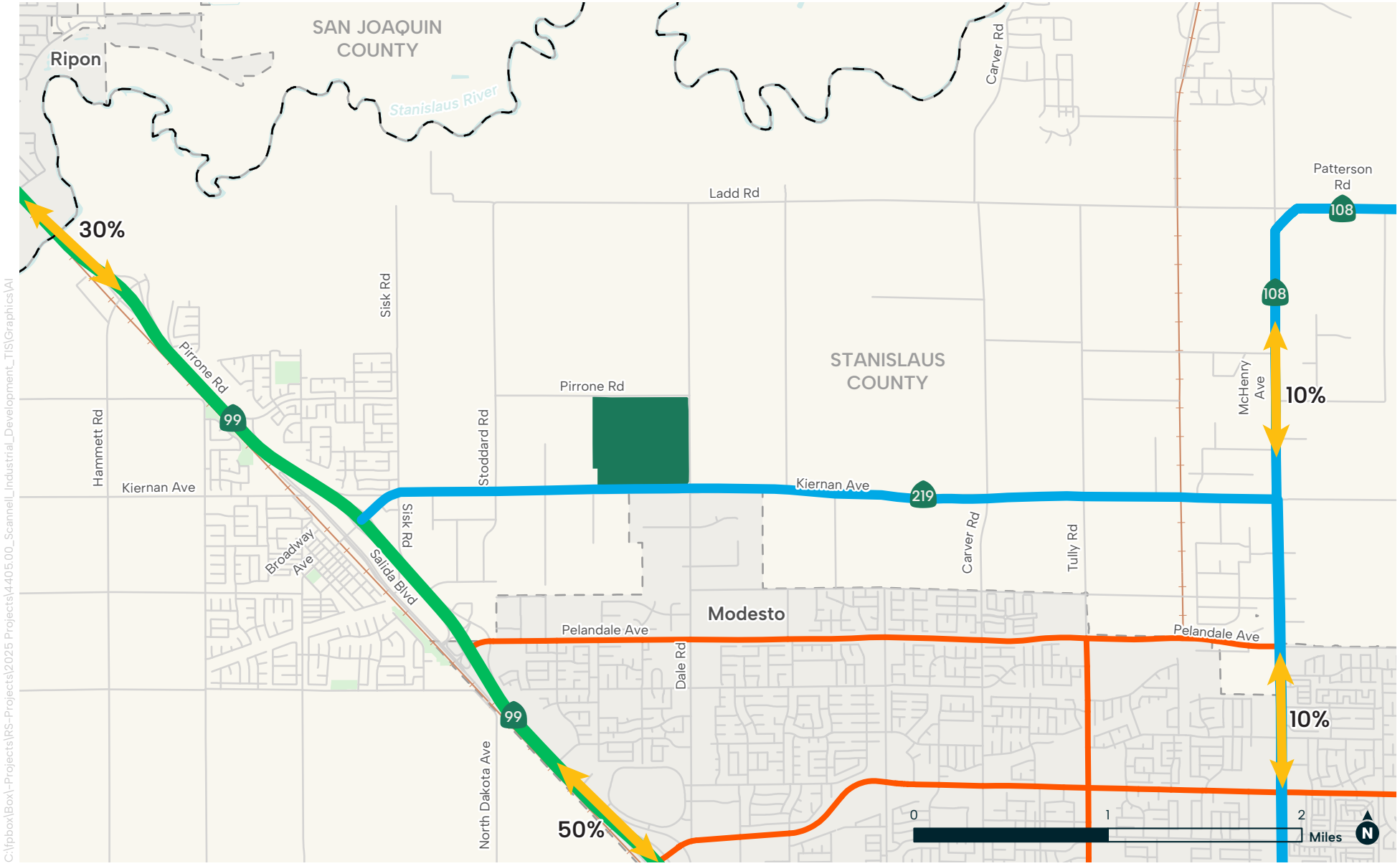


FIGURE 7

Existing Project Trip Distribution – Trucks

Fehr & Peers

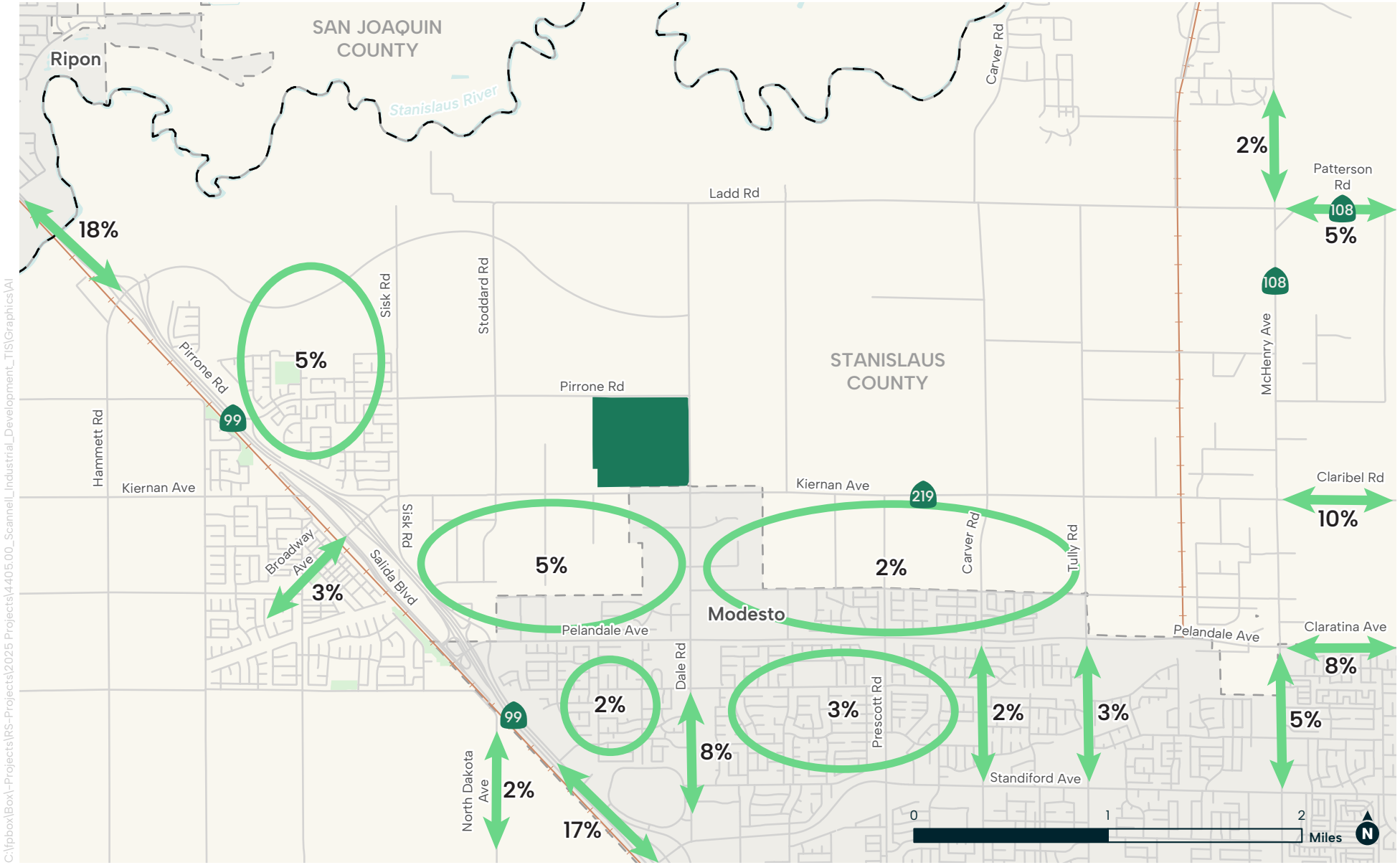


FIGURE 8

Cumulative Project Trip Distribution – Industrial Land Uses

Fehr & Peers

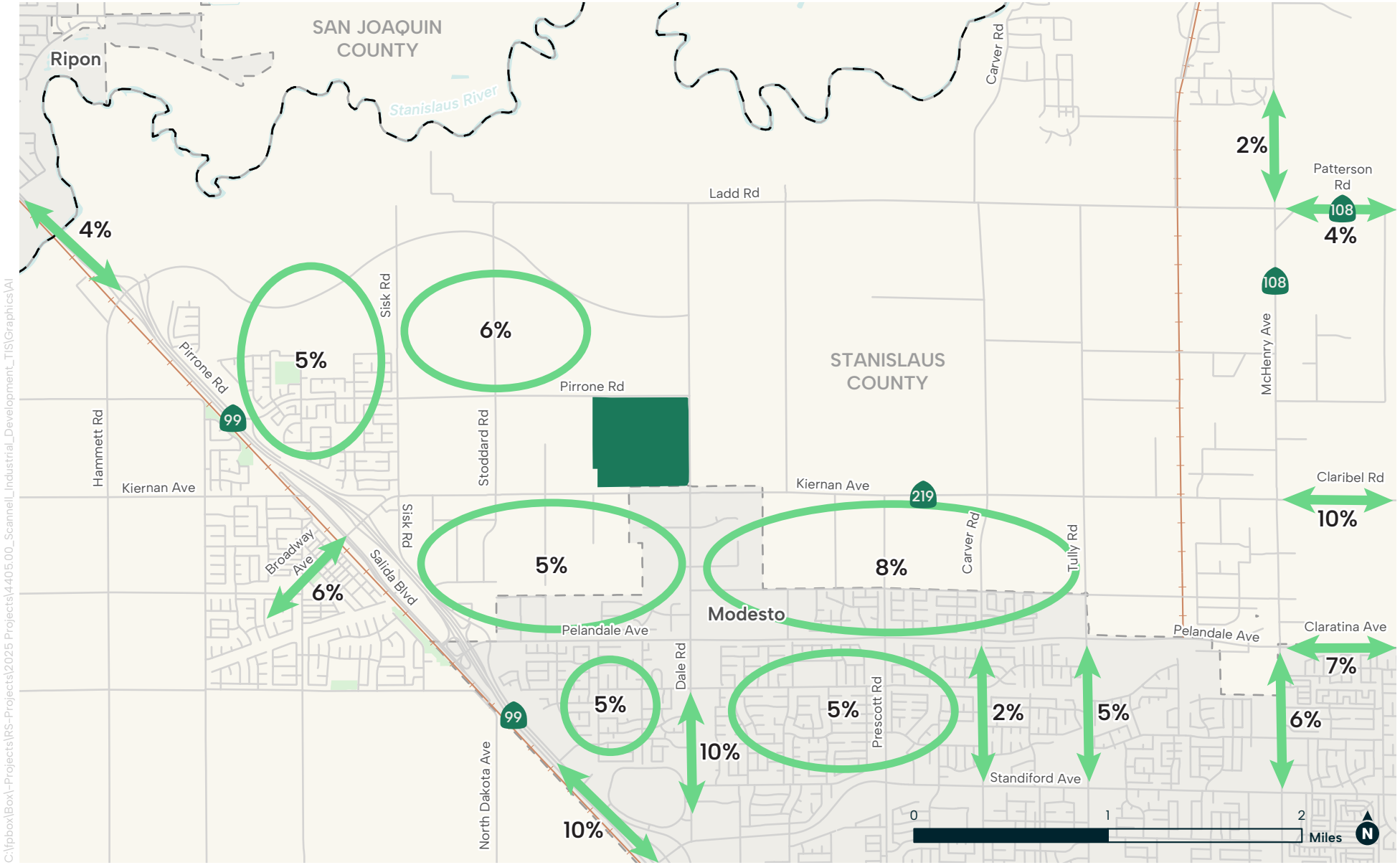


FIGURE 9

Cumulative Project Trip Distribution – Retail Land Uses

Fehr & Peers

- **Pirrone Road extension** between Stoddard Road and Sisk Road (classified as a minor arterial, four-lane wide cross-section)
- **Hammett Road extension** between SR 99 and Dale Road (classified as a minor arterial, four-lane wide cross-section)
- **Prescott Road** extension between Pelandale Avenue and Kiernan Avenue (SR 219, classified as a minor arterial, four-lane wide cross-section)

These improvements are assumed to be constructed by others by the year 2050.

Project Trip Assignment

Trip assignment is the process of determining the specific routes that vehicles will take on the transportation network, based on estimated trip generation and trip distribution. Trip assignment is expected to change under cumulative conditions due to planned roadway improvements described above. These planned improvements by others are expected to alter travel routes for trips that originate from or are destined for the Salida community, neighborhoods south Kiernan Avenue (SR 219), or areas north of Stanislaus County via SR 99. The Project trip assignment under existing conditions is shown in **Figure 10** and in **Figure 11** for cumulative conditions. The trip assignment shown in the figures below accounts for the pass-by trip adjustments due to the pass-by trips generated by the retail uses.

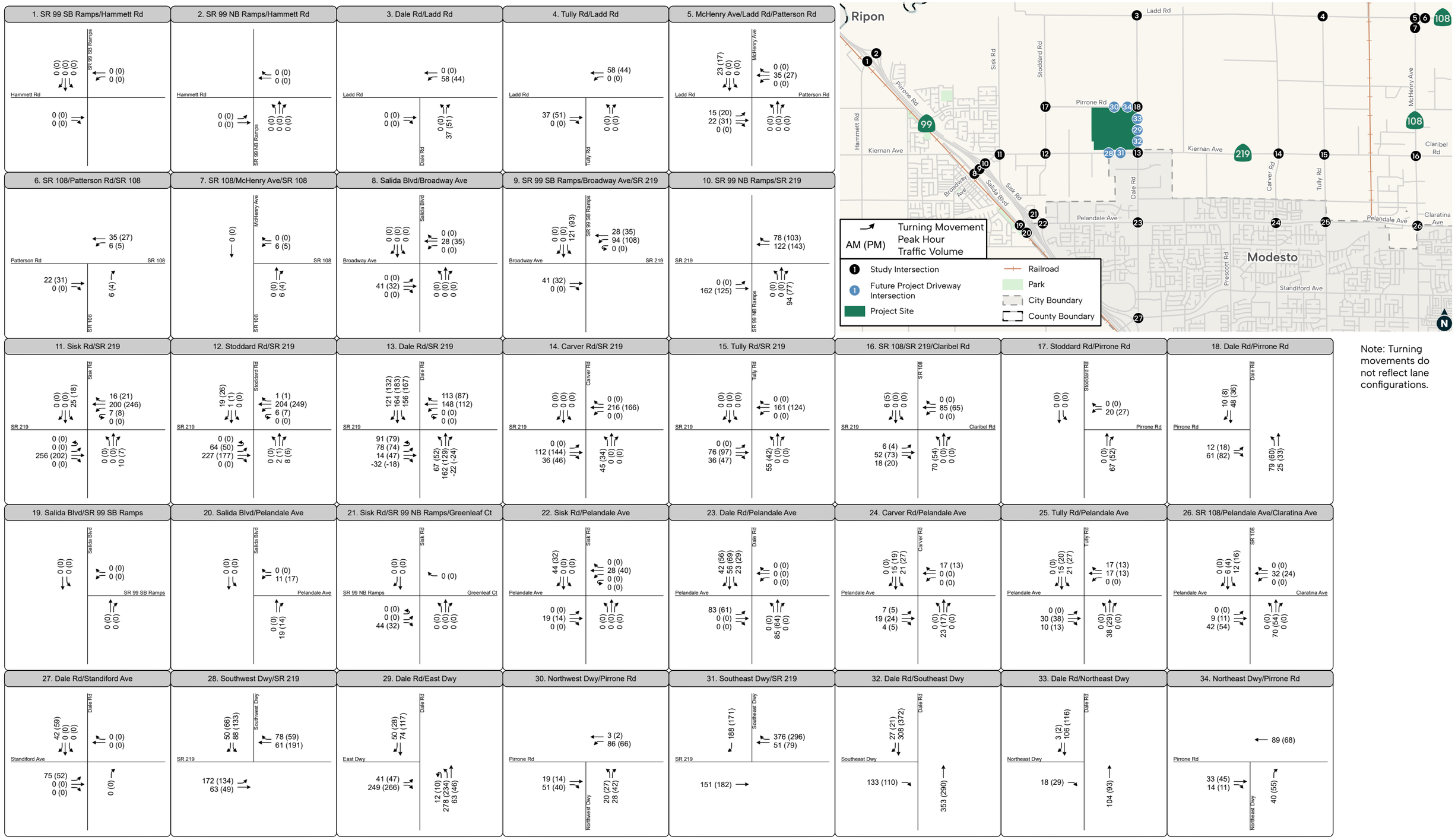
The estimated Project trip assignment along roadway segments in the vicinity of the project site are summarized in **Table 7** for Existing Plus Project and Cumulative Plus Project conditions.

Table 7. Average Daily Traffic & Project Trip Assignment

Segment	Existing Volumes[1]		Existing Project Trip Assignment		Cumulative Project Trip Assignment	
	ADT	Heavy Truck %[2]	Net-New Trips[3]	Heavy Truck %[2]	Net-New Trips[3]	Heavy Truck %[2]
Kiernan Ave (SR 219) between Quinturn Ln & Dale Rd	30,610	2.2%	6,815	16.2%	5,869	18.8%
Kiernan Ave (SR 219) between Dale Rd & American Ave	27,140	2.2%	3,362	8.8%	3,147	9.4%
Dale Rd between Kiernan Ave (SR 219) & Pirrone Rd	5,680	0.1%	6,217	8.9%	5,931	9.4%
Dale Rd between Kiernan Ave (SR 219) & Healthcare Wy	18,430	0.4%	2,857	0%	2,792	0%

Notes:
1. Based on roadway count data collected May 20 and 21, 2025.
2. Heavy-duty trucks are defined as three or more axle-vehicles
3. Represents daily net-new external trip assignment generated by the project (see Table 5).

Source: Fehr & Peers, 2026.



Note: Turning movements do not reflect lane configurations.

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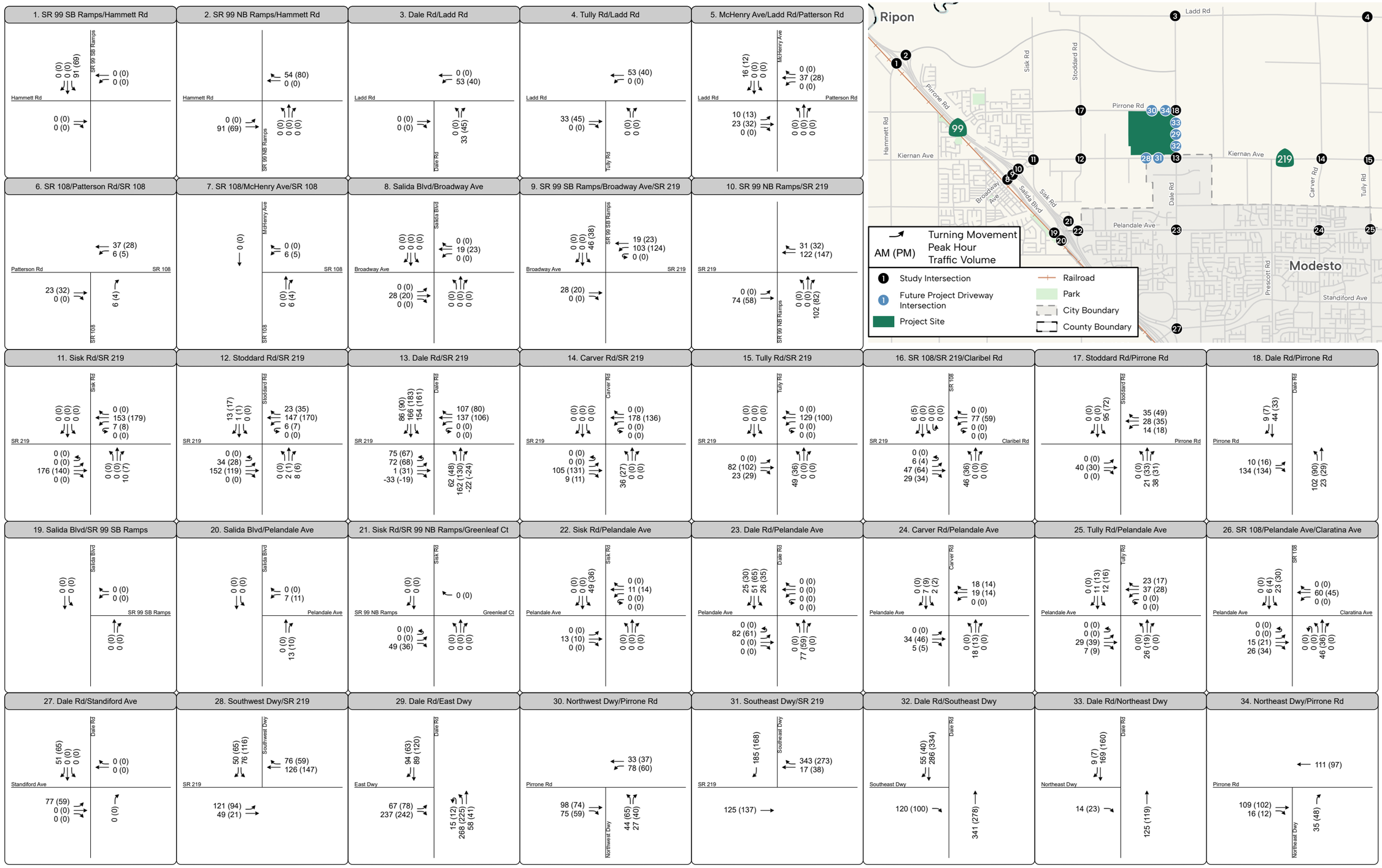
FIGURE 10

Project Trip Assignment with Pass-By Trip Adjustments – Existing Conditions

Fehr & Peers



Note: Turning movements do not reflect lane configurations.

FIGURE 11

Project Trip Assignment with Pass-By Trip Adjustments – Cumulative Conditions

Fehr & Peers

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Existing Plus Project Vehicle Queues

The lane configurations and Existing Plus Project AM and PM peak hour volumes at each intersection evaluated for queuing impacts, in addition to all other study intersections evaluated in the separate non-CEQA LTA report, are shown in **Figure 12**.

Table 8 presents the 95th percentile queue summary for off-ramp movements and study-intersection turning movements along the SHS that would experience project-added trips. Off-ramps and turning movements without project-added trips are not reported. As shown in **Table 8**, the following movements experience 95th percentile queue lengths that exceed the available storage length under Existing Plus Project AM and/or PM peak hour conditions:

- **Dale Road/Kiernan Avenue (SR 219, #13)**: 95th percentile queues exceed the EB left-turn storage length during the AM and PM peak hours
- **McHenry Avenue (SR 108)/Kiernan Avenue (SR 219)/Claribel Road (#16)**: 95th percentile queues exceed the NB left-turn storage length during the AM and PM peak hours
- **Pelandale Avenue/McHenry Avenue (SR 108, #26)**: 95th percentile queues exceed the SB left-turn storage length during the PM peak hour
- **Southwest Driveway/Kiernan Avenue (SR 219, #28)**: 95th percentile queues exceed the EB left-turn storage length during the AM and PM peak hours

The proposed Southwest Driveway/Kiernan Avenue (SR 219) intersection improvements assume a 300 foot storage length for the EB left-turn lane. However, the 95th percentile queues are expected to exceed this storage length not because of limited storage capacity or high EB left-turn volumes at the driveway itself, but due to operational deficiencies introduced by the project at the Dale Road/Kiernan Avenue (SR 219) intersection. These operational deficiencies result in extended maximum EB queues along Kiernan Avenue that propagate upstream, consequently affecting operations at the Southwest Driveway. Capacity improvements at the Dale Road/Kiernan Avenue (SR 219) intersection are expected to alleviate these spillbacks, thereby improving queuing and reducing delay at the nearby Southwest Driveway intersection.

Detailed intersection analysis worksheets are provided in **Appendix B**.

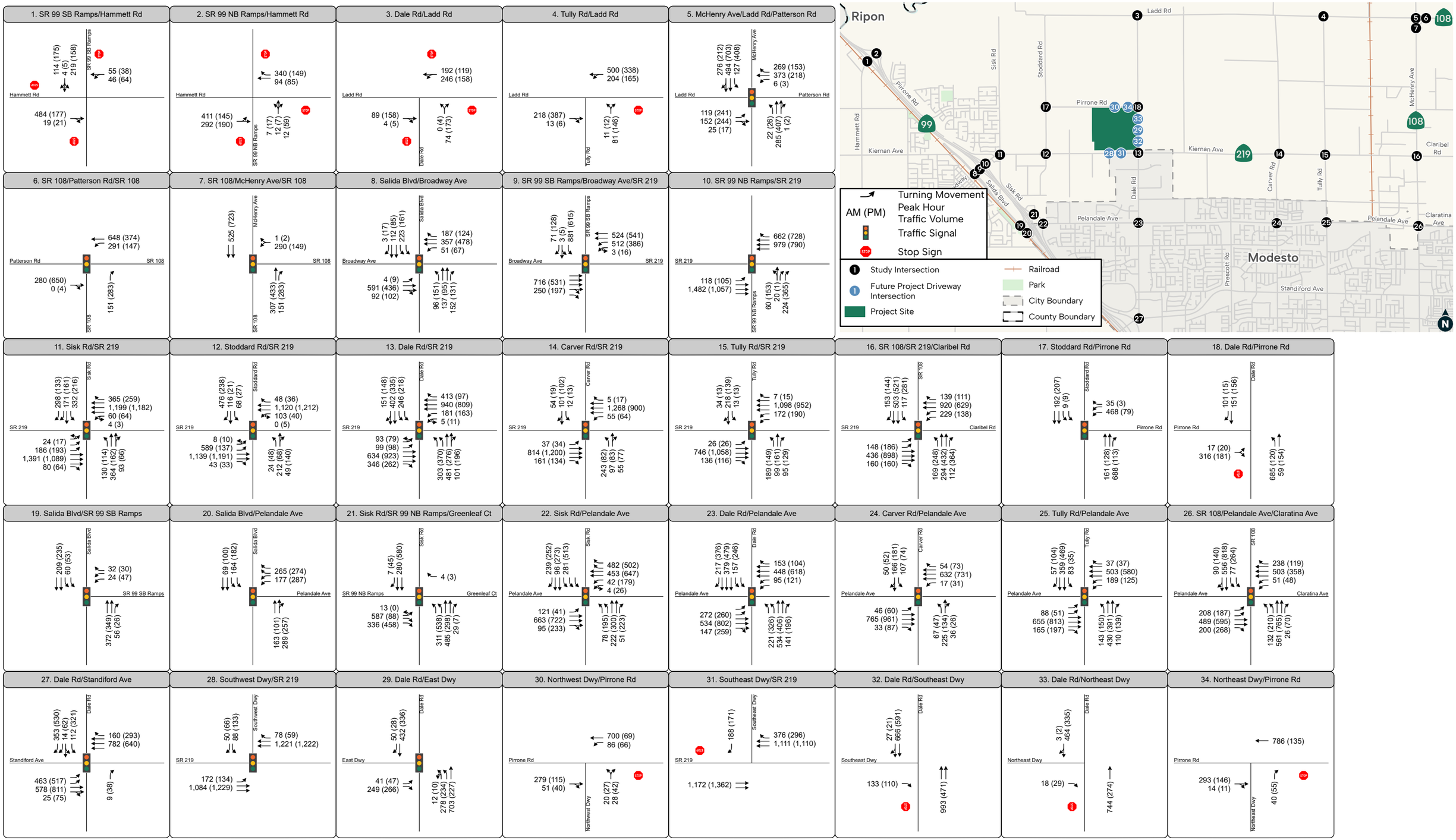

FIGURE 12

Intersection Lane Configurations, Traffic Controls & Peak Hour Volumes – Existing Plus Project Conditions

Fehr & Peers

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Table 8. 95th Percentile Queue Length Summary – Existing Plus Project Conditions

ID	Intersection	Lead Agency	Movement[1]	Storage Length (ft)	Existing 95th Percentile Queue Length (ft)		Existing Plus Project 95th Percentile Queue Length (ft)		Significant Impact?
					AM	PM	AM	PM	
6.	Patterson Rd/SR 108	Caltrans	WBL	525	124	99	137	112	No
7.	McHenry Ave/SR 108	Caltrans	NBR	460	--	--	--	--	No
9.	SR 99 SB Ramps/ Kiernan Ave (SR 219)	Caltrans	Off-Ramp	1,120	363	235	428	260	No
10.	SR 99 NB Ramps/ Kiernan Ave (SR 219)	Caltrans	Off-Ramp	1,260	114	172	121	168	No
11.	Sisk Rd/ Kiernan Ave (SR 219)	Caltrans	WBR	525	170	102	150	110	No
			WBL	735	105	99	103	105	No
12.	Stoddard Rd/ Kiernan Ave (SR 219)	Caltrans	EBL	1,000	339	90	380	115	No
			WBL	620	150	65	134	82	No
			WBR	640	60	32	51	34	No
13.	Dale Rd/ Kiernan Ave (SR 219)	Caltrans	EBL	555	54	55	**841**	**790**	**Yes**
			EBR	700	302	153	181	130	No
14.	Carver Rd/ Kiernan Ave (SR 219)	Caltrans	EBR	580	69	52	70	62	No
15.	Tully Rd/ Kiernan Ave (SR 219)	Caltrans	EBR	355	74	53	92	70	No
16.	McHenry Ave (SR 108) /Kiernan Ave (SR 219)	Caltrans	EBL	765	120	132	124	140	No
			EBR	650	92	74	112	87	No
			SBR	535	95	80	105	87	No
			NBL	140	**160**	**244**	**229**	**263**	**Yes**
21.	Sisk Rd/ SR 99 NB Ramps	Caltrans	Off-Ramp	1,475	422	111	547	117	No

ID	Intersection	Lead Agency	Movement[1]	Storage Length (ft)	Existing 95th Percentile Queue Length (ft)		Existing Plus Project 95th Percentile Queue Length (ft)		Significant Impact?
					AM	PM	AM	PM	
26.	Pelandale Ave/ McHenry Ave (SR 108)	Caltrans	SBL	175	137	**346**	137	**348**	No
28.	Southwest Dwy/ Kiernan Ave (SR 219)	Caltrans	EBL	300	--	--	**430**	**327**	**Yes**
			WBR	500	--	--	46	43	No
--	SR 99 NB Ramps/ Beckwith Rd/ Standiford Ave	Caltrans	Off-Ramp	1,025	146	319	302	766	No

Notes: **Bold** font denotes movements where storage length is exceeded.

1. EB = eastbound; WB = westbound; NB = northbound; SB = southbound; L= left-turn; T = through; R = right-turn

Source: Fehr & Peers, 2026.

4. Cumulative Setting

This chapter describes the cumulative setting, which is a CEQA-required scenario that considers reasonably and foreseeable land developments and transportation improvements.

Land Use Assumptions

Data from the *2022 RTP/SCS* model indicates a reasonable growth rate (generally 1.0% or less per year) in jobs and households in Stanislaus County, the City of Modesto, and the combined total of Modesto, Ceres, and Salida shown in **Table 9** below. Traffic volume growth is driven by jobs and household growth.

Table 9. Per Year Growth Rates by Location

Location	Average Annual % Growth Rates between 2019 and 2046	
	Jobs	Households
All Stanislaus County	0.99%	0.87%
City of Modesto Only	1.00%	0.89%
Modesto, Ceres, and Salida	0.99%	0.88%

Source: StanCOG *2022 RTP/SCS* Travel Demand Model; Fehr & Peers, 2026.

As shown in **Table 9**, the *2022 RTP/SCS* model assumes average annual growth of approximately 1.0% for jobs and 0.9% for households from 2019 to 2046. As discussed in the Traffic Forecasts section, a 1.0% annual growth rate was applied to existing traffic volumes to estimate cumulative traffic volumes, reflecting the factors described above. This 1.0% per year traffic growth rate is considered conservative, given regional peak-hour freeway congestion that constrains volume growth in the study area. The assumed annual traffic growth rate is consistent with the annual job and household growth rates in the *2022 RTP/SCS* model.

Network Assumptions

The *2022 Regional Transportation Plan/Sustainable Communities Strategy* (StanGOG, 2022) and the *Stanislaus County Comprehensive Public Facilities Impact Fee Update Study* (Stanislaus County, July 2020) identify cumulative roadway improvements that are reasonably expected to be funded and implemented in the foreseeable future. In addition, the *City of Modesto General Plan* (City of Modesto, 2019), the *Kiernan Business Park Specific Plan* (City of Modesto, 2022) and the *Salida Community Plan* (Stanislaus County, 2007) were reviewed to identify specific roadway projects anticipated to be in place by the cumulative year 2050. The following cumulative roadway improvements are assumed to be in place in the study area under cumulative conditions for development of traffic volume forecasts:

- Reconstruct SR 99/Hammett Road interchange with traffic signal controls at both ramp-terminal intersections
- New four-lane east-west arterial from Hammett Road at SR 99 to Dale Road
- Widen Dale Road to six-lanes between Pelandale Avenue and Kiernan Avenue (SR 219)
- Extend four-lane Pirrone Road from Stoddard Road to Sisk Road

- Widen Kiernan Avenue (SR 219) to six-lanes between SR 99 and McHenry Avenue (SR 108)

The network assumptions listed above have the greatest influence on peak hour traffic volume forecasts and study intersection lane configurations within the study area. Cumulative conditions study intersection lane configurations and traffic control assumptions are shown in **Figure 13** for all study intersections evaluated as part of the separate non-CEQA LTA report.

Although the City of Modesto is currently underway with the PA/ED phase of the Beckwith/Standiford Multimodal Safety and Complete Streets Improvement Project, the improvements under consideration for that project were not assumed to be constructed by the year 2050. Instead, the interchange and the nearby Dale Road/Standiford Avenue intersection lane configurations were assumed to remain consistent with existing conditions based on input from City of Modesto staff.

Traffic Forecasts

The StanCOG *2022 RTP/SCS* model was used to develop VMT and trip distribution estimates for the project because it was validated for regional daily VMT during the *2022 RTP/SCS* model development. However, the model was not statically validated for AM or PM peak hour volumes. As a result, the City of Modesto and Caltrans District 10 collaboratively determined that the StanCOG model alone was not suitable for developing year 2050 peak hour forecasts for the Beckwith/Standiford Multimodal Safety and Complete Streets Improvement Project area, which lies within the Scannell Industrial Project study area. Specifically, Caltrans District 10 staff determined that use of the traditional "difference method" would yield unreasonable forecasts at the turning movement level.

Instead, the consultant team for the Beckwith/Standiford Multimodal Safety and Complete Streets Improvement Project developed year 2050 peak hour forecasts using a hybrid approach that combined: (1) straight-line growth rates based on *2022 RTP/SCS* model land use data, and (2) an off-model traffic volume redistribution process using Visum. This approach was approved by Caltrans District 10 during the Beckwith/Standiford project's Project Approval/Environmental Document (PA/ED) phase and was subsequently applied to develop year 2050 traffic volume forecasts for the Scannell Industrial Project study area.

For the Cumulative (Year 2050) No Project scenario, a straight-line annual growth rate of 1.0%, based on *2022 RTP/SCS* model land use data, was applied to existing conditions volumes to develop the AM and PM peak hour intersection turning movement forecasts. Caltrans District 10 rounding standards were also applied in the forecasting process.

The growth rate method estimated Cumulative (Year 2050) No Project traffic demands by applying a linear growth rate to the approved existing traffic volumes. For a given intersection turning movement volumet, the forecasting procedure was calculated as follows:

- Cumulative (Year 2050) No Project Forecast = Existing Volume + (Existing Volume * Annual 1.0 % Growth Rate * (2050 – 2025))

Most existing conditions intersection counts were collected in May 2025; however, some study intersections were counted in May 2024. The Cumulative (Year 2050) No Project forecast estimates were adjusted accordingly based on whether the base-year data was collected in 2024 or 2025.

The Visum software package was used to estimate shifts in traffic volume patterns within the study area resulting from new roadway extensions assumed under cumulative conditions, such as the Hammett Road extension from SR 99 to Dale Road and the Pirrone Road extension from Stoddard Road to Sisk Road. While the total overall travel demand in the study area remains constant, travel patterns shift in response to the availability of the new roadway connections.

The Visum model reassignment process incorporated the following parameters and procedure:

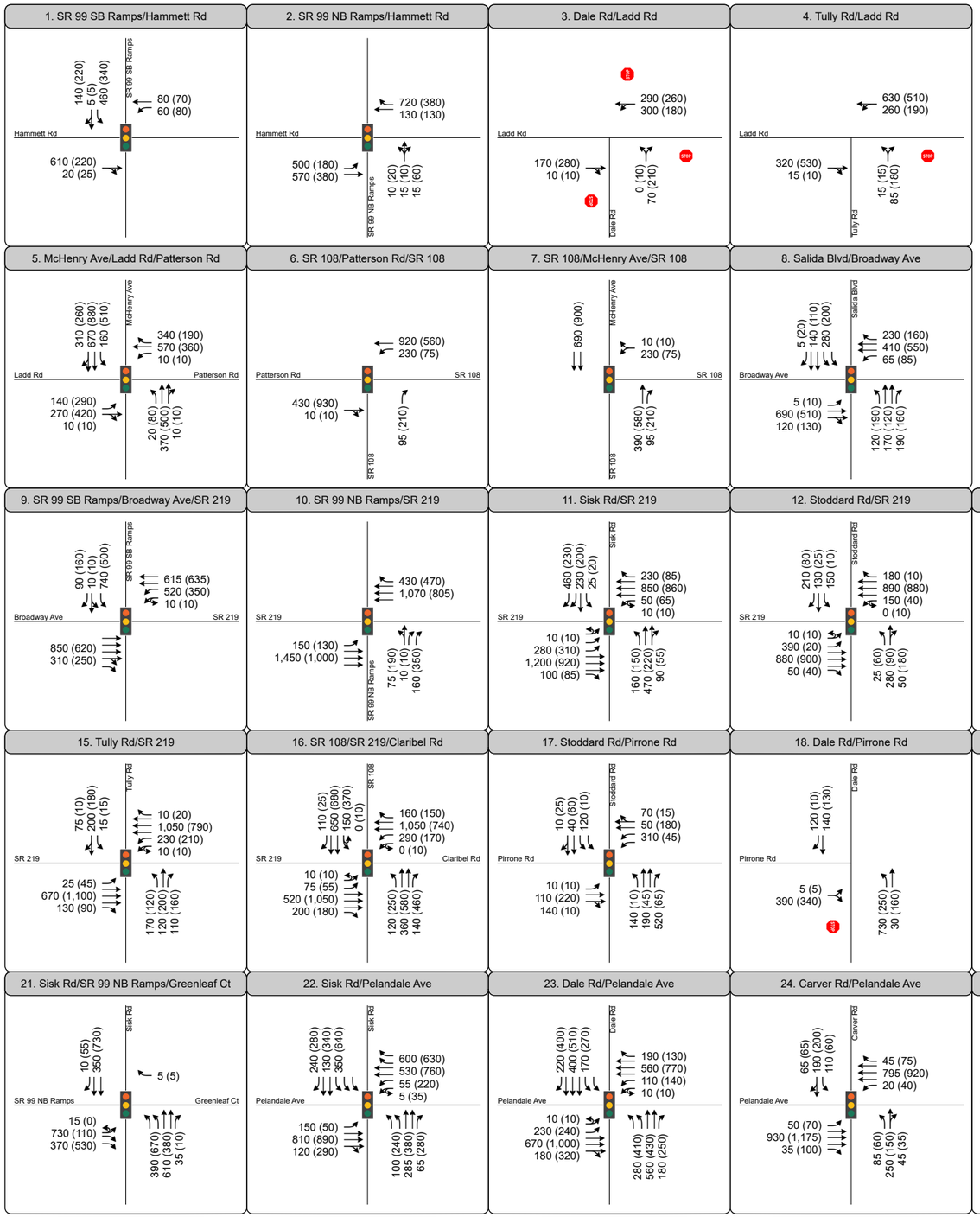
A. Visum model built to reflect the existing conditions with respect to distances between intersections and speed limits
B. Existing conditions turning movement volumes were converted to origin-destination pattern matrix using StreetLight Data origin-destination information as a seed into the matrix estimation process. Note that the existing conditions study area network is a 1:1 network, meaning that there is only one possible path for every origin-destination pair in the study area.
C. Cumulative (Year 2050) No Project turning movement volumes (developed using travel demand model land use growth rates as described above) converted to an origin-destination pattern matrix using the existing conditions origin-destination pattern matrix as a seed.
D. Visum model modified to reflect Hammett Road and Pirrone Road extensions
E. Cumulative (Year 2050) No Project turning movement forecasts were adjusted by reassigning the origin-destination pattern matrix, considering the following presumptions:
    - Routing choices based on uncongested travel times (leads to better representation of preferred travel routes)
    - Overall demand at network edges must remain constant
    - When using uncongested travel times for reassignment, the changes in travel paths between weekday AM and PM peak hours should be constant

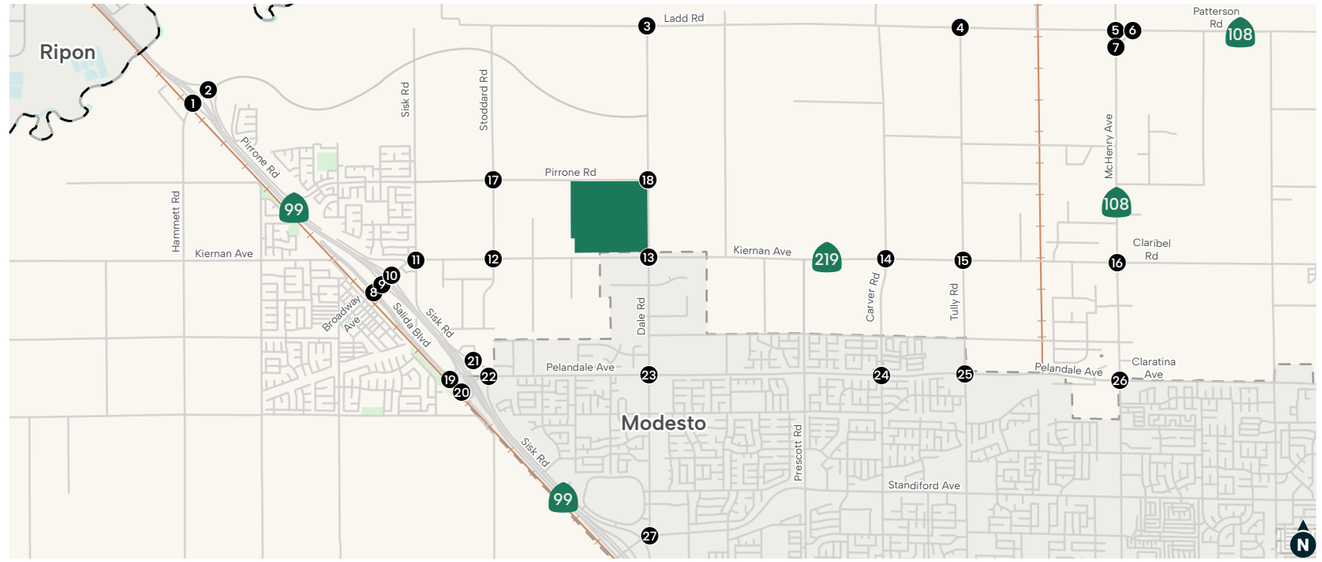
As a final manual check, the adjusted cumulative-conditions turning-movement volumes were reviewed at the network edges to ensure volume consistency resulting from the reassignment process. Cumulative conditions AM and PM peak hour intersection turning movement forecasts are shown in **Figure 13** for all study intersections evaluated as part of the separate LTA report.

The off-model traffic volume redistribution methodology using Visum was approved by Caltrans District 10 for use on the Beckwith/Standiford Multimodal Safety and Complete Streets Improvement Project during the PA/ED phase and is therefore appropriate for estimating year 2050 cumulative forecasts for the Scannell Industrial Project, given that many of the study intersections evaluated in this CEQA TIA and the separate non-CEQA LTA report fall within Caltrans jurisdiction.

The forecasts shown in **Figure 13** support the evaluation of intersection queuing assessment for this CEQA TIA as well as intersection LOS for the separate non-CEQA LTA report. As previously noted, Senate Bill 743 prohibits the use of automobile delay and LOS as performance measures for determining transportation impacts under CEQA. Therefore, the Cumulative intersection LOS and analysis is documented in the separate LTA report.

As shown in **Table 10**, considerable background traffic growth is expected on Kiernan Avenue (SR 219) west of Dale Road and along Dale Road in the vicinity of the project site.





Turning Movement
AM (PM) Peak Hour Traffic Volume
Traffic Signal
Stop Sign
Study Intersection
Project Site
Railroad
Park
City Boundary
County Boundary

FIGURE 13

Intersection Lane Configurations, Traffic Controls & Peak Hour Volumes Cumulative Conditions

Fehr & Peers

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Table 10. Cumulative No Project Average Daily Traffic Forecasts

Segment	Existing ADT[1]	Cumulative No Project ADT	Cumulative Growth
Kiernan Ave (SR 219) between Quinturn Ln & Dale Rd	30,610	33,800	3,190 (10%)
Kiernan Ave (SR 219) between Dale Rd & American Ave	27,140	33,530	6,390 (24%)
Dale Rd between Kiernan Ave (SR 219) & Pirrone Rd	5,680	9,200	3,520 (62%)
Dale Rd between Kiernan Ave (SR 219) & Healthcare Wy	18,430	23,380	4,950 (27%)

Notes:
1. Based on roadway count data collected May 20 and 21, 2025.
2. Cumulative growth displayed as: total growth (percent growth).

Source: Fehr & Peers, 2026.

Cumulative No Project Vehicle Queues

The lane configurations and Cumulative No Project AM and PM peak hour volumes at each intersection evaluated for queuing impacts, in addition to all other study intersections evaluated in the separate non-CEQA LTA report, are shown in **Figure 13**.

Table 11 presents the 95th percentile queue summary for off-ramp movements and study-intersection turning movements along the SHS that would experience project-added trips. Off-ramps and turning movements without project-added trips are not reported. As shown in **Table 11**, the following movements experience 95th percentile queue lengths that exceed the available storage length under Cumulative No Project AM and/or PM peak hour conditions:

- **Patterson Road/SR 108 (#6)**: 95th percentile queues exceed the WB left-turn storage length during the AM peak hour
- **McHenry Avenue (SR 108)/Kiernan Avenue (SR 219)/Claribel Road (#16)**: 95th percentile queues exceed the NB left-turn storage length during the AM and PM peak hours
- **SR 99 NB Off-Ramp at Sisk Road (#21)**: 95th percentile queues exceed the SR 99 NB off-ramp storage length during the AM peak hour.
- **Pelandale Avenue/McHenry Avenue (SR 108, #26)**: 95th percentile queues exceed the SB left-turn storage length during the AM and PM peak hours
- **SR 99 NB Off-Ramp at Beckwith Road-Standiford Avenue**: 95th percentile queues exceed the SR 99 NB off-ramp storage length during the PM peak hour

Detailed intersection analysis worksheets are provided in **Appendix C**.

Table 11. 95th Percentile Queue Length Summary – Cumulative No Project Conditions

ID	Intersection	Lead Agency	Movement[1]	Storage Length (ft)	Existing 95th Percentile Queue Length (ft)		Cumulative No Project 95th Percentile Queue Length (ft)	
					AM	PM	AM	PM
1.	SR 99 SB Ramps/Hammett Rd	Caltrans	Off-Ramp	1,400	716	103	499	316
2.	SR 99 NB Ramps/Hammett Rd	Caltrans	Off-Ramp	1,300	39	51	79	100
6.	Patterson Rd/SR 108	Caltrans	WBL	525	124	99	**921**	108
7.	McHenry Ave/SR 108	Caltrans	NBR	460	--	--	-	-
9.	SR 99 SB Ramps/ Kiernan Ave (SR 219)	Caltrans	Off-Ramp	1,120	363	235	318	221
10.	SR 99 NB Ramps/ Kiernan Ave (SR 219)	Caltrans	Off-Ramp	1,260	114	172	115	206
11.	Sisk Rd/ Kiernan Ave (SR 219)	Caltrans	WBR	525	170	102	349	68
			WBL	735	105	99	14	123
12.	Stoddard Rd/ Kiernan Ave (SR 219)	Caltrans	EBL	1,000	339	90	272	40
			WBL	620	150	65	34	9
			WBR	640	60	32	167	16
13.	Dale Rd/ Kiernan Ave (SR 219)	Caltrans	WBR[2]	500	--	--	396	183
			EBL	555	54	55	396	183
			EBR	700	302	153	38	33
14.	Carver Rd/ Kiernan Ave (SR 219)	Caltrans	EBR	580	69	52	71	59
15.	Tully Rd/ Kiernan Ave (SR 219)	Caltrans	EBR	355	74	53	90	68
16.	McHenry Ave (SR 108) /Kiernan Ave (SR 219)	Caltrans	EBL	765	120	132	88	65
			EBR	650	92	74	151	126
			SBR	535	95	80	91	32

ID	Intersection	Lead Agency	Movement[1]	Storage Length (ft)	Existing 95th Percentile Queue Length (ft)		Cumulative No Project 95th Percentile Queue Length (ft)	
					AM	PM	AM	PM
			NBL	140	**160**	**244**	**195**	**260**
21.	Sisk Rd/ SR 99 NB Ramps	Caltrans	Off-Ramp	1,475	422	111	**3,153**	152
26.	Pelandale Ave/ McHenry Ave (SR 108)	Caltrans	SBL	175	137	**346**	**227**	**372**
--	SR 99 NB Ramps/ Beckwith Rd/ Standiford Ave	Caltrans	Off-Ramp	1,025	146	319	715	**1,368**

Notes: **Bold** font denotes movements where storage length is exceeded.

1. EB = eastbound; WB = westbound; NB = northbound; SB = southbound; L= left-turn; T = through; R = right-turn
2. WB right-turn lane with 500 ft storage assumed to be implemented under cumulative conditions given the planned Kiernan Avenue (SR 219) widening improvements documented in the 2022 RTP/SCS project list.

Source: Fehr & Peers, 2026.

5. Cumulative Plus Project Conditions

This chapter describes the project's expected travel characteristics under cumulative plus croject conditions. It also presents the estimated number of daily trips the surrounding roadways would carry under this scenario.

Network Assumptions & Traffic Forecasts

The roadway network and intersection lane configurations under Cumulative Plus Project conditions are expected to remain the same as Cumulative No Project conditions with the exception of the seven new driveway intersections proposed by the project. Project site access is proposed via the following seven driveways:

- Two driveways on Kiernan Avenue (SR 219), including a signalized full-access western driveway and one unsignalized side-street-stop-controlled right-turn in and right-turn out access only eastern driveway
- Three driveways on Dale Road, the central driveway is proposed as a signalized full-access driveway, while the northern and southern driveways are unsignalized side-street-stop-controlled driveways limited to right-turn in and right-turn out access only
- Two unsignalized driveways on Pirrone Road, including a full-access side-street-stop-controlled western driveway and one side-street-stop-controlled right-turn in and right-turn out access only eastern driveway

The cumulative project trip assignment shown in **Figure 11** was added to the Cumulative No Project turning movement volumes shown in **Figure 13** to estimate the Cumulative Plus Project AM and PM peak hour turning movement forecasts shown in **Figure 14**. The Cumulative Plus Project forecasts shown in **Figure 14** support the evaluation of intersection queuing summarized in this CEQA TIA and intersection LOS evaluated as part of the separate non-CEQA LTA report. As previously noted, Senate Bill 743 prohibits the use of automobile delay and LOS as performance measures for determining transportation impacts under CEQA. Therefore, the intersection LOS evaluation is documented in the separate non-CEQA LTA report.

Table 12 summarizes the resulting Cumulative Plus Project ADT forecasts for roadway segments in the vicinity of the project site.

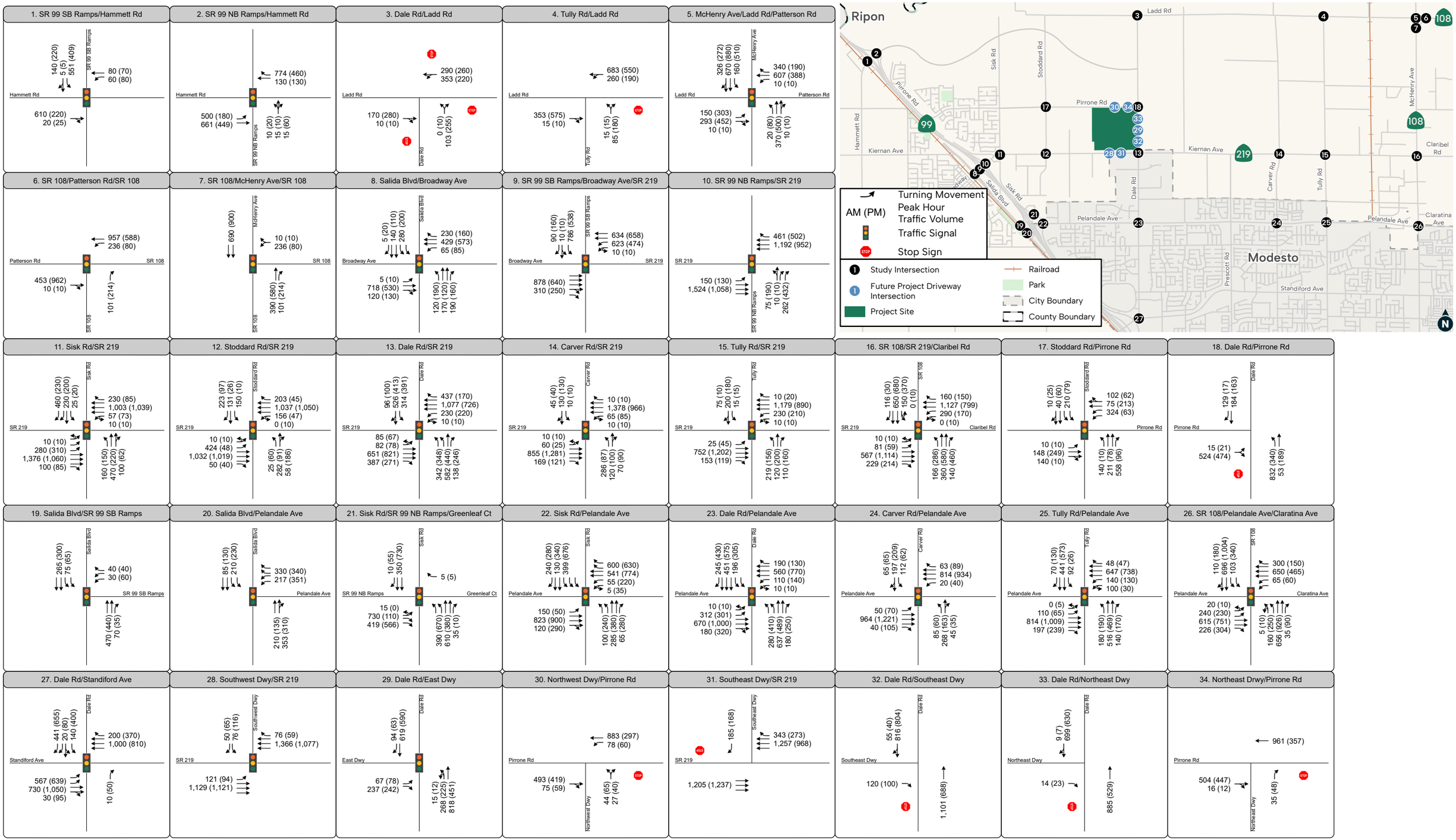

FIGURE 14

Intersection Lane Configurations, Traffic Controls & Peak Hour Volumes – Cumulative Plus Project Conditions

Fehr & Peers

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Table 12. Cumulative Plus Project Average Daily Traffic Forecasts

Segment	Cumulative No Project ADT[1]	Cumulative Project Trip Assignment[1]	Cumulative Plus Project ADT[1]
Kiernan Ave (SR 219) between Quinturn Ln & Dale Rd	33,800 (2.2%)	5,869 (18.8%)	39,669 (4.6%)
Kiernan Ave (SR 219) between Dale Rd & American Ave	33,530 (2.2%)	3,147 (9.4%)	36,677 (2.8%)
Dale Rd between Kiernan Ave (SR 219) & Pirrone Rd	9,200 (0.1%)	5,931 (9.4%)	15,131 (3.7%)
Dale Rd between Kiernan Ave (SR 219) & Healthcare Wy	23,380 (0.4%)	2,792 (0%)	26,172 (0.3%)

Notes:
1. Information displayed as total ADT (heavy-duty truck percentage).

Source: Fehr & Peers, 2026.

Cumulative Plus Project Vehicle Queues

The lane configurations and Cumulative No Project AM and PM peak hour volumes at each intersection evaluated for queuing impacts, in addition to all other study intersections evaluated in the separate non-CEQA LTA report, are shown in **Figure 14**.

Table 13 presents the 95th percentile queue summary for off-ramp movements and study-intersection turning movements along the SHS that would experience project-added trips. Off-ramps and turning movements without project-added trips are not reported. As shown in **Table 13**, the following movements experience 95th percentile queue lengths that exceed the available storage length under Cumulative Plus Project AM and/or PM peak hour conditions:

- **Patterson Road/SR 108 (#6)**: 95th percentile queues exceed the WB left-turn storage length during the AM peak hour
- **McHenry Avenue (SR 108)/Kiernan Avenue (SR 219)/Claribel Road (#16)**: 95th percentile queues exceed the NB left-turn storage length during the AM and PM peak hours
- **SR 99 NB Off-Ramp at Sisk Road (#21)**: 95th percentile queues exceed the SR 99 NB off-ramp storage length during the AM peak hour.
- **Pelandale Avenue/McHenry Avenue (SR 108, #26)**: 95th percentile queues exceed the SB left-turn storage length during the AM and PM peak hours
- **SR 99 NB Off-Ramp at Beckwith Road-Standiford Avenue**: 95th percentile queues exceed the SR 99 NB off-ramp storage length during the AM and PM peak hours

Detailed intersection analysis worksheets are provided in **Appendix D**.

Table 13. 95th Percentile Queue Length Summary – Cumulative Plus Project Conditions

ID	Intersection	Lead Agency	Movement[1]	Storage Length (ft)	Cumulative No Project 95th Percentile Queue Length (ft)		Cumulative Plus Project 95th Percentile Queue Length (ft)		Project Impact?
					AM	PM	AM	PM	
1.	SR 99 SB Ramps/Hammett Rd	Caltrans	Off-Ramp	1,400	499	316	571	362	No
2.	SR 99 NB Ramps/Hammett Rd	Caltrans	Off-Ramp	1,300	79	100	82	110	No
6.	Patterson Rd/SR 108	Caltrans	WBL	525	**921**	108	**919**	324	No
7.	McHenry Ave/SR 108	Caltrans	NBR	460	-	-	-	-	No
9.	SR 99 SB Ramps/ Kiernan Ave (SR 219)	Caltrans	Off-Ramp	1,120	318	221	335	221	No
10.	SR 99 NB Ramps/ Kiernan Ave (SR 219)	Caltrans	Off-Ramp	1,260	115	206	126	248	No
11.	Sisk Rd/ Kiernan Ave (SR 219)	Caltrans	WBR	525	349	68	146	64	No
			WBL	735	14	123	117	126	No
12.	Stoddard Rd/ Kiernan Ave (SR 219)	Caltrans	EBL	1,000	272	40	304	59	No
			WBL	620	34	9	39	19	No
			WBR	640	167	16	167	38	No
13.	Dale Rd/ Kiernan Ave (SR 219)	Caltrans	WBR[2]	500	396	183	425	148	No
			EBL	555	396	183	**822**	**570**	**Yes**
			EBR	700	38	33	171	101	No
14.	Carver Rd/ Kiernan Ave (SR 219)	Caltrans	EBR	580	71	59	83	63	No
15.	Tully Rd/ Kiernan Ave (SR 219)	Caltrans	EBR	355	90	68	111	77	No
16.	McHenry Ave (SR 108) /Kiernan Ave (SR 219)	Caltrans	EBL	765	88	65	101	72	No
			EBR	650	151	126	184	146	No

ID	Intersection	Lead Agency	Movement[1]	Storage Length (ft)	Cumulative No Project 95th Percentile Queue Length (ft)		Cumulative Plus Project 95th Percentile Queue Length (ft)		Project Impact?
					AM	PM	AM	PM	
			SBR	535	91	32	93	36	No
			NBL	140	**195**	**260**	**231**	**255**	No
21.	Sisk Rd/ SR 99 NB Ramps	Caltrans	Off-Ramp	1,475	**3,153**	152	**3,133**	163	No
26.	Pelandale Ave/ McHenry Ave (SR 108)	Caltrans	SBL	175	**227**	**372**	**219**	**364**	No
28.	Southwest Dwy/ Kiernan Ave (SR 219)	Caltrans	EBL	300	--	--	174	127	No
			WBR	500	--	--	49	45	No
--	SR 99 NB Ramps/ Beckwith Rd/ Standiford Ave	Caltrans	Off-Ramp	1,025	715	**1,368**	**1,287**	**1,299**	**Yes**

Notes: **Bold** font denotes movements where storage length is exceeded.
1. EB = eastbound; WB = westbound; NB = northbound; SB = southbound; L= left-turn; T = through; R = right-turn
Source: Fehr & Peers, 2026.

6. VMT Analysis

This chapter first describes the various methods used to calculate the proposed project's VMT under base year and cumulative conditions. It then presents VMT results for each of the project's land use components.

VMT Defined

VMT is defined as one mile of travel driven by a motorist in a vehicle regardless of the number of occupants or type of engine (e.g., internal combustion engine versus electric). Per the *Technical Advisory*, VMT is expressed on a daily (weekday) basis. Although this simple definition of VMT may be helpful, methodologies recommended by the *Technical Advisory* require a more nuanced approach to calculating and analyzing VMT, which is described in this chapter.

VMT, in and of itself, is not a measure of traffic congestion, though it is used to compare the relative efficiency of multiple land use–transportation planning scenarios.

VMT Analysis Methodologies

The City of Modesto, nor Stanislaus County, have adopted VMT analysis guidelines or significance thresholds for development projects in their jurisdiction. Therefore, technical guidance provided in OPR's *Technical Advisory* was used to guide the VMT analysis prepared the project.

The *Technical Advisory* identifies recommended numeric VMT thresholds for office and retail projects.

- Office projects that would generate vehicle travel exceeding 15 percent below (i.e., greater than 85 percent of) existing regional VMT per employee may indicate a significant transportation impact.
- Retail projects (and other non-residential/non-office projects) that result in a net increase in total VMT may indicate a significant transportation impact.

Although the *Technical Advisory* does not explicitly provide VMT thresholds for industrial uses, the threshold identified for office uses is considered applicable to workers at industrial facilities. Regarding trucks, the *Technical Advisory* notes that CEQA Section 15064 refers specifically to automobiles when addressing VMT. As a result, heavy-duty trucks are excluded from the transportation VMT analysis. However, VMT associated with trucks has been calculated for the analysis of greenhouse gas emissions and is addressed in other sections of the EIR.

The *Technical Advisory* also provides screening thresholds to help determine when a project is likely to result in a less-than-significant transportation impact without requiring a detailed VMT analysis. Of the thresholds provided, only the local-serving retail threshold is applicable to this project. Local-serving retail developments typically shorten trip lengths and reduce overall VMT. The *Technical Advisory* encourages lead agencies to determine whether a project is likely to be local-serving but generally notes that retail developments with stores larger than 50,000 square feet may be considered regional-serving.

Use of Various Travel Demand Models

VMT associated with industrial uses were estimated using both the StanCOG and SJCOG travel demand models, which were last updated for the *2022 RTP/SCS* for each respective county. The SJCOG model is a larger regional model that incorporates land use and network details for San Joaquin, Stanislaus, and Merced counties, whereas the StanCOG model includes land use and network detail only for Stanislaus County.

The SJCOG model was used to calculate VMT for industrial uses because its regional scope allows for a more comprehensive assessment of full trip lengths. The StanCOG model has a 2019 base year, while the SJCOG model has a 2016 base year. Both models have 2046 cumulative year.

Although neither the StanCOG nor the SJCOG *2022 RTP/SCS* models were used to develop cumulative traffic volume forecasts using the traditional "difference method," the use of both models to estimate VMT is appropriate. Both models were validated to regional daily VMT during development of the 2022 RTP/SCS, making them suitable for CEQA evaluation of the RTP/SCS updates as well as for the VMT analysis conducted for the Scannell Industrial Project CEQA TIA.

VMT Analysis under Base Year and Cumulative Conditions

The tables that follow report both base year and cumulative VMT for the industrial project land use component. The base year VMT is derived from the 2019 StanCOG and 2016 SJCOG models. The cumulative VMT is derived from the 2046 StanCOG and SJCOG models.

VMT Calculated Separately for Various Project Land Use Components

VMT is evaluated separately for all land use components (i.e., industrial, retail). This is necessary to determine the significance of project impacts by land use type, and also needed as inputs into other technical areas of the EIR.

Project-Generated Versus Project Effect on VMT

All VMT calculations reported in this study are "project-generated VMT", not "project effect on VMT". Project-generated VMT refers to the amount of travel its users would generate. In contrast, project effect on VMT refers to how the VMT of an entire area would change if a project was approved and constructed. Project effect on VMT is mentioned prominently in the *Technical Advisory*. However, project effect on VMT is not calculated in this study because no such analysis is necessary to evaluate VMT impacts per the thresholds listed above for industrial uses. As described later in this report, retail land uses are considered locally serving and are therefore exempt from a detailed project effect on VMT analysis.

VMT Generated by Project Land Use Type

Industrial Land Uses

Table 14 presents the project's Home Based Work (HBW) auto VMT per employee for industrial uses under base year and cumulative conditions, using the StanCOG and SJCOG travel demand models. As shown, VMT per employee is higher in both scenarios when using the SJCOG model. This is because the SJCOG model, with its broader regional scope, better captures trip lengths across San Joaquin, Stanislaus, and Merced counties. In contrast, the StanCOG model, limited to Stanislaus

County, may underestimate trip lengths for projects near county borders due to the lack of land use and network data for neighboring areas. The project site is near the northern Stanislaus County border with San Joaquin County.

Table 14. Auto VMT per Industrial Employee Comparison

Project Scenario	HBW Auto VMT per Employee		
	2019 StanCOG Model[1]	2016 SJCOG Model[2]	San Joaquin Countywide Warehousing Travel Behavior Study[3]
Base Year Project Buildout	6.5	12.2	58.6
Cumulative Project Buildout	6.2	10.2	49.0

Notes:
1. Calculated using the 2019 and 2046 StanCOG travel demand model. VMT shown is only associated with employee travel between the project and residence.
2. Calculated using the 2016 and 2046 SJCOG travel demand model. VMT shown is only associated with employee travel between the project and residence
3. Base Year VMT per employee was estimated using StreetLight Data from 39 warehousing sites collected as part of the *San Joaquin Countywide Warehousing Travel Behavior Study*. With an average round-trip length of 58.6 miles (29.3 miles each way), daily HBW auto VMT per employee was calculated. Cumulative VMT per employee was then derived by applying the proportional reduction (16%) from base year to cumulative conditions as estimated by the SJCOG model.

Source: Fehr & Peers, 2026.

Neither the StanCOG nor the SJCOG travel demand models provide enough detail to evaluate trip lengths for different types of industrial uses, as all are grouped into a general industrial land use category. To supplement the travel demand model VMT evaluation, Fehr & Peers used worker trip length data from the *San Joaquin Countywide Warehousing Travel Behavior Study*, which found an average trip length of 29.3 miles between home and work. This results in a daily VMT per employee of 58.6, accounting for the round trip. This average VMT per employee is based on data from 39 warehousing sites in San Joaquin County. Although the data was collected in San Joaquin County, it is considered applicable to Stanislaus County due to similar land use and transportation network characteristics. Furthermore, the project proposes similar warehousing uses and the project site is also located near the border of the two counties.

The base year daily VMT per employee for warehousing uses is estimated at 58.6 miles, substantially higher than the VMT estimates for general industrial uses from both the StanCOG and SJCOG models. Based on this evidence, the project's industrial land uses are assumed to generate an average daily VMT of 58.6 miles per employee. The SJCOG model estimates a 16% reduction in daily VMT per employee from base year to cumulative conditions. This reduction was applied to the 58.6-mile base year to estimate a cumulative VMT of 49.0 miles per employee. As shown in **Table 14**, this remains substantially higher than the average VMT per employee estimated by the StanCOG and SJCOG models.

As shown in **Table 15**, under base year project buildout conditions, approximately 58.6 VMT per employee is generated. Since most employees do not leave the worksite during their shift, this amounts to a pair of 29.3-mile one-way commutes between the job site and residence. The VMT per employee decreases by about 16% under cumulative conditions presumably due to the introduction of additional residential in the region. This results in shorter overall commute distances to the project site.

Table 15. Daily Industrial Auto VMT Generated by Project

Scenario	Daily HBW Auto VMT per Employee[1]	Number of Employees[2]	Daily HBW Auto VMT Generated by Employees[3]
Base Year Project Buildout	58.6	1,000	58,600
Cumulative Project Buildout	49.0	1,000	49,000

Notes: HBW = Home-based work (i.e., travel from home to work).

1. Base year project buildout VMT per employee calculated using trip length data from the *San Joaquin Countywide Warehousing Travel Behavior Study*. Cumulative VMT per employee was calculating by applying the proportional reduction (16%) from base year to cumulative conditions as estimated by the SJCOG travel demand model.
2. Number of employees based on project description provided in EIR Notice of Preparation.
3. Calculated by multiplying average VMT per employee by number of employees. VMT shown is only associated with employee travel between the project and home.

Source: Fehr & Peers, 2026.

Retail Land Uses

Approximately 121,450 square feet of developable land area is designated for retail development; specific tenants and uses have not yet been identified. For the purposes of this VMT screening analysis, it is assumed that the following land uses could be accommodated within this area:

- Gas station with 18 vehicle fueling positions and a 6,000-sf convenience store
- Two fast-food restaurants with drive-through windows, each with 4,000 sf of building area, totaling 8,000 sf

Combined, the building area of these uses is less than 50,000 sf and is considered locally serving retail. According to the screening criteria outlined in the *Technical Advisory*, locally serving retail uses are presumed to have a less-than-significant VMT impact. As such, they are exempt from a detailed VMT analysis. Therefore, a detailed VMT analysis was not conducted for the retail uses.

7. Roadway Safety Assessment

This chapter provides an overview of Caltrans' "Four Pillars of Traffic Safety", which will help guide the department toward the ultimate goal of zero deaths or severe injuries on California roads by 2050. It then presents the collision history for state highways in the project vicinity.

Four Pillars of Traffic Safety

Caltrans' *2024 – 2028 Strategic Plan* lists safety as its top goal through 2028. The *2020 Caltrans Annual Accomplishments Report* describes the Four Pillars of Traffic Safety, which are:

1. Double Down on What Works
2. Accelerate Advanced Technology
3. Lead Safety Culture Change
4. Integrate Equity

Each of these pillars, including their applicability to the proposed project, are described below.

Double Down on What Works

This pillar focuses on implementing applicable countermeasures from FHWA's Proven Safety Countermeasures program (https://safety.fhwa.dot.gov/provencountermeasures/). This program contains 28 types of countermeasures including several crosscutting strategies that address multiple safety focus areas.

Caltrans and City of Modesto design standards include many of these treatments including: roadway design improvements at horizontal curves, reduced left-turn conflicts at intersections, median barriers, traffic signals with retroreflective backplates, corridor access management, dedicated left/right turn lanes at intersections, medians/pedestrian crossing islands, and walkways. Other treatments from the FHWA program that could be considered for the proposed project include bicycle lanes on frontage streets, crosswalk visibility enhancements, pedestrian crossing control improvements (e.g. pedestrian hybrid beacons, rectangular rapid flashing beacons) at unsignalized crossings. Multimodal safety improvements applicable to the project are discussed in detail in Chapter 8 (Impacts and Mitigation Measures).

Accelerate Advanced Technology

This pillar refers to increased and proactive usage of advanced technologies known to improve safety. Examples at traffic signals include vehicle queue spillback detection, coupled with a fixed Changeable Message Sign (CMS) sign upstream to alert drivers of either slowed or stopped traffic ahead. Other examples include extinguishable / blankout signs placed on traffic signal poles to advise travelers of regulatory or advisory conditions (e.g., no right-turn on red, look left for vehicles, etc.). Additionally, adaptive traffic signal systems are now being implemented in a number of corridors in urban areas. These systems can update their traffic signal timings in real-time, in response to changes in traffic flows, to better serve travelers (source: Adaptive Traffic Management: SCOOT | Traffic Management | Siemens Mobility USA).

Applicable advanced technology improvements may be incorporated into the project design for site access intersection controls. Site access improvements are discussed in Chapter 8 (Impacts and Mitigation Measures).

Lead Safety Culture Change

The Safe System approach represents a paradigm shift in roadway safety philosophy. Whereas previously the focus of roadway safety was on preventing collisions, now it is on preventing fatal and severe collisions. Before, the emphasis was on improving human behavior to reduce collision frequency, but now it is recognized that humans make mistakes and are vulnerable, and that roadway design must consider these factors. The Safe System approach refocuses transportation system design and operation on anticipating human mistakes and lessening impact forces to reduce crash severity and save lives. In the Safe System approach, the principles related to prevention of collision-related deaths and serious injuries are:

- Reduce System Kinetic Energy/Control Speeding
- Coordinate and Share Responsibility
- Proactively Address Risks

Some of these Safe System principles (e.g., reduce system kinetic energy) can be employed as part of the project design. Others are more regional and programmatic in nature, requiring leadership and commitment by regional and state agencies and other stakeholders. Through preparation of a Safe Streets for All (SS4A) Plan, the City of Modesto is proactively addressing risks through a systemic approach to safety.

Integrate Equity

The *2020-2024 Strategic Highway Safety Plan* (California State Transportation Agency, CalSTA, 2023 update) lists "Integrate Equity" as one of its four guiding principles and a way to address institutional and systemic biases. This principle supports a better understanding of the effects of socioeconomic and demographic influences on fatal and serious injury crashes. Understanding these effects includes use of data related to race, income, population density, and other demographic, socioeconomic, and location-based information. Equity in safety may also relate to disparate treatment of different modes of travel.

The proposed project site plan provided in **Figure 2** is not currently designed to accommodate all modes of travel. This condition is specifically addressed in Chapter 8 (Impacts and Mitigation Measures).

Collision History on State Highway System in Study Area

The collision history of the three SHS segments that would be used by project traffic was analyzed using the Transportation Injury Mapping System (TIMS) database for the study area. This is a free and publicly available dataset of reported injury collisions on local and state roadways. TIMS data was obtained for a 6.5-year period from January 1, 2018 through June 30, 2024. The dataset consists of numerous variables associated with each collision including time of day, day of week, date, primary collision factor, collision type, number of involved parties, collision severity, weather conditions, lighting, pavement conditions, involvement of bicyclist, pedestrian, or motorcycle, driver impaired,

driver age and gender. The TIMS database classifies collisions as either fatal, severe, or injury-only. The results are shown in **Table 16**.

SR 99 experienced more fatal collisions than either Kiernan Avenue (SR 219) or McHenry Avenue (SR 108), which had none. This is primarily due to the higher traffic volumes on SR 99. The most common collision type on both SR 99 and McHenry Avenue (SR 108) was rear-end, and the most common primary collision factor was unsafe speed. On Kiernan Avenue (SR 219), the most common collision type was broadside, and the most common primary collision factor was traffic signal and sign violations. With respect to vulnerable road users (i.e., bicyclists and pedestrians), two injury collisions were reported on SR 99.

Table 16. Roadway Safety Injury Collision Statistics on State Highway System in Project Vicinity

Segment	Dist. (mi)	Number of Collisions[1]			Specific Collision Types				
		Total	# Resulting in a Fatality	# Resulting in a Severe Injury	Most Common Collision Type	Most Common Primary Collision Factor	# Involving Bicyclist or Pedestrian	# Involving Trucks	# DUI Collisions[2]
SR 99 from San Joaquin County Line to Standiford Ave	4.5	20	2	1	Rear End / Hit Object	Unsafe Speed / DUI	2	0	7
Kiernan Ave (SR 219) from SR 99 to McHenry Ave (SR 108)	4.7	5	0	0	Broadside	Traffic Signals and Signs Violation	0	0	1
McHenry Ave (SR 108) from Pelandale Ave to Patterson Rd	2.3	7	0	1	Rear End	Unsafe Speed	0	0	0

Notes:
1. Data only shows reported collisions that involved an injury.
2. DUI: Driving Under the Influence (of alcohol or drugs).

Source: TIMS data from January 1, 2018 through June 30, 2024.

8. Impacts and Mitigation Measures

This chapter begins by presenting the thresholds of significance to be used to identify significant adverse transportation impacts. It then identifies project-specific and cumulative impacts of the proposed project based on those thresholds. Impact statements are provided for the topics of VMT and roadway safety/hazards, which are the criteria used to evaluate roadway system impacts. Impact statements are also provided for the bicycle, pedestrian, and transit systems.

Mitigation measures are recommended to lessen the significance of identified impacts. This chapter does not draw conclusions as to whether the mitigation measure would mitigate the impact to a less than significant level or whether the impact would remain significant after mitigation. Such conclusions are presented in the EIR based on the data provided here.

Thresholds of Significance

The following thresholds of significance are used to determine whether implementing the proposed project would result in a significant environmental impact. The thresholds are based on guidance from Appendix G of the CEQA Guidelines, OPR's *Technical Advisory*, and policies of City of Modesto and other responsible agencies listed previously. The proposed project would cause a significant impact if it would:

Roadway Network

1. For project land use components whose VMT impacts are otherwise not presumed to be less-than-significant based on the *Technical Advisory on Evaluating Transportation Impacts in CEQA* (OPR, December 2018) thresholds, exceed the applicable VMT threshold as follows:
    - Industrial: Average VMT per employee exceeds 85% of the City of Modesto average.

Active Transportation Network

2. Conflict with adopted policies, plans, or programs regarding bicycle or pedestrian facilities.

Transit Services and Facilities

3. Disrupt existing or planned transit facilities or conflict with adopted policies, plans, or programs regarding transit facilities or service.
4. Create a demand for transit that is currently unmet.

Hazards

5. Cause the 95th percentile queue length at a freeway off-ramp to extend beyond the gore point onto the mainline (or exacerbate a current or future deficient condition by increasing the 95th percentile queue by two or more vehicles)
6. Cause the 95th percentile queue length in the left-turn and/or right-turn lane at an at-grade intersection on the State Highway System to exceed the available storage (or exacerbate a current or future deficient condition by increasing the 95th percentile queue by two or more vehicles)

7. Substantially increase hazards due to geometric design features (e.g., sharp curves or dangerous intersections) or incompatible uses.

Emergency Access

8. Project results in inadequate emergency access.

Note that the thresholds pertaining to vehicle queue lengths exceeding freeway off-ramp or left-turn lane storage on state highways is based on guidance from the *Local Development Review (LDR) Safety Review Practitioners Guidance* (Caltrans, 2024).

With regard to the first significance criterion (Roadway Network), it is acknowledged that retail buildings are not specifically mentioned. However, as described later in this report, retail land uses are addressed and are presumed to have a less than significant impact, as they are under 50,000 sf in building area and are considered local-serving uses.

Project-Specific Impacts and Mitigation Measures

Project-specific transportation impacts and recommended mitigation measures are summarized below.

Roadway Network VMT

Impact TR-1*: Significant Adverse VMT Impacts Caused by Industrial Land Use Components*

Table 17 shows the citywide average HBW auto VMT per employee, estimated using the 2019 StanCOG base year model, the 2016 SJCOG base year model, and the VMT+ tool. VMT+ is a data platform that provides VMT metrics at the Census Block Group level across California, including HBW VMT per resident and per employee, to support Senate Bill 743 compliance and planning efforts. [3] It uses 2019 StreetLight Data and allows users to compare local VMT levels to city, county, metropolitan planning organization, and statewide averages through an interactive dashboard.

As shown in **Table 17**, the City of Modesto's average daily HBW auto VMT per employee is highest using the VMT+ tool and lowest using the StanCOG model. The significance threshold is defined as 85% of the citywide average daily VMT per employee, and it varies depending on the data source. Regardless of the source used to establish the threshold, the project's estimated 58.6 daily VMT per employee for industrial uses substantially exceeds all the thresholds using all three base year VMT data sources. Therefore, the VMT impact generated by industrial land uses is considered **significant**.

[3] More information available on the following website: https://storymaps.arcgis.com/stories/e9fb17d33a2c4d60a6747071be3d5b4a

Table 17. Base Year Daily Auto VMT per Employee Comparison Against Significance Threshold – Industrial Land Uses

Scenario	HBW Auto VMT per Employee		
	2019 StanCOG Model	2016 SJCOG Model	2019 VMT+ Database
City of Modesto Average – Base Year	8.3	10.2	13.6
85% of City of Modesto Average – Base Year	7.1	8.7	11.6
Project Industrial Uses[1]	58.6	58.6	58.6

Notes:

1. Base Year VMT per employee was estimated using StreetLight Data from 39 warehousing sites collected as part of the *San Joaquin Countywide Warehousing Travel Behavior Study*. With an average round-trip length of 58.6 miles (29.3 miles each way), daily HBW auto VMT per employee was calculated.

Source: Fehr & Peers, 2026.

***Mitigation Measure TR-1a**: The project applicant shall comply with SJVAPCD Rule 9410 (Employer Based Trip Reduction).*

SJVAPCD Rule 9410 (found at: https://ww2.valleyair.org/media/tlbogtid/rule-9410.pdf) was adopted by the District Governing Board in 2009 and requires major employers in the region to implement an Employer Trip Reduction Implementation Plan (ETRIP). Two types of worksites are identified: Tier 1 worksites consist of 100 to 249 eligible employees, while Tier 2 worksites have at least 250 eligible employees (who worked at least 16 consecutive weeks during the previous fiscal year). Eligible employees are any employees excluding the following: emergency health and safety employees, employment agency personnel, farm workers; field personnel, field construction workers, home garage employees, on-call employees, part-time employees, seasonal employees, volunteers, and employees who do not report to work during the peak period, which is defined as 6:00 AM to 10:00 AM. The number of eligible employees that work for a major employer would determine whether that employer falls into a Tier 1 or 2 worksite.

Table 1 of Rule 9410 indicates that Tier 1 and 2 worksites shall implement an ETRIP that achieves at least 44 and 66 points, respectively, based on selecting various TDM strategies, which fall into the following four groups: Marketing Strategies, Program Support Strategies, Service and Facilities Strategies, and Transportation, Alternative Schedule, and Incentives Strategies. Table 2 of Rule 9410 contains 59 different strategies that could be considered to reduce vehicle trips. Strategies are applicable only to eligible employees.

It is not known how many of the individual warehouse tenants will qualify as a Tier 1 or 2 worksite because of uncertainties around specific tenants, start time, shift hours and amount of square feet per employee. And it is not possible to identify which specific strategies that tenants of individual buildings would select since they have not been identified, signed leases, etc. Accordingly, it is not possible to quantify the VMT reductions achieved by the strategies that would be selected.

***Mitigation Measure TR-1b**: The project applicant shall implement the following transportation demand management (TDM) strategies, some of which may overlap with strategies selected under Rule 9410, that are considered feasible and will have a material effect on reducing VMT.*

1. *Implement a Voluntary Commute Trip Reduction (CTR) program. Required elements of the program include:*
    - *Commute Trip Reduction Marketing – implements a marketing strategy to promote the project site employer's CTR program (which includes a guaranteed ride home program).*
    - *Ridesharing Program – implements a ridesharing program and establishes a permanent transportation management association with funding requirements for employers.*
    - *Subsidized or Discounted Transit Program – provides subsidized or discounted, or free transit passes for employees.*
    - *End-of-Trip Bicycle Facilities – installs and maintains end-of-trip facilities (including bike parking, bike lockers, showers, and personal lockers) for employee use.*
    - *Employer-Sponsored Vanpool – implements an employer-sponsored vanpool service for employee groups of 5 to 15 people.*
2. *Implement Employee Parking Cash-Out program – requires project employers to offer employees the choice of foregoing their current subsidized/free parking for a cash payment (in exchange for not driving).*

The above strategies are ongoing measures that would begin in the first phase of industrial development and continue through project buildout. Most of the above TDM strategies are included in the *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity* (California Air Pollution Control Officer Association, CAPCOA, 2021). In late 2021, the CAPCOA Board of Directors adopted this report (henceforth known as the *CAPCOA GHG Reduction Handbook*). In addition to listing a variety of TDM strategies, the *CAPCOA GHG Reduction Handbook* presents the maximum effectiveness that a given strategy or set of strategies can have. However, that effectiveness can vary considerably depending on geographic context (urban, suburban, versus rural), tenant type, and availability of non-auto modes). The following sections investigate in more detail each of the recommended TDM strategies above.

Voluntary Commute Trip Reduction (CTR) Program

The *CAPCOA GHG Reduction Handbook* suggests that the voluntary CTR program could achieve up to a 4% reduction in employee generated VMT. For analysis purposes, a 4% reduction is assumed based primarily on the program achieving an increase in carpooling and usage of the vanpool program.

Employee Parking Cash-Out Program

The *CAPCOA GHG Reduction Handbook* suggests that this program could achieve up to a 12% reduction in VMT (based on six case studies in California in 1992). This program will only be effective if combined with the other strategies that improve project access via biking and transit. For analysis purposes, a 6% reduction is assumed based on the premise that other modes of travel are also upgraded to become viable.

Table 18 displays the expected effectiveness of the mitigation measures included in Mitigation TR-1b at reducing the VMT per employee of industrial employees. While the net effect of these measures was a 10% reduction in VMT, the resulting VMT per employee estimates would remain well above the significance threshold for determination of a VMT impact. While the Mitigations from TR-1a (Rule 9410) would also provide some VMT savings, the potential VMT reductions that could be achieved cannot currently be quantified given the uncertainty of what strategies would be selected and to how many employers that program would apply.

Table 18. Mitigation Measure Effectiveness at Reducing Industrial Auto VMT Generated for Base Year Conditions

Mitigation Measures (TDM Strategies)[1]	Percent Auto VMT Reduced per Employee[1]
Voluntary Commute Trip Reduction (CTR) Program	4%
Employee Parking Cash-Out Program	6%
Mitigation Measures (TDM Strategies) Overall Effectiveness	**HBW Auto VMT per Employee[1]**
Without Mitigation Measures	58.6
With Mitigation Measures	52.8
Significance Threshold	11.6
VMT Reduced to Below Threshold?	No

Notes:
1. See discussion and calculations of TDM strategy effectiveness on previous pages.
2. Significance threshold based on the City of Modesto daily HBW auto VMT per employee estimated using the 2019 VMT+ Tool.

Source: Fehr & Peers, 2026.

TDM Program Monitoring

With regard to Mitigation Measure TR-1a (Comply with SJVAPD Rule 9410), employers must complete and submit an Employer Registration form to the Air Pollution Control Officer (APCO) of the SJVAPCD within 180 days of becoming subject to the trip reduction requirements of Rule 9410. According to Rule 9410, ETRIP strategies are phased in over a period of three years. An employer may submit a single ETRIP that covers multiple worksites when those worksites are using the same ETRIP measures. If worksites are using differing ETRIP measures, then each worksite should have its own ETRIP.

Rule 9410 also requires employers to collect information on the modes of transportation used for each employee's commute each day of the Commute Verification Period, which is a period of at least one week (selected by the employer) that is representative of typical work week conditions. The employer is required to submit its sampling methodology to the District 120 days prior to the start of the calendar year in which the employer intends to use the method. The APCO shall notify employers of its approval or disapproval of this method within 60 days of receipt.

No later than March 31st of each year, the employer shall submit a report to the APCO containing the results of the Commute Verification for the previous calendar year (including number of forms distributed, the number completed and returned, total number of trips to and from work, and the total number of each commute mode for the employees during the Commute Verification period).

Although truck generated VMT is not being evaluated for potentially significant VMT impacts, it is worth noting that the project site is considered to be in an efficient location as it relates to truck VMT. First, it is situated along a STAA route. Second, it is served by Kiernan Avenue (SR 219), which provides direct connectivity to SR 99, which is a major north-south goods movement corridor in California.

***Impact TR-2**: Less Than Significant VMT Impacts Caused by Retail Land Use Components*

Each of the retail pads and the gas station is considered local-serving retail given their small size (i.e., less than 50,000 square feet). No further VMT analysis of the retail land uses is conducted as their VMT impacts are less than significant and no mitigation is required.

Active Transportation Facilities

***Impact TR-3**: Conflicts with Adopted Policies, Plans, or Programs Regarding Bicycle or Pedestrian Facilities*

The project would not eliminate or adversely affect an existing bikeway or pedestrian facility in a way that would discourage its use. The project would construct the frontage improvements along the following roadway segments:

- 2,500 feet of Kiernan Avenue (SR 219)
- 2,400 feet of Dale Road
- 2,600 feet of Pirrone Road

The project site plan shown on **Figure 2** and the project description provided in the EIR NOP do not specify whether paved sidewalks are proposed along the project frontages. The existing 10-foot wide Class II bicycle lane along the Kiernan Avenue (SR 219) frontage will remain; however, the project does not propose any bikeway improvements along the Dale Road or Pirrone Road frontages. Both Dale Road and Pirrone Road are classified as "Minor Arterials" according to the *City of Modesto General Plan* (City of Modesto, 2019). As shown in **Image 4** below, the City's *Standard Specifications* (City of Modesto, 2014) require a minimum 10-foot sidewalk and five-foot Class II bicycle lanes on both sides of a standard "Minor Arterial" section. The *Salida Community Plan* (Stanislaus County, 2007) also identifies planned sidewalk and bikeway improvements along the Dale and Pirrone Road frontages. Furthermore, public comments on the EIR NOP raised concerns about project impacts to bicycle and pedestrian circulation to/from Joseph A. Gregori High School, which is located near the project site. The current project site plan does not specify the extent of paved sidewalk frontage improvements, nor does it propose any bikeway improvements along Kiernan Avenue (SR 219), Dale or Pirrone Road.

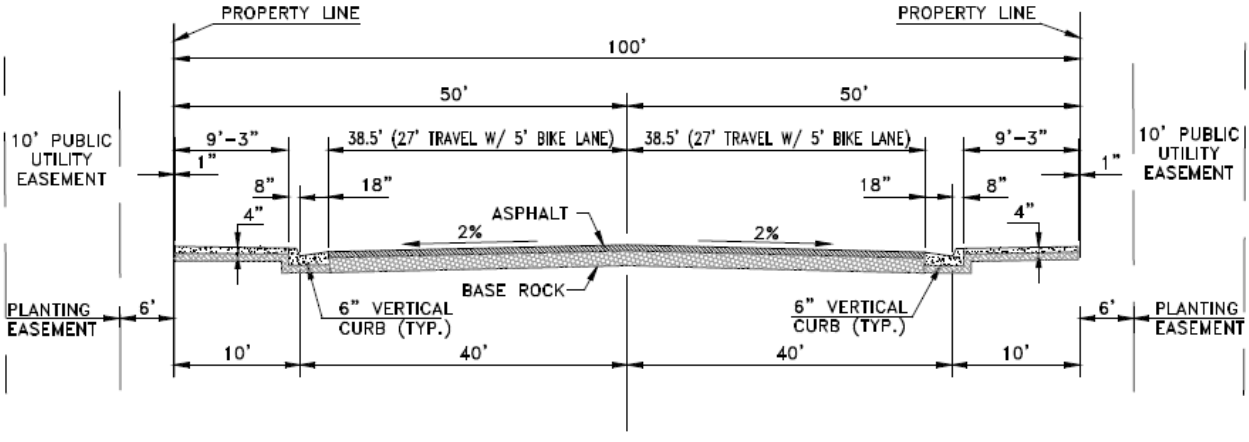


Image 4. Minor Arterial Cross-Section Standard (City of Modesto Standard Specifications)

The project would not eliminate or adversely affect a planned pedestrian or bikeway facility in a way that would preclude its construction. However, it would cause an inconsistency with several City of Modesto General Plan policies (V.A.1, V.A.2, V.A.5, V.D.1, V.D.5, V.D.7, V.E.3, V.E.8, V.H.5, and V.H.9) pertaining to providing multimodal transportation options, reducing auto dependency, and eliminating gaps in the pedestrian and bikeway system. Under existing conditions, there would continue to be no dedicated bicycle facilities along the project site frontages on Dale and Pirrone Road. Given the project's large number of employees and the lack of any planned pedestrian and bicycle facilities to connect the project site with surrounding neighborhood. This impact is considered **significant**.

The project's proposed retail uses are expected to generate pedestrian trips to the site from Dale Road south of Kiernan Avenue (SR 219) and from Joseph A. Gregori High School on Pirrone Road. The existing Kiernan Avenue (SR 219)/Dale Road intersection lacks a pedestrian crosswalk on the west leg, requiring pedestrians to potentially navigate crosswalks on the south, east, and north legs to access the project site from the southwest corner of the intersection. The project does not propose any pedestrian crossing improvements at this intersection. The project also does not propose any pedestrian crossing improvements on Pirrone Road, which currently lacks marked crosswalks near the project site. This impact is **significant**.

***Mitigation Measure TR-3a**: The project applicant shall construct sidewalk improvements along Kiernan Avenue (SR 219), Dale Road, and Pirrone Road frontages as well as Class II bicycle lane improvements along Dale Road and Pirrone Road frontages in accordance with City of Modesto design standards.*

The *City of Modesto Standard Specifications* (City of Modesto, 2014) require a minimum 10-foot sidewalk and five-foot Class II bicycle lanes on both sides of a standard "Minor Arterial" section. Although Kiernan Avenue (SR 219) is under Caltrans jurisdiction, the project applicant shall provide minimum 10-foot wide sidewalk and maintain the existing 10-foot wide Class II bicycle lane along the Kiernan Avenue (SR 219) frontage.

The City of Modesto is currently in the process of updating its *Standard Specifications*, which may modify the dimensions and types of sidewalk and bikeway improvements required under Mitigation Measure TR-3a. Because these updated design standards have not yet been adopted, Mitigation Measure TR-3a references only the City's currently adopted standards.

Although all project frontages are currently under Caltrans jurisdiction (Kiernan Avenue) or Stanislaus County jurisdiction (Dale Road and Pirrone Road), the City of Modesto standards are applied based on the assumption that the project site would be annexed into the City of Modesto if the project were approved. Notwithstanding this assumption, the Kiernan Avenue frontage will remain under Caltrans jurisdiction, and all of the public right-of-way portion of the Dale Road and Pirrone Road frontages will be annexed into the City of Modesto. Therefore, encroachment permits for frontage improvements would be required from Caltrans and City of Modesto prior to construction.

***Mitigation Measure TR-3b**: The project applicant shall construct a crosswalk with corresponding directional curb ramps and pedestrian signal heads with countdown timers across the western leg of the Kiernan Avenue (SR 219)/Dale Road intersection in accordance with Caltrans design standards.*

The Kiernan Avenue (SR 219)/Dale Road intersection currently lacks a crosswalk on the east leg, requiring pedestrians to navigate crosswalks on the south, west, and north legs to access the project site from the southwest corner of the intersection. Constructing a new crosswalk at this existing

signalized intersection would provide direct access from the south, enhance pedestrian safety, and connect the frontage sidewalk improvements described in Mitigation Measure TR-3a to the existing sidewalk network on the west side of Dale Road, south of Kiernan Avenue (SR 219).

The Kiernan Avenue (SR 219)/Dale Road intersection is under Caltrans jurisdiction and will therefore require an encroachment permit from Caltrans prior to construction.

Mitigation Measure TR-3c*: The project applicant shall coordinate with City of Modesto Engineering Services Department, Public Works Department and administrators at Joseph A. Gregori High School to identify and construct high-visibility crosswalk connecting the northwest corner of the project site and southeast corner of the high school. Potential improvements to be considered include (but are not limited to):*

- *Installation of high-visibility crosswalk striping*
- *Installation of rectangular rapid flashing beacon (RRFB) or pedestrian hybrid beacon (PHB) crossing controls*
- *Installation of ADA compliant curb ramps with adequate connections to existing sidewalk on high school frontage and future sidewalk on project site frontage*

A new pedestrian crossing on Pirrone Road connecting the project site to Joseph A. Gregori High School would enhance pedestrian and bicycle connectivity to and from the school. A new crossing will also improve transit connectivity for project site employees to the existing StanRTA Route 48 bus stop on WB Pirrone Road at high school frontage. The installation of traffic controls, such as a RRFB or PHB, would alert drivers to yield to pedestrians and bicyclists in the crosswalk.

The type of pedestrian control, RRFB or PHB, shall be determined by Stanislaus County and/or City of Modesto staff. The recommended pedestrian crossing location on Pirrone Road is under Stanislaus County jurisdiction and therefore implementation of improvements requires an encroachment permit from Stanislaus County prior to construction. A portion of the crossing location will also be annexed into the City of Modesto; therefore, coordination between both agencies is required for implementation of the recommended mitigation measure.

The project applicant shall coordinate with Caltrans District 10 to prepare the *Intersection Safety and Operational Assessment Process* (ISOAP) for approval of frontage and site access intersection improvements along Kiernan Avenue (SR 219) prior to submitting an encroachment permit application for these improvements.

Transit Services and Facilities

Impact TR-4*: Inadequate Transit Service to Meet Demand*

The project would not eliminate or adversely affect existing transit access. StanRTA currently operates Route 48, with bus stops located in both directions along Pirrone Road adjacent to Joseph A. Gregori High School, less than 800 feet from the project site. Additional stops are provided in both directions along Dale Road near the Kaiser Medical Center, less than 2,200 feet from the site. These existing bus stops are within a 10-minute walking distance of the project site. Furthermore, implementation of Mitigation Measures TR-3a, 3b and 3c would enhance bicycle and pedestrian access to these bus stops. Therefore, this impact is considered **less than significant**, and no mitigation is required.

Roadway Safety/Design Standards

Impact TR-5*: Increased Hazards due to Geometric Design Features*

The project would generate 1,480 new daily truck trips across seven driveways, which have greater turning radius requirements, pavement deterioration effects, and vehicle storage requirements than passenger vehicles. Trucks over seven tons are currently prohibited on Dale and Stoddard Road from Kiernan Avenue (SR 219) to Ladd Road; in addition to Pirrone Road between Dale and Stoddard Road. This impact is **significant**.

Mitigation Measure TR-5*: The project applicant shall construct physical improvements at project access intersections along Kiernan Avenue (SR 219) in accordance with Caltrans standards. The project shall construct physical improvements in accordance with City of Modesto and/or Stanislaus design standards for the following segments proposed for heavy truck access between the project site and Kiernan Avenue (SR 219):*

- *Dale Road between Kiernan Avenue (SR 219) and Pirrone Road (City of Modesto)*
- *Stoddard Road between Kiernan Avenue (SR 219) and Pirrone Road (Stanislaus County)*
- *Pirrone Road between Dale and western project site boundary (City of Modesto)*
- *Pirrone Road between western project site boundary and Stoddard Road (Stanislaus County)*

Additional considerations should be made for the need to accommodate STAA trucks, enhanced pavement structural sections, increased truck turn lane storage, and new street signage such as "Local Trucks Only" signs along adopted truck routes and "No Trucks Allowed" signs on Dale and Stoddard Road north of Pirrone Road. New signs should be installed within the roadway right-of-way. Adoption of the roadway segments listed above into the City of Modesto and/or Stanislaus County local truck route network is required to allow heavy-truck access to the project site via Dale Road or via Pirrone Road and Stoddard Road.

Alternatively, if truck routes cannot be adopted along the Dale, Pirrone, and Stoddard Road segments identified above, the project applicant shall limit heavy-truck access to the project site driveways on Kiernan Avenue (SR 219), which is currently designated as a Terminal Access STAA Route.

It would be premature at this juncture to identify every specific design detail required at each project access and on-site intersection. Instead, to ensure that the project roadway designs provide the necessary infrastructure improvements to accommodate the special travel needs of trucks, the following performance standards are established for this mitigation measure:

- All street segments that would be improved by the project are designed with the appropriate Traffic Index (TI) to ensure that the structural section is capable of accommodating the added weight of trucks for that street section.
- All left and right turn lanes constructed at project site intersections along Kiernan Avenue (SR 219), Dale Road and/or Pirrone Road provide adequate vehicle storage to accommodate the 95th percentile vehicle queues (considering cumulative travel demands and the effects of trucks on storage requirements).
- Intersection designs consider curb return radii requirements, width of receiving travel lanes, placement of traffic control equipment, and other design parameters to ensure that trucks can perform left and right-turns without encroaching onto oncoming travel lanes, driving over curbs, or colliding with signal equipment or signs.

The roadway design review process, overseen by the City of Modesto Engineering Services and/or Public Works Departments, will ensure that these performance standards are met. Design coordination with, and approval from, Caltrans and Stanislaus County is also required, given that the existing Kiernan Avenue (SR 219) frontage falls within Caltrans jurisdiction and truck route improvements on off-site segments of Pirrone and Stoddard Road fall under Stanislaus County jurisdiction.

The project applicant shall coordinate with Caltrans District 10 to prepare the *Intersection Safety and Operational Assessment Process* (ISOAP) for approval of frontage and site access intersection improvements along Kiernan Avenue (SR 219) prior to submitting an encroachment permit application for these improvements.

Impact TR-6*: Increased Hazards due to Incompatible Vehicle Fleet Mix*

The following roadway segments are currently used by agricultural equipment on occasion and prohibit trucks over seven tons:

- *Dale Road between Kiernan Avenue (SR 219) and Pirrone Road*
- *Stoddard Road between Kiernan Avenue (SR 219) and Pirrone Road*
- *Pirrone Road between Dale and Stoddard Road*

Project buildout would add an estimated 590 trucks per day on Dale Road, 180 trucks per day on Pirrone Road and Stoddard Road, which currently prohibit trucks over seven tons. This impact is **significant**.

Mitigation Measure TR-6*: The project applicant shall implement Dale Road, Pirrone Road and Stoddard Road improvements specified in Mitigation Measure TR-5.*

Trucks over seven tons are currently prohibited on Dale and Stoddard Road north of Kiernan Avenue (SR 219), and on Pirrone Road between Dale and Stoddard Road. Implementing Mitigation Measure TR-5 would upgrade Dale Road, Pirrone Road and Stoddard Road to accommodate heavy trucks between the project site driveways and Kiernan Avenue (SR 219).

The roadway design review process, overseen by the City of Modesto Engineering Services and/or Public Works Departments, will ensure that these performance standards are met. Design coordination with, and approval from, Stanislaus County is also required, given that off-site segments of Pirrone and Stoddard Road fall within Stanislaus County jurisdiction.

Alternatively, if truck routes cannot be adopted along the Dale Road, Stoddard Road, and Pirrone Road segments identified above, the project applicant shall limit heavy-truck access to the project site driveways on Kiernan Avenue (SR 219), which is currently designated as a Terminal Access STAA Route.

Impact TR-7*: Increased Hazards due to Incompatible Land Uses on Dale Road, Pirrone Road and Stoddard Road.*

Trucks over seven tons are currently prohibited on Dale and Stoddard Road north of Kiernan Avenue (SR 219), and on Pirrone Road between Dale and Stoddard Road. Several rural homes front segments of Dale and Stoddard Road; while Joseph A. Gregori High School fronts on Pirrone Road between Stoddard Road and the project site western boundary. The project will generate 180 – 590 daily truck

trips on the segments of Dale Road, Pirrone Road, and Stoddard Road, which would create an incompatibility with the adjacent rural residences and high school. This impact is **significant**.

Mitigation Measure TR-7*: The project applicant shall construct the Dale Road, Pirrone Road, and Stoddard Road physical improvements specified in Mitigation Measure TR-5.*

Implementing Mitigation Measure TR-5 would upgrade Dale Road, Pirrone Road and Stoddard Road to accommodate heavy trucks between the project site driveways and Kiernan Avenue (SR 219).

The roadway design review process, overseen by the City of Modesto Engineering Services and/or Public Works Departments, will ensure that these performance standards are met. Design coordination with, and approval from, Stanislaus County is also required, given that off-site segments of Pirrone and Stoddard Road fall within Stanislaus County jurisdiction.

Alternatively, if truck routes cannot be adopted along the Dale Road, Stoddard Road, and Pirrone Road segments identified above, the project applicant shall limit heavy-truck access to the project site driveways on Kiernan Avenue (SR 219), which is currently designated as a Terminal Access STAA Route.

Impact TR-8*: Increased Hazards due to State Highway System Intersection Queues Exceeding Available Storage*

Table 8 displays the AM and PM peak hour 95th percentile queues at queuing study locations (located on the SHS) under Existing Plus Project conditions. As shown, three out of 14 locations shown in this table would experience queueing that exceeds available storage. This impact is **significant**.

Mitigation Measure TR-8*: The project applicant shall prepare transportation phasing analyses, to the satisfaction of the City of Modesto Engineering Services and/or Public Works Departments, that when subsequent phases of project development trigger construction of the geometric improvements described in* ***Table 19****.*

The effectiveness of the improvements shown in **Table 19** were analyzed under Existing Plus Project conditions using the SimTraffic microsimulation models. The results are shown in **Table 20** and indicate that the proposed improvements would reduce the extent of queuing such that all 95th percentile queues would be less than the available storage. Refer to **Appendix E** for the queuing analysis worksheets. Therefore, no excess queueing would occur.

The improvements described above are on the SHS, which is owned and operated by Caltrans. There is no guarantee they will support the identified improvements. As such, the project applicant and/or the City of Modesto Engineering Services and/or Public Works Departments shall coordinate with Caltrans District 10 to prepare the *Intersection Safety and Operational Assessment Process* (ISOAP) for approval of intersection improvements within the SHS prior to submitting an encroachment permit application for these improvements.

Table 19. Recommended Improvements to Address Queuing Impacts – Existing Plus Project Conditions

ID	Intersection	Lead Agency	Description of Improvements
13.	Dale Rd/ Kiernan Ave (SR 219)	Caltrans	• Additional SB left-turn lane 300 ft in length (total two left turn lanes) • Additional SB through lane (total two through lanes) with a shared through/right-turn lane • Additional EB left-turn lane 555 ft in length (total two left turn lanes) • Additional WB through lane (total three through lanes) • Additional WB right-turn lane 500 ft in length (total one right-turn lane) • Additional NB through lane (total two through lanes) with a shared through/right-turn lane
16.	McHenry Ave (SR 108) /Kiernan Ave (SR 219)	Caltrans	Increase the dedicated NB left-turn lane storage length to 500 ft
28.	Southwest Dwy/ Kiernan Ave (SR 219)	Caltrans	Implement recommended improvements at the Dale Rd / Kiernan Ave (SR 219) intersection

Source: Fehr & Peers, 2026.

Table 20. 95th Percentile Queue Length Summary – Existing Plus Project Conditions with Improvements

ID	Intersection	Lead Agency	Movement[1]	Storage Length (ft)	Existing 95th Percentile Queue Length (ft)		Existing Plus Project 95th Percentile Queue Length (ft)		Existing Plus Project with Improvements[2] 95th Percentile Queue Length (ft)		95th Percentile Queue Requirement Met?
					AM	PM	AM	PM	AM	PM	
13.	Dale Rd/ Kiernan Ave (SR 219)	Caltrans	EBL	555	54	55	**841**	**790**	180	190	Yes
16.	McHenry Ave (SR 108) /Kiernan Ave (SR 219)	Caltrans	NBL	140/ 500[3]	**160**	**244**	**229**	**263**	232	331	Yes
28.	Southwest Dwy/ Kiernan Ave (SR 219)	Caltrans	EBL	300	--	--	**430**	**327**	232	178	Yes

Notes: **Bold** font denotes movements where storage length is exceeded.

1. EB = eastbound; WB = westbound; NB = northbound; SB = southbound; L= left-turn; T = through; R = right-turn
2. Refer to **Table 19** for description of improvements.
3. NB left-turn lane extension to 500 ft recommended under Existing Plus Project conditions.

Source: Fehr & Peers, 2026.

Emergency Access

Impact TR-9*: Inadequate emergency access.*

The nearest fire station is City of Modesto Fire Station 11, located at 4225 Carver Road, approximately 2.3 miles from the project site. The nearest hospital, the Kaiser Medical Center, is less than a half mile from the project site. The project currently proposes three site access driveways (with ingress and egress) on Dale Road, two on Kiernan Avenue (SR 219), and two on Pirrone Road, all of which will also serve as emergency vehicle access points.

All project driveways provide a minimum clear width of 40 feet, except for the northern Dale Road driveway, which provides 26 foot clear width.

The proposed industrial buildings would have a maximum height of 45 feet. In accordance with Sections D104 and D105 of the 2025 California Fire Code, as adopted by the City of Modesto, the project must provide the following accommodations:

- Buildings or facilities exceeding 30 feet or three stories in height shall have not fewer than two means of fire apparatus access for each structure
- Where the vertical distance between the grade plan and the highest roof surface exceeds 30 feet, approved aerial fire apparatus access roads shall be provided.
- Aerial fire apparatus access roads shall have a minimum unobstructed width of 26 feet, exclusive of shoulders, in the immediate vicinity of the building or portion thereof.
- One or more of the required access routes for buildings 30-feet or taller shall be located not less than 15 feet and not greater than 30 feet from the building, and shall be positioned parallel to one entire side of the building. The side of the building on which the aerial fire apparatus access road is positioned shall be approved by the fire code official.
- Buildings or facilities having a gross building area of more than 62,000 sf shall be provided with two separate and approved fire apparatus access roads. An exception is allowed for buildings having a gross building area up to 124,000 sf that have a single approved fire apparatus access road where all buildings are equipped throughout with approved automatic sprinkler systems.

All proposed site driveways and on-site drive aisles provide a minimum unobstructed width of 26 feet. Although the project includes a continuous and connected internal roadway network for fire access, the site plan does not currently identify designated fire apparatus access roads or the locations of aerial fire apparatus access points for any proposed industrial buildings exceeding 30 feet in height. This impact is **significant**.

The separate non-CEQA LTA report prepared for the project demonstrates that improvements are available to maintain acceptable LOS, consistent with the City of Modesto and Stanislaus County General Plans, at roadways and intersections throughout the study area under Existing Plus Project conditions. Therefore, emergency vehicles are not expected to experience undue delays due to increased project trips in the study area.

Mitigation Measure TR-9*: The project applicant shall construct the on-site fire apparatus access road network in accordance with the City of Modesto Fire Code, subject to approval by the City of Modesto Fire Department.*

The final site plan must be approved by the City of Modesto Fire Department to ensure the emergency access routes meet requirements to facilitate the safe movement of emergency vehicles.

Cumulative Project Impacts and Mitigation Measures

This section presents the cumulatively considerable significant project impacts.

Roadway Network VMT

***Impact TR-10**: Cumulatively Significant Adverse VMT Impacts Caused by Industrial Land Use Components*

Table 21 shows the citywide average HBW auto VMT per employee under cumulative conditions, estimated using both the 2046 StanCOG and SJCOG travel demand models. As shown in **Table 21**, the City of Modesto's average daily HBW auto VMT per employee is similar using both travel demand models. The project's estimated 49.0 daily VMT per employee for industrial uses substantially exceeds the cumulative thresholds estimated by both travel demand models. Therefore, the VMT impact is considered **significant**.

***Mitigation Measure TR-10**: Implement Mitigation Measures TR-1a and 1b.*

The effectiveness of these measures would be similar under both existing and cumulative conditions. The main difference is that there is likely to be more robust transit service in the region under cumulative conditions. This may enable TDM strategies to become more effective.

Table 21. Cumulative Daily Auto VMT per Employee Comparison Against Significance Threshold – Industrial Land Uses

Scenario	HBW Auto VMT per Employee	
	2046 StanCOG Model	2046 SJCOG Model
City of Modesto Average – Cumulative	8.2	8.3
85% of City of Modesto Average – Cumulative	7.0	7.1
Project Industrial Uses[1]	49.0	49.0

Notes:

1. Base year VMT per employee was estimated using StreetLight Data from 39 warehousing sites collected as part of the *San Joaquin Countywide Warehousing Travel Behavior Study*. With an average round-trip length of 58.6 miles (29.3 miles each way), daily HBW auto VMT per employee was calculated. Cumulative VMT per employee (49.0 miles) was then derived by applying the proportional reduction (16%) from base year to cumulative conditions as estimated by the SJCOG model.

Source: Fehr & Peers, 2026.

***Impact TR-11**: Less Than Significant VMT Impacts Caused by Retail Land Use Components*

Each of the retail pads and the gas station is considered local-serving retail given their small size (i.e., less than 50,000 square feet). No further VMT analysis of the retail land uses is conducted as their VMT impacts are less than significant and no mitigation is required.

Active Transportation Facilities

***Impact TR-12**: Conflicts with Adopted Policies, Plans, or Programs Regarding Bicycle or Pedestrian Facilities under Cumulative Conditions*

The project site plan and the project description provided in the EIR NOP do not specify whether paved sidewalks are proposed along the project frontages. The existing 10-foot wide Class II bicycle lane along the Kiernan Avenue (SR 219) frontage will remain; however, the project does not propose any bikeway improvements along the Dale Road or Pirrone Road frontages. Both Dale Road and Pirrone Road are classified as "Minor Arterials" according to the *City of Modesto General Plan* (City of Modesto, 2019). The City's *Standard Specifications* (City of Modesto, 2014) require a minimum 10-foot sidewalk and five-foot Class II bicycle lanes on both sides of a standard "Minor Arterial" section.

The project would not eliminate or adversely affect a planned cumulative pedestrian or bikeway facility in a way that would preclude its construction. However, it would cause an inconsistency with several City of Modesto General Plan policies (V.A.1, V.A.2, V.A.5, V.D.1, V.D.5, V.D.7, V.E.3, V.E.8, V.H.5, and V.H.9) pertaining to providing multimodal transportation options, reducing auto dependency, and eliminating gaps in the pedestrian and bikeway system. Under cumulative conditions, there would continue to be no dedicated bicycle facilities along the project site frontages on Dale and Pirrone Road. However, additional business park and industrial development in the vicinity of the project site is expected to occur as part of the *Salida Community Plan* (Stanislaus County, 2007), which will further increase the need for bicycle and pedestrian facilities. Given the project's large number of employees and the lack of any planned pedestrian and bicycle facilities to connect the project site with surrounding future commercial and industrial development sites. This impact is considered cumulatively **significant**.

The project's proposed retail uses are expected to generate pedestrian trips to the site from Dale Road south of Kiernan Avenue (SR 219) and from Joseph A. Gregori High School on Pirrone Road. The existing Kiernan Avenue (SR 219)/Dale Road intersection lacks a pedestrian crosswalk on the west leg, requiring pedestrians to potentially navigate crosswalks on the south, east, and north legs to access the project site from the southwest corner of the intersection. The project does not propose any crossing improvements at this intersection. The project also does not propose any pedestrian crossing improvements on Pirrone Road under cumulative conditions, which currently lacks marked crosswalks near the project site. This is considered a cumulatively **significant** impact.

***Mitigation Measure TR-12**: Implement Mitigation Measures TR-3a, 3b, and 3c.*

The City of Modesto is currently in the process of updating its *Standard Specifications*, which may modify the dimensions and types of sidewalk and bikeway improvements required under Mitigation Measure TR-3a. Because these updated design standards have not yet been adopted, Mitigation Measure TR-3a references only the City's currently adopted standards.

Although all project frontages are currently under Caltrans jurisdiction (Kiernan Avenue) or Stanislaus County jurisdiction (Dale Road and Pirrone Road), the City of Modesto standards are applied based on the assumption that the project site would be annexed into the City of Modesto if the project were approved. Notwithstanding this assumption, the Kiernan Avenue frontage will remain under Caltrans jurisdiction, and all of the public right-of-way portion of the Dale Road and Pirrone Road frontages will be annexed into the City of Modesto. Therefore, encroachment permits for frontage improvements would be required from Caltrans and City of Modesto prior to construction.

The project applicant shall coordinate with Caltrans District 10 to prepare the *Intersection Safety and Operational Assessment Process* (ISOAP) for approval of frontage and site access intersection improvements along Kiernan Avenue (SR 219) prior to submitting an encroachment permit application for these improvements.

Transit Services and Facilities

***Impact TR-13**: Cumulatively Inadequate Transit Service to Meet Demand*

The project would not eliminate or adversely affect planned transit access in the immediate project vicinity. StanRTA currently operates Route 48, with bus stops located in both directions along Pirrone Road adjacent to Joseph A. Gregori High School, less than 800 feet from the project site. Additional stops are provided in both directions along Dale Road near the Kaiser Medical Center, less than 2,200 feet from the site. These existing bus stops are within a 10-minute walking distance of the project site and are expected to remain under cumulative conditions. Transit service is expected to continue operating within the vicinity of the project site under cumulative conditions. Furthermore, implementation of Mitigation Measures TR-3a, 3b and 3c would enhance bicycle and pedestrian access to these bus stops. Therefore, this cumulative impact is considered **less than significant**, and no mitigation is required.

Roadway Safety/Design Standards

***Impact TR-14**: Increased Hazards due to Geometric Design Features*

The project would generate 1,480 new daily truck trips spread across seven driveways, which have greater turning radius requirements, pavement deterioration effects, and vehicle storage requirements than passenger vehicles. Trucks over seven tons are assumed to remain prohibited on Dale and Stoddard Road from Kiernan Avenue (SR 219) to Ladd Road; in addition to Pirrone Road between Dale and Stoddard Road under cumulative conditions. This is considered a cumulatively **significant** impact.

***Mitigation Measure TR-14**: Implement Mitigation Measure TR-5.*

The roadway design review process, overseen by the City of Modesto Engineering Services and/or Public Works Departments, will ensure that these performance standards are met. Design coordination with, and approval from, Caltrans and Stanislaus County is also required, given that the existing Kiernan Avenue (SR 219) frontage falls within Caltrans jurisdiction and truck route improvements on off-site segments of Pirrone and Stoddard Road fall under Stanislaus County jurisdiction.

Alternatively, if truck routes cannot be adopted along the Dale Road, Stoddard Road, and Pirrone Road segments identified above, the project applicant shall limit heavy-truck access to the project site driveways on Kiernan Avenue (SR 219), which is currently designated as a Terminal Access STAA Route.

The project applicant shall coordinate with Caltrans District 10 to prepare the *Intersection Safety and Operational Assessment Process* (ISOAP) for approval of frontage and site access intersection improvements along Kiernan Avenue (SR 219) prior to submitting an encroachment permit application for these improvements.

***Impact TR-15**: Increased Hazards due to Incompatible Vehicle Fleet Mix*

Additional business park and industrial development is expected to occur in the project vicinity under cumulative conditions as part of the *Salida Community Plan* (Stanislaus County, 2007). However, some agricultural uses generating roadway trips via agricultural equipment are assumed to remain under cumulative conditions on the following roadway segments that are currently used by agricultural equipment on occasion and prohibit trucks over seven tons:

- *Dale Road between Kiernan Avenue (SR 219) and Pirrone Road*
- *Stoddard Road between Kiernan Avenue (SR 219) and Pirrone Road*
- *Pirrone Road between Dale and Stoddard Road*

Project buildout would add an estimated 590 trucks per day on Dale Road, 180 trucks per day on Pirrone Road and Stoddard Road, which currently prohibit trucks over seven tons.

Future development would cause the daily traffic volume increases on Dale Road, Pirrone Road and Stoddard Road. The addition of project trips, when considered in combination with trips from other planned future developments, would introduce more frequent conflicts with agricultural equipment on the Dale Road, Pirrone Road, and Stoddard Road segments listed above, which is considered a cumulatively **significant** impact.

***Mitigation Measure TR-15**: Implement Mitigation Measure TR-5.*

The roadway design review process, overseen by the City of Modesto Engineering Services and/or Public Works Departments, will ensure that these performance standards are met. Design coordination with, and approval from, Caltrans and Stanislaus County is also required, given that the existing Kiernan Avenue (SR 219) frontage falls within Caltrans jurisdiction and truck route improvements on off-site segments of Pirrone and Stoddard Road fall under Stanislaus County jurisdiction.

Alternatively, if truck routes cannot be adopted along the Dale Road, Stoddard Road, and Pirrone Road segments identified above, the project applicant shall limit heavy-truck access to the project site driveways on Kiernan Avenue (SR 219), which is currently designated as a Terminal Access STAA Route.

***Impact TR-16**: Increased Hazards due to Incompatible Land Uses on Dale Road, Pirone Road and Stoddard Road*

Trucks over seven tons are expected to remain prohibited on Dale and Stoddard Road north of Kiernan Avenue (SR 219), and on Pirrone Road between Dale and Stoddard Road under cumulative conditions. Several rural homes front segments of Dale and Stoddard Road; while Joseph A. Gregori High School fronts on Pirrone Road between Stoddard Road and the project site western boundary. Joseph A. Greogori High School and some rural homes are expected to remain in cumulative conditions along these segments of Dale Road, Pirrone Road and Stoddard Road.

The project will generate 180 – 590 daily truck trips on the segments of Dale Road, Pirrone Road, and Stoddard Road, which would create an incompatibility with the adjacent rural residences and high school. This impact is considered cumulatively **significant**.

***Mitigation Measure TR-16**: Implement Mitigation Measure TR-5.*

The roadway design review process, overseen by the City of Modesto Engineering Services and/or Public Works Departments, will ensure that these performance standards are met. Design coordination with, and approval from, Caltrans and Stanislaus County is also required, given that the existing Kiernan Avenue (SR 219) frontage falls within Caltrans jurisdiction and truck route improvements on off-site segments of Pirrone and Stoddard Road fall under Stanislaus County jurisdiction.

Alternatively, if truck routes cannot be adopted along the Dale Road, Stoddard Road, and Pirrone Road segments identified above, the project applicant shall limit heavy-truck access to the project site driveways on Kiernan Avenue (SR 219), which is currently designated as a Terminal Access STAA Route.

***Impact TR-17**: Increased Hazards due to State Highway System Intersection Queues Exceeding Available Storage*

Table 13 displays the AM and PM peak hour 95th percentile queues at queuing study locations (located on the SHS) under Cumulative Plus Project conditions. As shown, two out of 14 locations shown in this table would experience queueing that exceeds available storage. This impact is cumulatively **significant**.

***Mitigation Measure TR-17**: The project applicant shall construct the geometric improvements at the Dale Road/Kiernan Avenue (SR 219) described in **Table 22** (or an equivalent or more effective set of alternative improvements), and shall also contribute its fair share toward the improvements planned at the SR 99/Beckwith Road/Standiford Avenue interchange as part of the City of Modesto's Beckwith/Standiford Multimodal Safety and Complete Streets Improvement Project.*

Table 22. Recommended Improvements to Address Queuing Impacts – Cumulative Plus Project Conditions

ID	Intersection	Lead Agency	Description of Improvements
13.	Dale Rd/ Kiernan Ave (SR 219)	Caltrans	• Additional SB left-turn lane 300 ft in length (total two left turn lanes) • Additional SB through lane (total two through lanes) • Additional SB right-turn lane 300 ft in length (total one right-turn lane) • Additional EB left-turn lane 555 ft in length (total two left turn lanes) • Additional NB through lane (total two through lanes) • Additional NB right-turn lane 300 ft in length (total one right-turn lane)
--	SR 99 NB Ramps/ Beckwith Rd/ Standiford Ave	Caltrans	Implement Beckwith/Standiford Multimodal Safety and Complete Streets Improvement Project

Source: Fehr & Peers, 2026.

The effectiveness of the improvements recommended at the Dale Road/Kiernan Avenue (SR 219) intersection were analyzed under Cumulative Plus Project conditions using the SimTraffic microsimulation models. The results are shown in **Table 23** and indicate that the proposed improvements would reduce the extent of queueing such that all 95th percentile queues would be less than the available storage. Refer to **Appendix F** for the queuing analysis worksheets.

The City of Modesto is currently underway with development of the preferred improvements planned at the SR 99/Beckwith Road/Standiford Avenue interchange as part of the Beckwith/Standiford Multimodal Safety and Complete Streets Improvement Project. The interchange project proposes modification to the SR 99/Beckwith Road/Standiford Avenue interchange and the local street system, including roundabouts at local street intersections, including the Dale Road/Standiford Avenue intersection. Some of the recommended modifications to the interchange design include the following:

- New ramps to provide direct access between SR 99 and the areas north of Beckwith Road/Standiford Avenue. These new ramps are intended to reduce vehicular volume along the Beckwith Road–Standiford Avenue corridor and reduce conflicts between vehicles, bicyclists, and pedestrians.
- Widening ramps to increase vehicle storage and minimize the potential for vehicle queue spillback to SR 99 and local streets.
- High occupancy vehicle (HOV) bypass lanes at on ramps to encourage mode shift from single occupancy vehicle (SOV) to HOV.
- A two–lane exit and auxiliary lane at each off ramp (one exit–only lane plus one optional exit lane).

Build alternatives under consideration by the City of Modesto include roundabout–controlled ramp–terminal intersections at the SR 99/Beckwith Road/Standiford Avenue interchange, as well as a diverging diamond interchange (DDI) configuration with signal–controlled ramp–terminal intersections. The final geometric configuration will be determined through the project development process. The interchange project is currently the Project Approval/Environmental Document (PA/ED) phase; however, the traffic operations analysis for that effort is not yet available.

Interchange build–alternative analysis results for year 2050 conditions are documented in the *Traffic Engineering Performance Assessment for the Beckwith/Standiford Multimodal Safety and Complete Streets Improvement Project PSR/PDS* (Fehr & Peers, May 2024), prepared for the Project Study Report (PSR). This memorandum is included in **Appendix F**. As shown in the memorandum, six different interchange build alternatives were evaluated under year 2050 conditions, all of which were estimated to have 95th percentile queues less than 400 feet in length.

The improvements described above are located on the SHS, which is owned and operated by Caltrans. There is no guarantee that Caltrans will support or approve the identified improvements.

Table 23. 95th Percentile Queue Length Summary – Cumulative Plus Project Conditions with Improvements

ID	Intersection	Lead Agency	Movement[1]	Storage Length (ft)	Cumulative No Project 95th Percentile Queue Length (ft)		Cumulative Plus Project 95th Percentile Queue Length (ft)		Cumulative Plus Project with Improvements[2] 95th Percentile Queue Length (ft)		95th Percentile Queue Requirement Met?
					AM	PM	AM	PM	AM	PM	
13.	Dale Rd/ Kiernan Ave (SR 219)	Caltrans	EBL	555	396	183	**822**	**570**	231	169	Yes
--	SR 99 NB Ramps/ Beckwith Rd/ Standiford Ave	Caltrans	Off-Ramp	1,025	715	**1,368**	**1,287**	**1,365**	<1,000	<1,000	Yes[3]

Notes: **Bold** font denotes movements where storage length is exceeded.

1. EB = eastbound; WB = westbound; NB = northbound; SB = southbound; L= left-turn; T = through; R = right-turn
2. Refer to **Table 22** for description of improvements.
3. Refer to year 2050 queuing results summarized in the *Traffic Engineering Performance Assessment for the Beckwith/Standiford Multimodal Safety and Complete Streets Improvement Project PSR/PDS* (TEPA, Fehr & Peers, May 2024), which is also provided in **Appendix F**. All six interchange build alternatives studied as part of the TEPA result in 95th percentile queues less than 400 feet along the SR 99 off-ramp at Beckwith Road/Standiford Avenue.

Source: Fehr & Peers, 2026.

Emergency Access

***Impact TR-18**: Inadequate emergency access.*

The nearest fire station is City of Modesto Fire Station 11, located at 4225 Carver Road, approximately 2.3 miles from the project site. The nearest hospital, the Kaiser Medical Center, is less than a half mile from the project site. The project currently proposes three site access driveways (with ingress and egress) on Dale Road, two on Kiernan Avenue (SR 219), and two on Pirrone Road, all of which will also serve as emergency vehicle access points. All project driveways provide a minimum clear width of 40 feet, except for the northern Dale Road driveway, which provides 26 foot clear width.

The proposed industrial buildings would have a maximum height of 45 feet. In accordance with Sections D104 and D105 of the 2025 California Fire Code, as adopted by the City of Modesto, the project must provide the following accommodations:

- Buildings or facilities exceeding 30 feet or three stories in height shall have not fewer than two means of fire apparatus access for each structure
- Where the vertical distance between the grade plan and the highest roof surface exceeds 30 feet, approved aerial fire apparatus access roads shall be provided.
- Aerial fire apparatus access roads shall have a minimum unobstructed width of 26 feet, exclusive of shoulders, in the immediate vicinity of the building or portion thereof.
- One or more of the required access routes for buildings 30-feet or taller shall be located not less than 15 feet and not greater than 30 feet from the building, and shall be positioned parallel to one entire side of the building. The side of the building on which the aerial fire apparatus access road is positioned shall be approved by the fire code official.
- Buildings or facilities having a gross building area of more than 62,000 sf shall be provided with two separate and approved fire apparatus access roads. An exception is allowed for buildings having a gross building area up to 124,000 sf that have a single approved fire apparatus access road where all buildings are equipped throughout with approved automatic sprinkler systems.

All proposed site driveways and on-site drive aisles provide a minimum unobstructed width of 26 feet. Although the project includes a continuous and connected internal roadway network for fire access, the site plan does not currently identify designated fire apparatus access roads or the locations of aerial fire apparatus access points for any proposed industrial buildings exceeding 30 feet in height. This impact is cumulatively **significant**.

The *Salida Community Plan* (Stanislaus County, 2007) buildout assumes the construction of a new fire station on Stoddard Road north of Pirrone Road about one mile from the project site. When constructed, the future fire station within the Salida community would improve emergency vehicle response times to the project site.

The separate non-CEQA LTA report prepared for the project demonstrates that improvements are available to maintain acceptable LOS, consistent with the City of Modesto and Stanislaus County General Plans, or to achieve LOS equal to or better than Cumulative No Project conditions at roadways and intersections throughout the study area under Cumulative Plus Project conditions. Therefore, emergency vehicles are not expected to experience undue delays resulting from increased project-generated trips in the study area.

***Mitigation Measure TR-18**: Implement Mitigation Measure TR-9.*

The final site plan must be approved by the City of Modesto Fire Department to ensure the emergency access routes meet requirements to facilitate the safe movement of emergency vehicles.

Construction Impacts Discussion

Project development would entail extensive construction to install backbone site roadway infrastructure, erect industrial and retail buildings, and implement other project features. Improvements would be required to Kiernan Avenue (SR 219), Dale Road, and Pirrone Road. Off-site improvements are required at two intersections as discussed previously. Construction of these access points would not likely require any sustained closures of Kiernan Avenue (SR 219), Dale Road or Pirrone Road. Temporary lane shifts, and manual traffic control during workdays may be required.

As the project develops, additional on-site and off-site construction will be necessary. Due to the uncertainty of exact location and timing of subsequent phases, it is not possible to conclusively describe and evaluate what types of construction effects could occur. Supplemental studies, development of traffic control plans, etc. would be needed at that time.

It is recommended that the project be conditioned to develop a Construction Traffic Management Plan. An important part of that plan will relate to construction staging and the need for travel lanes to remain open. That plan should include performance standards that should be met throughout project construction. Specific performance standards that could be considered include:

- Construction-related trucks operate only on designated truck routes and do not idle or stage on any public streets.
- Construction-related employees do not park along public streets.
- Public streets are regularly maintained to be free of rocks and dirt.
- Construction hours and days of the week adhere to applicable policies.

The Construction Traffic Management Plan and any detour or construction traffic handling plans would be subject to review and approval by the City of Modesto and Stanislaus County Departments of Public Works, and Caltrans.

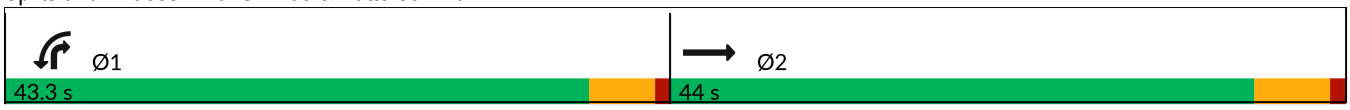
Appendix A. Queuing Analysis Worksheets – Existing Conditions

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	258	0	285	613	0	145
Future Volume (vph)	258	0	285	613	0	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	525		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			125		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.865
Flt Protected			0.950			
Satd. Flow (prot)	1792	0	1703	1792	0	1550
Flt Permitted			0.950			
Satd. Flow (perm)	1792	0	1703	1792	0	1550
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						486
Link Speed (mph)	35			55	45	
Link Distance (ft)	574			1403	796	
Travel Time (s)	11.2			17.4	12.1	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	274	0	303	652	0	154
Shared Lane Traffic (%)						
Lane Group Flow (vph)	274	0	303	652	0	154
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (ft)	100		20	100	20	20
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0		0
Detector 1 Size(ft)	6		20	6		20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0		0.0	0.0		0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA		Over
Protected Phases	2		1	Free		1
Permitted Phases						

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	2		1			1
Switch Phase						
Minimum Initial (s)	8.0		8.0			8.0
Minimum Split (s)	14.0		13.3			13.3
Total Split (s)	44.0		43.3			43.3
Total Split (%)	50.4%		49.6%			49.6%
Maximum Green (s)	38.0		38.0			38.0
Yellow Time (s)	5.0		4.3			4.3
All-Red Time (s)	1.0		1.0			1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	6.0		5.3			5.3
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.2		3.2			3.2
Recall Mode	None		None			None
Act Effct Green (s)	11.6		12.2	35.5		12.2
Actuated g/C Ratio	0.33		0.34	1.00		0.34
v/c Ratio	0.47		0.52	0.36		0.18
Control Delay (s/veh)	13.1		13.3	0.6		0.5
Queue Delay	0.0		0.0	0.0		0.0
Total Delay (s/veh)	13.1		13.3	0.6		0.5
LOS	B		B	A		A
Approach Delay (s/veh)	13.1			4.6	0.5	
Approach LOS	B			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 87.3			
Actuated Cycle Length: 35.5			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay (s/veh): 5.8		Intersection LOS: A	
Intersection Capacity Utilization 38.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: SR 108 & Patterson Rd

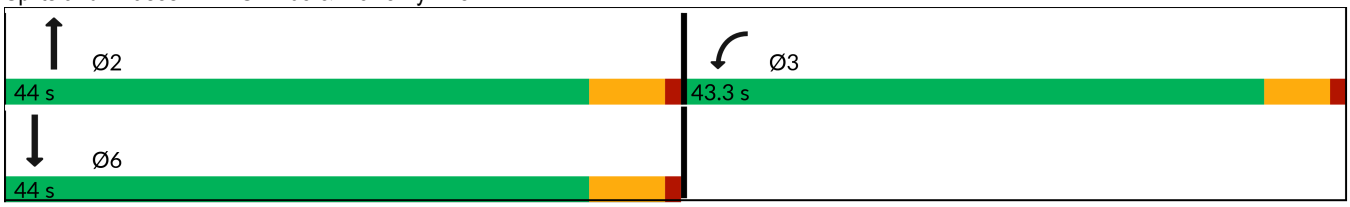


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	284	1	307	145	0	525
Future Volume (vph)	284	1	307	145	0	525
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		475	0	
Storage Lanes	1	0		1	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Frt				0.850		
Flt Protected	0.953					
Satd. Flow (prot)	1708	0	1792	1524	0	3406
Flt Permitted	0.953					
Satd. Flow (perm)	1708	0	1792	1524	0	3406
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)				154		
Link Speed (mph)	45		55			55
Link Distance (ft)	796		700			570
Travel Time (s)	12.1		8.7			7.1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	302	1	327	154	0	559
Shared Lane Traffic (%)						
Lane Group Flow (vph)	303	0	327	154	0	559
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1		2	1		2
Detector Template	Left		Thru	Right		Thru
Leading Detector (ft)	20		100	20		100
Trailing Detector (ft)	0		0	0		0
Detector 1 Position(ft)	0		0	0		0
Detector 1 Size(ft)	20		6	20		6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0		0.0	0.0		0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot		NA	Free		NA
Protected Phases	3		2			6
Permitted Phases				Free		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	3		2			6
Switch Phase						
Minimum Initial (s)	8.0		8.0			8.0
Minimum Split (s)	13.3		14.0			14.0
Total Split (s)	43.3		44.0			44.0
Total Split (%)	49.6%		50.4%			50.4%
Maximum Green (s)	38.0		38.0			38.0
Yellow Time (s)	4.3		5.0			5.0
All-Red Time (s)	1.0		1.0			1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.3		6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.2		3.2			3.2
Recall Mode	None		None			None
Act Effct Green (s)	12.7		12.9	37.4		12.9
Actuated g/C Ratio	0.34		0.34	1.00		0.34
v/c Ratio	0.52		0.53	0.10		0.47
Control Delay (s/veh)	14.1		13.9	0.1		11.4
Queue Delay	0.0		0.0	0.0		0.0
Total Delay (s/veh)	14.1		13.9	0.1		11.4
LOS	B		B	A		B
Approach Delay (s/veh)	14.1		9.5			11.4
Approach LOS	B		A			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 87.3			
Actuated Cycle Length: 37.4			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay (s/veh): 11.4		Intersection LOS: B	
Intersection Capacity Utilization 41.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 7: SR 108 & McHenry Ave



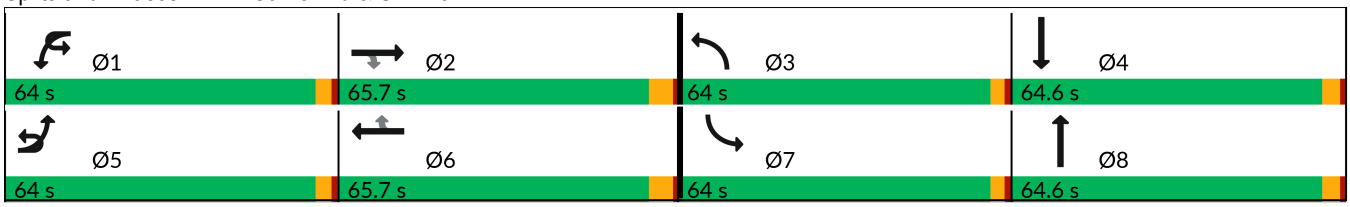
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	7	30	702	125	2	53	1052	5	198	97	55	12
Future Volume (vph)	7	30	702	125	2	53	1052	5	198	97	55	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		430		580		595		540	260		0	95
Storage Lanes		1		2		1		1	1		0	1
Taper Length (ft)		110				90			115			115
Lane Util. Factor	0.91	1.00	0.91	1.00	0.91	1.00	0.91	1.00	1.00	1.00	1.00	1.00
Frt				0.850				0.850		0.946		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	1719	4940	1538	0	1719	4940	1538	1719	1712	0	1719
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	1719	4940	1538	0	1719	4940	1538	1719	1712	0	1719
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				137				41		10		
Link Speed (mph)			55				55			35		
Link Distance (ft)			1479				1299			1261		
Travel Time (s)			18.3				16.1			24.6		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	8	33	771	137	2	58	1156	5	218	107	60	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	41	771	137	0	60	1156	5	218	167	0	13
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			12				12			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			16				16			16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2		1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)		20	100	20		20	100	20	20	100		20
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0		0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA		Prot
Protected Phases	5	5	2		1	1	6		3	8		7

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	101	54
Future Volume (vph)	101	54
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	1.00	1.00
Frt	0.948	
Flt Protected		
Satd. Flow (prot)	1715	0
Flt Permitted		
Satd. Flow (perm)	1715	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	10	
Link Speed (mph)	35	
Link Distance (ft)	1396	
Travel Time (s)	27.2	
Peak Hour Factor	0.91	0.91
Heavy Vehicles (%)	5%	5%
Adj. Flow (vph)	111	59
Shared Lane Traffic (%)		
Lane Group Flow (vph)	170	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane	Yes	
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	
Detector Template	Thru	
Leading Detector (ft)	100	
Trailing Detector (ft)	0	
Detector 1 Position(ft)	0	
Detector 1 Size(ft)	6	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	
Protected Phases	4	

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Permitted Phases				2				6				
Detector Phase	5	5	2	2	1	1	6	6	3	8		7
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	14.0	14.0	15.7	15.7	14.0	14.0	15.7	15.7	14.0	14.5		14.0
Total Split (s)	64.0	64.0	65.7	65.7	64.0	64.0	65.7	65.7	64.0	64.6		64.0
Total Split (%)	24.8%	24.8%	25.4%	25.4%	24.8%	24.8%	25.4%	25.4%	24.8%	25.0%		24.8%
Maximum Green (s)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.1		60.0
Yellow Time (s)	3.0	3.0	4.7	4.7	3.0	3.0	4.7	4.7	3.0	3.5		3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		4.0	5.7	5.7		4.0	5.7	5.7	4.0	4.5		4.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	2.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0		1.0
Recall Mode	None	None	Min	Min	None	None	Min	Min	None	None		None
Act Effct Green (s)		10.5	40.0	40.0		10.9	40.3	40.3	20.2	36.9		10.4
Actuated g/C Ratio		0.10	0.39	0.39		0.11	0.39	0.39	0.20	0.36		0.10
v/c Ratio		0.23	0.40	0.20		0.33	0.60	0.01	0.65	0.27		0.07
Control Delay (s/veh)		53.8	26.0	5.5		54.9	28.6	0.0	50.3	26.6		51.9
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		53.8	26.0	5.5		54.9	28.6	0.0	50.3	26.6		51.9
LOS		D	C	A		D	C	A	D	C		D
Approach Delay (s/veh)			24.3				29.8			40.1		
Approach LOS			C				C			D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 258.3			
Actuated Cycle Length: 103.2			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay (s/veh): 30.6		Intersection LOS: C	
Intersection Capacity Utilization 63.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 14: Carver Rd & SR 219





Lane Group	SBT	SBR
Permitted Phases		
Detector Phase	4	
Switch Phase		
Minimum Initial (s)	10.0	
Minimum Split (s)	14.6	
Total Split (s)	64.6	
Total Split (%)	25.0%	
Maximum Green (s)	60.0	
Yellow Time (s)	3.6	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	4.6	
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	2.0	
Recall Mode	None	
Act Effct Green (s)	17.2	
Actuated g/C Ratio	0.17	
v/c Ratio	0.58	
Control Delay (s/veh)	48.5	
Queue Delay	0.0	
Total Delay (s/veh)	48.5	
LOS	D	
Approach Delay (s/veh)	48.7	
Approach LOS	D	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	26	670	100	18	154	937	7	134	99	95	13	218
Future Volume (vph)	26	670	100	18	154	937	7	134	99	95	13	218
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	715		355		665		415	275		395	300	
Storage Lanes	1		1		2		1	1		1	1	
Taper Length (ft)	95				190			120			100	
Lane Util. Factor	1.00	0.91	1.00	0.91	0.97	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor										0.99		
Frt			0.850				0.850			0.850		0.980
Flt Protected	0.950				0.950			0.950			0.950	
Satd. Flow (prot)	1736	4988	1553	0	3367	4988	1553	1736	1827	1553	1736	1790
Flt Permitted	0.950				0.950			0.950			0.950	
Satd. Flow (perm)	1736	4988	1553	0	3367	4988	1553	1736	1827	1532	1736	1790
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)			101				82			104		3
Link Speed (mph)		55				55			35			35
Link Distance (ft)		1306				1457			1372			1326
Travel Time (s)		16.2				18.1			26.7			25.8
Confl. Peds. (#/hr)										1		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	29	736	110	20	169	1030	8	147	109	104	14	240
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	736	110	0	189	1030	8	147	109	104	14	277
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)		24				24			12			12
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		16				16			16			16
Two way Left Turn Lane									Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Number of Detectors	1	2	1		1	2	1	1	2	1	1	2
Detector Template	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left	Thru
Leading Detector (ft)	20	100	20		20	100	20	20	100	20	20	100
Trailing Detector (ft)	0	0	0		0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0		0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20		20	6	20	20	6	20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94				94			94			94
Detector 2 Size(ft)		6				6			6			6
Detector 2 Type		Cl+Ex				Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0				0.0			0.0			0.0

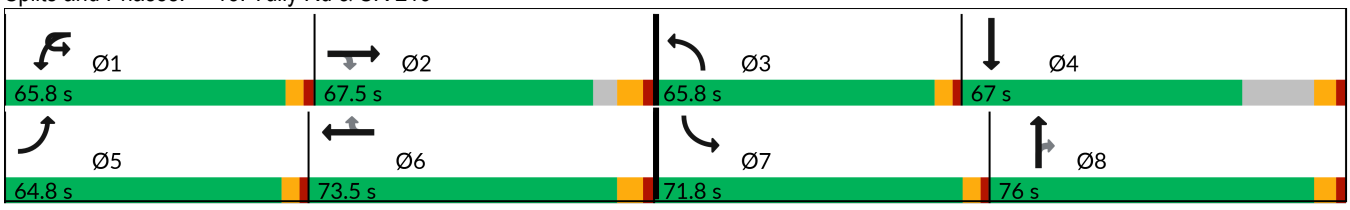


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	34
Future Volume (vph)	34
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	
Lane Util. Factor	1.00
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	0.91
Heavy Vehicles (%)	4%
Adj. Flow (vph)	37
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Turn Type	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	5	2		1	1	6		3	8		7	4
Permitted Phases			2				6			8		
Detector Phase	5	2	2	1	1	6	6	3	8	8	7	4
Switch Phase												
Minimum Initial (s)	9.0	10.0	10.0	10.0	10.0	16.0	16.0	10.0	19.0	19.0	16.0	10.0
Minimum Split (s)	14.8	17.5	17.5	15.8	15.8	23.5	23.5	15.8	26.0	26.0	21.8	17.0
Total Split (s)	64.8	67.5	67.5	65.8	65.8	73.5	73.5	65.8	76.0	76.0	71.8	67.0
Total Split (%)	22.6%	23.6%	23.6%	23.0%	23.0%	25.7%	25.7%	23.0%	26.6%	26.6%	25.1%	23.4%
Maximum Green (s)	59.0	60.0	60.0	60.0	60.0	66.0	66.0	60.0	69.0	69.0	66.0	60.0
Yellow Time (s)	3.8	5.5	5.5	3.8	3.8	5.5	5.5	3.8	5.0	5.0	3.8	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	7.5	7.5		5.8	7.5	7.5	5.8	7.0	7.0	5.8	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	1.0	2.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0
Recall Mode	None	Min	Min	None	None	Min	Min	None	None	None	None	None
Act Effct Green (s)	9.5	29.4	29.4		13.2	37.4	37.4	17.0	42.5	42.5	16.7	26.8
Actuated g/C Ratio	0.08	0.26	0.26		0.12	0.33	0.33	0.15	0.37	0.37	0.15	0.24
v/c Ratio	0.20	0.57	0.23		0.48	0.63	0.01	0.57	0.16	0.16	0.05	0.65
Control Delay (s/veh)	61.2	39.7	10.2		55.3	36.4	0.0	57.5	29.5	7.1	52.9	48.6
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	61.2	39.7	10.2		55.3	36.4	0.0	57.5	29.5	7.1	52.9	48.6
LOS	E	D	B		E	D	A	E	C	A	D	D
Approach Delay (s/veh)		36.7				39.1			34.5			48.8
Approach LOS		D				D			C			D

Intersection Summary			
Area Type:	Other		
Cycle Length: 286.1			
Actuated Cycle Length: 113.6			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay (s/veh): 38.8		Intersection LOS: D	
Intersection Capacity Utilization 76.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 15: Tully Rd & SR 219





Lane Group	SBR
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	

Intersection Summary

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	11	131	384	142	229	835	139	99	294	112	117	503
Future Volume (vph)	11	131	384	142	229	835	139	99	294	112	117	503
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		765		650	960		75	140		210	420	
Storage Lanes		2		1	2		1	1		1	1	
Taper Length (ft)		255			255			80			115	
Lane Util. Factor	0.91	0.97	0.91	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor				0.98								
Frt				0.850			0.850			0.850		
Flt Protected		0.950			0.950			0.950			0.950	
Satd. Flow (prot)	0	3335	4940	1538	3335	3438	1538	1719	3438	1538	1719	3438
Flt Permitted		0.950			0.950			0.950			0.950	
Satd. Flow (perm)	0	3335	4940	1503	3335	3438	1538	1719	3438	1538	1719	3438
Right Turn on Red				Yes			Yes			Yes		
Satd. Flow (RTOR)				156			90			123		
Link Speed (mph)			55			55			35			45
Link Distance (ft)			1286			1655			1507			1304
Travel Time (s)			15.9			20.5			29.4			19.8
Confl. Peds. (#/hr)				8								
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	12	144	422	156	252	918	153	109	323	123	129	553
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	156	422	156	252	918	153	109	323	123	129	553
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			24			24			12			12
Link Offset(ft)			0			0			0			0
Crosswalk Width(ft)			16			16			16			16
Two way Left Turn Lane												Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors		1	2	1	1	2	1	1	2	1	1	2
Detector Template		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru
Leading Detector (ft)		20	100	20	20	100	20	20	100	20	20	100
Trailing Detector (ft)		0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)		0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)		20	6	20	20	6	20	20	6	20	20	6
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94			94			94
Detector 2 Size(ft)			6			6			6			6
Detector 2 Type			Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0			0.0			0.0

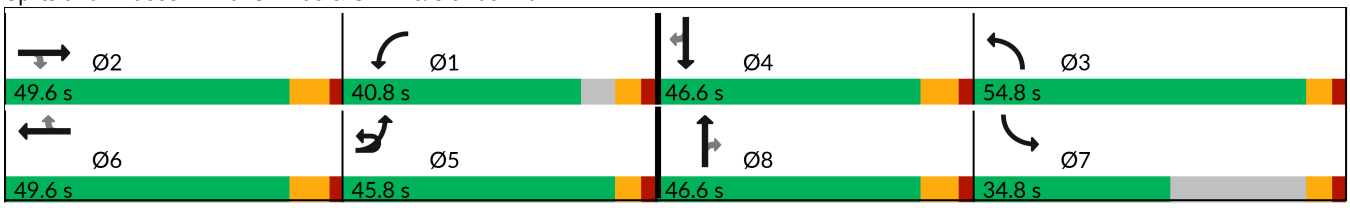


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	147
Future Volume (vph)	147
Ideal Flow (vphpl)	1900
Storage Length (ft)	535
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Ped Bike Factor	
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1538
Flt Permitted	
Satd. Flow (perm)	1538
Right Turn on Red	Yes
Satd. Flow (RTOR)	162
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	0.91
Heavy Vehicles (%)	5%
Adj. Flow (vph)	162
Shared Lane Traffic (%)	
Lane Group Flow (vph)	162
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Turn Type	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	5	5	2		1	6		3	8		7	4
Permitted Phases				2			6			8		
Detector Phase	5	5	2	2	1	6	6	3	8	8	7	4
Switch Phase												
Minimum Initial (s)	15.0	15.0	12.0	12.0	15.0	12.0	12.0	14.0	14.0	14.0	14.0	14.0
Minimum Split (s)	20.8	20.8	50.6	50.6	20.8	55.6	55.6	19.8	58.6	58.6	19.8	60.6
Total Split (s)	45.8	45.8	49.6	49.6	40.8	49.6	49.6	54.8	46.6	46.6	34.8	46.6
Total Split (%)	23.3%	23.3%	25.2%	25.2%	20.7%	25.2%	25.2%	27.8%	23.7%	23.7%	17.7%	23.7%
Maximum Green (s)	40.0	40.0	42.0	42.0	35.0	42.0	42.0	49.0	39.0	39.0	29.0	39.0
Yellow Time (s)	3.8	3.8	5.6	5.6	3.8	5.6	5.6	3.8	5.6	5.6	3.8	5.6
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.8	7.6	7.6	5.8	7.6	7.6	5.8	7.6	7.6	5.8	7.6
Lead/Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.5	2.5	2.1	2.1	2.5	2.0	2.0	2.5	3.6	3.6	2.5	2.3
Recall Mode	None	None	Min	Min	None	Min	Min	None	None	None	None	None
Walk Time (s)			7.0	7.0		7.0	7.0		7.0	7.0		7.0
Flash Don't Walk (s)			35.0	35.0		41.0	41.0		44.0	44.0		46.0
Pedestrian Calls (#/hr)			8	8		0	0		0	0		0
Act Effct Green (s)		15.9	19.3	19.3	38.9	42.2	42.2	15.4	18.7	18.7	22.5	25.8
Actuated g/C Ratio		0.13	0.15	0.15	0.31	0.33	0.33	0.12	0.15	0.15	0.18	0.20
v/c Ratio		0.37	0.56	0.43	0.25	0.80	0.27	0.52	0.64	0.37	0.42	0.79
Control Delay (s/veh)		54.7	51.8	10.0	38.0	45.4	15.9	63.1	57.1	11.6	51.4	56.4
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		54.7	51.8	10.0	38.0	45.4	15.9	63.1	57.1	11.6	51.4	56.4
LOS		D	D	B	D	D	B	E	E	B	D	E
Approach Delay (s/veh)			43.5			40.6			48.2			46.4
Approach LOS			D			D			D			D

Intersection Summary			
Area Type:	Other		
Cycle Length: 196.8			
Actuated Cycle Length: 126.3			
Natural Cycle: 160			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay (s/veh): 43.9		Intersection LOS: D	
Intersection Capacity Utilization 83.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 16: SR 108 & SR 219/Claribel Rd





Lane Group	SBR
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Detector Phase	4
Switch Phase	
Minimum Initial (s)	14.0
Minimum Split (s)	60.6
Total Split (s)	46.6
Total Split (%)	23.7%
Maximum Green (s)	39.0
Yellow Time (s)	5.6
All-Red Time (s)	2.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	7.6
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	2.3
Recall Mode	None
Walk Time (s)	7.0
Flash Don't Walk (s)	46.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	25.8
Actuated g/C Ratio	0.20
v/c Ratio	0.37
Control Delay (s/veh)	8.5
Queue Delay	0.0
Total Delay (s/veh)	8.5
LOS	A
Approach Delay (s/veh)	
Approach LOS	

Intersection Summary

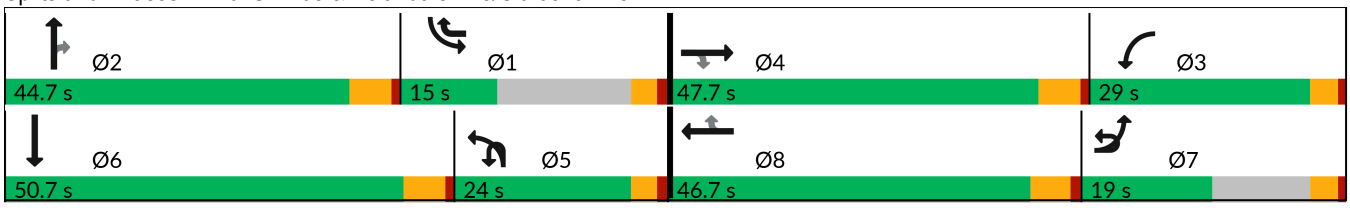
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	15	193	480	158	51	471	238	2	130	491	26	65
Future Volume (vph)	15	193	480	158	51	471	238	2	130	491	26	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		300		380	195		320		325		260	175
Storage Lanes		1		1	2		1		2		1	2
Taper Length (ft)		150			150				105			95
Lane Util. Factor	0.95	0.97	0.95	1.00	0.97	0.91	1.00	0.95	0.97	0.95	1.00	0.97
Ped Bike Factor							0.99					
Frt				0.850			0.850				0.850	
Flt Protected		0.950			0.950				0.950			0.950
Satd. Flow (prot)	0	3400	3505	1568	3400	5036	1568	0	3400	3505	1568	3400
Flt Permitted		0.950			0.950				0.950			0.950
Satd. Flow (perm)	0	3400	3505	1568	3400	5036	1547	0	3400	3505	1568	3400
Right Turn on Red				Yes			Yes				Yes	
Satd. Flow (RTOR)				174			125				118	
Link Speed (mph)			45			45				35		
Link Distance (ft)			850			671				829		
Travel Time (s)			12.9			10.2				16.1		
Confl. Peds. (#/hr)							1					
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	16	212	527	174	56	518	262	2	143	540	29	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	228	527	174	56	518	262	0	145	540	29	71
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	Left
Median Width(ft)			24			24				24		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	9	15		9	15
Number of Detectors		1	2	1	1	2	1		1	2	1	1
Detector Template		Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left
Leading Detector (ft)		20	100	20	20	100	20		20	100	20	20
Trailing Detector (ft)		0	0	0	0	0	0		0	0	0	0
Detector 1 Position(ft)		0	0	0	0	0	0		0	0	0	0
Detector 1 Size(ft)		20	6	20	20	6	20		20	6	20	20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94				94		
Detector 2 Size(ft)			6			6				6		
Detector 2 Type			Cl+Ex			Cl+Ex				Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0				0.0		

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	550	90
Future Volume (vph)	550	90
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	0.95	0.95
Ped Bike Factor	1.00	
Frt	0.979	
Flt Protected		
Satd. Flow (prot)	3422	0
Flt Permitted		
Satd. Flow (perm)	3422	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	12	
Link Speed (mph)	35	
Link Distance (ft)	2586	
Travel Time (s)	50.4	
Confl. Peds. (#/hr)		3
Peak Hour Factor	0.91	0.91
Heavy Vehicles (%)	3%	3%
Adj. Flow (vph)	604	99
Shared Lane Traffic (%)		
Lane Group Flow (vph)	703	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	24	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	
Detector Template	Thru	
Leading Detector (ft)	100	
Trailing Detector (ft)	0	
Detector 1 Position(ft)	0	
Detector 1 Size(ft)	6	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Turn Type	Prot	Prot	NA	Perm	Prot	NA	pm+ov	Prot	Prot	NA	Perm	Prot
Protected Phases	7	7	4		3	8	1	5	5	2		1
Permitted Phases				4			8				2	
Detector Phase	7	7	4	4	3	8	1	5	5	2	2	1
Switch Phase												
Minimum Initial (s)	10.0	10.0	15.0	15.0	25.0	10.0	10.0	10.0	10.0	25.0	25.0	10.0
Minimum Split (s)	14.0	14.0	47.7	47.7	29.0	46.7	14.0	14.0	14.0	44.7	44.7	14.0
Total Split (s)	19.0	19.0	47.7	47.7	29.0	46.7	15.0	24.0	24.0	44.7	44.7	15.0
Total Split (%)	12.5%	12.5%	31.5%	31.5%	19.2%	30.8%	9.9%	15.9%	15.9%	29.5%	29.5%	9.9%
Maximum Green (s)	15.0	15.0	42.0	42.0	25.0	41.0	11.0	20.0	20.0	39.0	39.0	11.0
Yellow Time (s)	3.0	3.0	4.7	4.7	3.0	4.7	3.0	3.0	3.0	4.7	4.7	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		4.0	5.7	5.7	4.0	5.7	4.0		4.0	5.7	5.7	4.0
Lead/Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.5	2.5	2.0	2.5	2.3	2.2	2.2	3.0	3.0	2.3
Recall Mode	None	None	None	None	Min	None	Min	None	None	Min	Min	Min
Walk Time (s)			10.0	10.0		10.0				5.0	5.0	
Flash Don't Walk (s)			32.0	32.0		31.0				34.0	34.0	
Pedestrian Calls (#/hr)			0	0		1				0	0	
Act Effct Green (s)		28.0	22.4	22.4	25.3	19.7	35.5		12.2	26.8	26.8	14.0
Actuated g/C Ratio		0.26	0.21	0.21	0.23	0.18	0.33		0.11	0.25	0.25	0.13
v/c Ratio		0.26	0.73	0.38	0.07	0.56	0.44		0.38	0.62	0.06	0.16
Control Delay (s/veh)		36.9	46.8	8.0	36.9	42.3	14.1		50.8	41.0	0.2	44.3
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)		36.9	46.8	8.0	36.9	42.3	14.1		50.8	41.0	0.2	44.3
LOS		D	D	A	D	D	B		D	D	A	D
Approach Delay (s/veh)			37.1			33.1				41.3		
Approach LOS			D			C				D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 151.4			
Actuated Cycle Length: 108.2			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay (s/veh): 38.3		Intersection LOS: D	
Intersection Capacity Utilization 69.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 26: SR 108 & Pelandale Ave/Claratina Ave





Lane Group	SBT	SBR
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Detector Phase	6	
Switch Phase		
Minimum Initial (s)	20.0	
Minimum Split (s)	50.7	
Total Split (s)	50.7	
Total Split (%)	33.5%	
Maximum Green (s)	45.0	
Yellow Time (s)	4.7	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	5.7	
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	
Recall Mode	Min	
Walk Time (s)	10.0	
Flash Don't Walk (s)	10.0	
Pedestrian Calls (#/hr)	3	
Act Effct Green (s)	28.7	
Actuated g/C Ratio	0.27	
v/c Ratio	0.77	
Control Delay (s/veh)	42.3	
Queue Delay	0.0	
Total Delay (s/veh)	42.3	
LOS	D	
Approach Delay (s/veh)	42.5	
Approach LOS	D	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	0	675	250	3	418	496	0	0	0	0	760	3
Future Volume (vph)	0	675	250	3	418	496	0	0	0	0	760	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		0		0		0	0		0	450	
Storage Lanes	2		1		2		0	0		0	1	
Taper Length (ft)	25				25			25			105	
Lane Util. Factor	1.00	0.81	0.81	0.95	0.97	0.95	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.983	0.850									
Flt Protected					0.950						0.950	0.953
Satd. Flow (prot)	0	5763	1246	0	3335	3438	0	0	0	0	1633	1638
Flt Permitted					0.950						0.950	0.953
Satd. Flow (perm)	0	5763	1246	0	3335	3438	0	0	0	0	1633	1638
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)		29	172									
Link Speed (mph)		25				40			35			35
Link Distance (ft)		417				419			778			1218
Travel Time (s)		11.4				7.1			15.2			23.7
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	703	260	3	435	517	0	0	0	0	792	3
Shared Lane Traffic (%)			34%								50%	
Lane Group Flow (vph)	0	791	172	0	438	517	0	0	0	0	396	399
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Right	Left
Median Width(ft)		24				24			12			12
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		50				16			16			30
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Number of Detectors		2	1		1	2			2		1	2
Detector Template		Thru	Right		Left	Thru			Thru		Left	Thru
Leading Detector (ft)		100	20		20	100			100		20	100
Trailing Detector (ft)		0	0		0	0			0		0	0
Detector 1 Position(ft)		0	0		0	0					0	0
Detector 1 Size(ft)		6	20		20	6					20	6
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0		0.0	0.0					0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0					0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0					0.0	0.0
Detector 2 Position(ft)		94				94						94
Detector 2 Size(ft)		6				6						6
Detector 2 Type		Cl+Ex				Cl+Ex						Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0				0.0						0.0
Turn Type		NA	Perm	Prot	Prot	NA					Split	NA
Protected Phases		2		1	1	6					4	4
Permitted Phases			2									

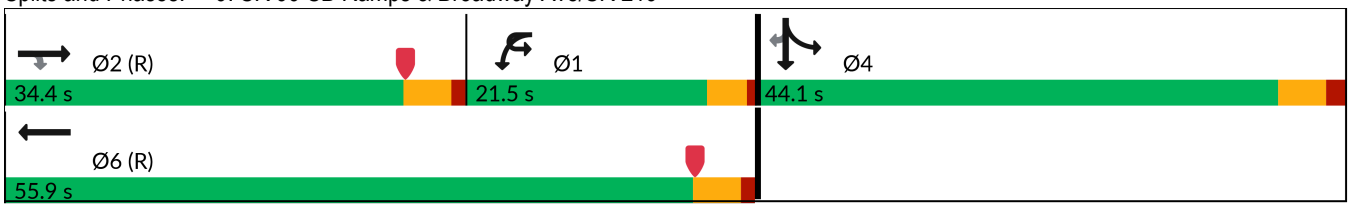


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	71
Future Volume (vph)	71
Ideal Flow (vphpl)	1900
Storage Length (ft)	450
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1538
Flt Permitted	
Satd. Flow (perm)	1538
Right Turn on Red	Yes
Satd. Flow (RTOR)	74
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.96
Adj. Flow (vph)	74
Shared Lane Traffic (%)	
Lane Group Flow (vph)	74
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	Perm
Protected Phases	
Permitted Phases	4

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Detector Phase		2	2	1	1	6					4	4
Switch Phase												
Minimum Initial (s)		8.0	8.0	8.0	8.0	8.0					5.0	5.0
Minimum Split (s)		25.6	25.6	11.5	11.5	25.6					30.1	30.1
Total Split (s)		34.4	34.4	21.5	21.5	55.9					44.1	44.1
Total Split (%)		34.4%	34.4%	21.5%	21.5%	55.9%					44.1%	44.1%
Maximum Green (s)		29.8	29.8	18.0	18.0	51.3					39.0	39.0
Yellow Time (s)		3.6	3.6	3.0	3.0	3.6					3.6	3.6
All-Red Time (s)		1.0	1.0	0.5	0.5	1.0					1.5	1.5
Lost Time Adjust (s)		0.0	0.0		0.0	0.0					0.0	0.0
Total Lost Time (s)		4.6	4.6		3.5	4.6					5.1	5.1
Lead/Lag		Lead	Lead	Lag	Lag							
Lead-Lag Optimize?		Yes	Yes	Yes	Yes							
Vehicle Extension (s)		2.4	2.4	2.0	2.0	3.0					3.0	3.0
Recall Mode		C-Max	C-Max	Max	Max	C-Max					None	None
Walk Time (s)		7.0	7.0			7.0					5.0	5.0
Flash Don't Walk (s)		14.0	14.0			14.0					20.0	20.0
Pedestrian Calls (#/hr)		0	0			0					0	0
Act Effct Green (s)		37.6	37.6		18.0	59.1					31.2	31.2
Actuated g/C Ratio		0.38	0.38		0.18	0.59					0.31	0.31
v/c Ratio		0.36	0.30		0.73	0.25					0.78	0.78
Control Delay (s/veh)		23.4	5.6		24.0	4.4					41.7	41.9
Queue Delay		0.0	0.0		0.0	0.0					0.0	0.0
Total Delay (s/veh)		23.4	5.6		24.0	4.4					41.7	41.9
LOS		C	A		C	A					D	D
Approach Delay (s/veh)		20.2				13.4						38.7
Approach LOS		C				B						D

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 12 (12%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay (s/veh): 23.6		Intersection LOS: C	
Intersection Capacity Utilization 60.5%		ICU Level of Service B	
Analysis Period (min) 15			

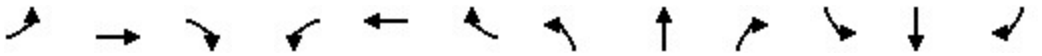
Splits and Phases: 9: SR 99 SB Ramps & Broadway Ave/SR 219





Lane Group	SBR
Detector Phase	4
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	30.1
Total Split (s)	44.1
Total Split (%)	44.1%
Maximum Green (s)	39.0
Yellow Time (s)	3.6
All-Red Time (s)	1.5
Lost Time Adjust (s)	0.0
Total Lost Time (s)	5.1
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Don't Walk (s)	20.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	31.2
Actuated g/C Ratio	0.31
v/c Ratio	0.14
Control Delay (s/veh)	5.5
Queue Delay	0.0
Total Delay (s/veh)	5.5
LOS	A
Approach Delay (s/veh)	
Approach LOS	

Intersection Summary

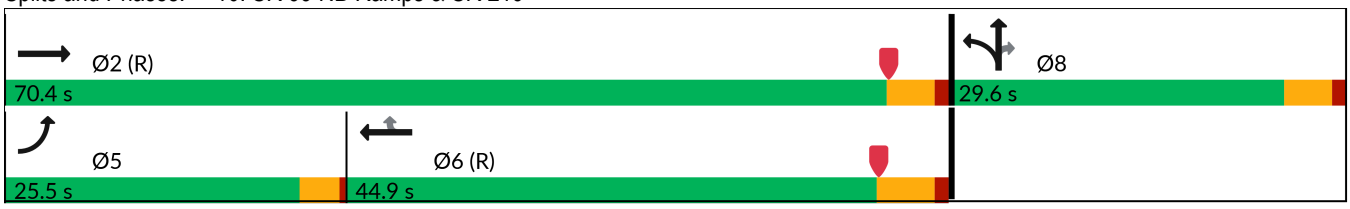


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	1320	0	0	857	584	60	20	130	0	0	0
Future Volume (vph)	118	1320	0	0	857	584	60	20	130	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	360		0	0		565	0		0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (ft)	25			140			25			25		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	0.88	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.964				
Satd. Flow (prot)	1719	4940	0	0	4940	1538	0	1744	2707	0	0	0
Flt Permitted	0.950							0.964				
Satd. Flow (perm)	1719	4940	0	0	4940	1538	0	1744	2707	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						608			118			
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		419			622			1358			1317	
Travel Time (s)		7.1			10.6			26.5			25.7	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	123	1375	0	0	893	608	63	21	135	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	123	1375	0	0	893	608	0	84	135	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			25			25			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1		2	1		2	
Detector Template	Left	Thru			Thru	Right		Thru	Right		Thru	
Leading Detector (ft)	20	100			100	20		100	20		100	
Trailing Detector (ft)	0	0			0	0		0	0		0	
Detector 1 Position(ft)	0	0			0	0		0	0			
Detector 1 Size(ft)	20	6			6	20		6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2			6	6	8	8	8			
Switch Phase												
Minimum Initial (s)	10.0	5.0			12.0	12.0	5.0	5.0	5.0			
Minimum Split (s)	13.5	24.6			27.3	27.3	29.6	29.6	29.6			
Total Split (s)	25.5	70.4			44.9	44.9	29.6	29.6	29.6			
Total Split (%)	25.5%	70.4%			44.9%	44.9%	29.6%	29.6%	29.6%			
Maximum Green (s)	22.0	65.8			39.6	39.6	25.0	25.0	25.0			
Yellow Time (s)	3.0	3.6			4.3	4.3	3.6	3.6	3.6			
All-Red Time (s)	0.5	1.0			1.0	1.0	1.0	1.0	1.0			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Total Lost Time (s)	3.5	4.6			5.3	5.3		4.6	4.6			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	2.0	3.0			2.0	2.0	2.0	2.0	2.0			
Recall Mode	Max	C-Max			C-Max	C-Max	Max	Max	Max			
Walk Time (s)		7.0			7.0	7.0	5.0	5.0	5.0			
Flash Don't Walk (s)		13.0			15.0	15.0	20.0	20.0	20.0			
Pedestrian Calls (#/hr)		0			0	0	0	0	0			
Act Effct Green (s)	22.0	65.8			39.6	39.6		25.0	25.0			
Actuated g/C Ratio	0.22	0.66			0.40	0.40		0.25	0.25			
v/c Ratio	0.33	0.42			0.46	0.62		0.19	0.18			
Control Delay (s/veh)	62.1	7.6			23.2	4.9		31.0	8.1			
Queue Delay	0.0	0.2			0.0	0.0		0.0	0.0			
Total Delay (s/veh)	62.1	7.8			23.2	4.9		31.0	8.1			
LOS	E	A			C	A		C	A			
Approach Delay (s/veh)		12.3			15.8			16.9				
Approach LOS		B			B			B				

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 27 (27%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay (s/veh): 14.2		Intersection LOS: B	
Intersection Capacity Utilization 60.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 10: SR 99 NB Ramps & SR 219



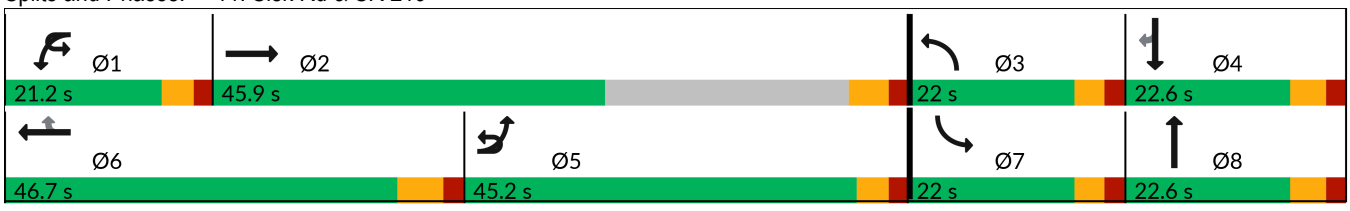
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	24	186	1135	80	4	53	999	349	130	364	83	307
Future Volume (vph)	24	186	1135	80	4	53	999	349	130	364	83	307
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		250		0		735		525	555		230	505
Storage Lanes		1		1		1		1	1		1	1
Taper Length (ft)		75				140			100			100
Lane Util. Factor	0.91	0.94	0.91	1.00	0.91	1.00	0.91	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor				0.99				0.99		1.00		
Frt				0.850				0.850		0.972		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	4848	4940	1538	0	1719	4940	1538	1719	3327	0	1719
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	4848	4940	1519	0	1719	4940	1518	1719	3327	0	1719
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				203				364		16		
Link Speed (mph)			40				55			35		
Link Distance (ft)			434				926			2020		
Travel Time (s)			7.4				11.5			39.4		
Confl. Peds. (#/hr)				1				1			5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	25	194	1182	83	4	55	1041	364	135	379	86	320
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	219	1182	83	0	59	1041	364	135	465	0	320
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			48				36			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			25				25			25		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2		1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)		20	100	20		20	100	20	20	100		20
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0		0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Free	Prot	Prot	NA	Perm	Prot	NA		Prot

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	171	298
Future Volume (vph)	171	298
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		150
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	1.00	0.88
Ped Bike Factor		
Frt		0.850
Flt Protected		
Satd. Flow (prot)	1810	2707
Flt Permitted		
Satd. Flow (perm)	1810	2707
Right Turn on Red		Yes
Satd. Flow (RTOR)		310
Link Speed (mph)	35	
Link Distance (ft)	1227	
Travel Time (s)	23.9	
Confl. Peds. (#/hr)		
Peak Hour Factor	0.96	0.96
Adj. Flow (vph)	178	310
Shared Lane Traffic (%)		
Lane Group Flow (vph)	178	310
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	35	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	1
Detector Template	Thru	Right
Leading Detector (ft)	100	20
Trailing Detector (ft)	0	0
Detector 1 Position(ft)	0	0
Detector 1 Size(ft)	6	20
Detector 1 Type	Cl+Ex	Cl+Ex
Detector 1 Channel		
Detector 1 Extend (s)	0.0	0.0
Detector 1 Queue (s)	0.0	0.0
Detector 1 Delay (s)	0.0	0.0
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	Perm

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Protected Phases	5	5	2		1	1	6		3	8		7
Permitted Phases				Free				6				
Detector Phase	5	5	2		1	1	6	6	3	8		7
Switch Phase												
Minimum Initial (s)	5.0	5.0	10.0		6.0	6.0	10.0	10.0	5.0	5.0		5.0
Minimum Split (s)	10.2	10.2	32.9		11.2	11.2	41.7	41.7	10.0	22.6		10.0
Total Split (s)	45.2	45.2	45.9		21.2	21.2	46.7	46.7	22.0	22.6		22.0
Total Split (%)	33.1%	33.1%	33.6%		15.5%	15.5%	34.2%	34.2%	16.1%	16.6%		16.1%
Maximum Green (s)	40.0	40.0	40.0		16.0	16.0	40.0	40.0	17.0	17.0		17.0
Yellow Time (s)	3.2	3.2	3.9		3.2	3.2	4.7	4.7	3.0	3.6		3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0		2.0
Lost Time Adjust (s)		0.0	0.0			0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		5.2	5.9			5.2	6.7	6.7	5.0	5.6		5.0
Lead/Lag	Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lead	Lag		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	4.6		3.0	3.0	4.6	4.6	3.0	3.2		3.0
Recall Mode	None	None	Min		None	None	Min	Min	None	None		None
Walk Time (s)			7.0				7.0	7.0		5.0		
Flash Don't Walk (s)			20.0				28.0	28.0		12.0		
Pedestrian Calls (#/hr)			1				1	1		5		
Act Effct Green (s)		10.1	40.1	102.5		8.9	35.7	35.7	13.1	17.1		17.1
Actuated g/C Ratio		0.10	0.39	1.00		0.09	0.35	0.35	0.13	0.17		0.17
v/c Ratio		0.46	0.61	0.05		0.39	0.60	0.48	0.62	0.82		1.12
Control Delay (s/veh)		47.7	27.3	0.1		53.2	29.2	4.8	55.5	53.9		130.8
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		47.7	27.3	0.1		53.2	29.2	4.8	55.5	53.9		130.8
LOS		D	C	A		D	C	A	E	D		F
Approach Delay (s/veh)			28.8				24.1			54.3		
Approach LOS			C				C			D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 136.5			
Actuated Cycle Length: 102.5			
Natural Cycle: 95			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.12			
Intersection Signal Delay (s/veh): 37.2		Intersection LOS: D	
Intersection Capacity Utilization 75.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 11: Sisk Rd & SR 219



Lane Group	SBT	SBR
Protected Phases	4	
Permitted Phases		4
Detector Phase	4	4
Switch Phase		
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	22.6	22.6
Total Split (s)	22.6	22.6
Total Split (%)	16.6%	16.6%
Maximum Green (s)	17.0	17.0
Yellow Time (s)	3.6	3.6
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	5.6	5.6
Lead/Lag	Lag	Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	None
Walk Time (s)	5.0	5.0
Flash Don't Walk (s)	12.0	12.0
Pedestrian Calls (#/hr)	0	0
Act Effct Green (s)	21.0	21.0
Actuated g/C Ratio	0.20	0.20
v/c Ratio	0.48	0.39
Control Delay (s/veh)	43.7	6.2
Queue Delay	0.0	0.0
Total Delay (s/veh)	43.7	6.2
LOS	D	A
Approach Delay (s/veh)	63.8	
Approach LOS	E	

Intersection Summary

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	8	525	912	43	97	916	47	24	210	41	68	115
Future Volume (vph)	8	525	912	43	97	916	47	24	210	41	68	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		1000		620	495		640	70		0	155	
Storage Lanes		2		1	1		1	1		0	1	
Taper Length (ft)		210			140			55			160	
Lane Util. Factor	0.95	0.97	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850			0.850		0.975			
Flt Protected		0.950			0.950			0.950			0.950	
Satd. Flow (prot)	0	3335	3438	1538	1719	3438	1538	1719	1764	0	1719	1810
Flt Permitted		0.950			0.950			0.950			0.950	
Satd. Flow (perm)	0	3335	3438	1538	1719	3438	1538	1719	1764	0	1719	1810
Right Turn on Red				Yes			Yes			Yes		
Satd. Flow (RTOR)				93			81		5			
Link Speed (mph)			55			55			35			35
Link Distance (ft)			1694			1350			735			1875
Travel Time (s)			21.0			16.7			14.3			36.5
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	8	547	950	45	101	954	49	25	219	43	71	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	555	950	45	101	954	49	25	262	0	71	120
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			48			48			12			12
Link Offset(ft)			0			0			0			0
Crosswalk Width(ft)			25			25			16			25
Two way Left Turn Lane												Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors		1	2	1	1	2	1	1	2		1	2
Detector Template		Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru
Leading Detector (ft)		20	100	20	20	100	20	20	100		20	100
Trailing Detector (ft)		0	0	0	0	0	0	0	0		0	0
Detector 1 Position(ft)		0	0	0	0	0	0	0	0		0	0
Detector 1 Size(ft)		20	6	20	20	6	20	20	6		20	6
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94			94			94
Detector 2 Size(ft)			6			6			6			6
Detector 2 Type			Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0			0.0			0.0
Turn Type	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA
Protected Phases	5	5	2		1	6		3	8		7	4
Permitted Phases				2			6					

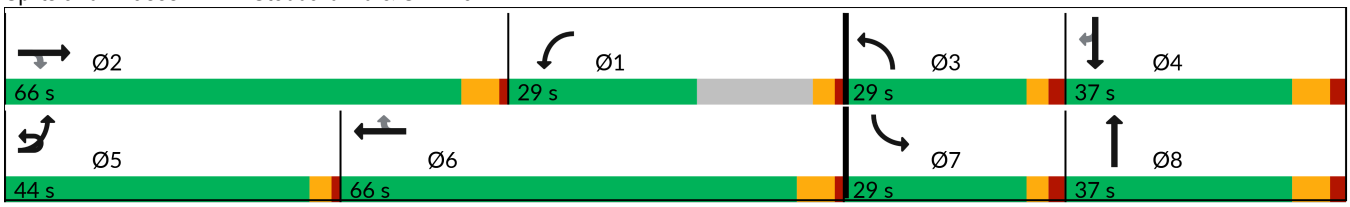


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	457
Future Volume (vph)	457
Ideal Flow (vphpl)	1900
Storage Length (ft)	155
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1538
Flt Permitted	
Satd. Flow (perm)	1538
Right Turn on Red	Yes
Satd. Flow (RTOR)	476
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.96
Adj. Flow (vph)	476
Shared Lane Traffic (%)	
Lane Group Flow (vph)	476
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	Perm
Protected Phases	
Permitted Phases	4

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Detector Phase	5	5	2	2	1	6	6	3	8		7	4
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.0	10.0		9.0	10.0
Minimum Split (s)	14.0	14.0	16.0	16.0	14.0	16.0	16.0	14.0	17.0		14.0	17.0
Total Split (s)	44.0	44.0	66.0	66.0	29.0	66.0	66.0	29.0	37.0		29.0	37.0
Total Split (%)	25.0%	25.0%	37.5%	37.5%	16.5%	37.5%	37.5%	16.5%	21.0%		16.5%	21.0%
Maximum Green (s)	40.0	40.0	60.0	60.0	25.0	60.0	60.0	24.0	30.0		24.0	30.0
Yellow Time (s)	3.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0		3.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)		4.0	6.0	6.0	4.0	6.0	6.0	5.0	7.0		5.0	7.0
Lead/Lag	Lead	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lag		Lead	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	4.5	4.5	3.0	4.5	4.5	3.0	3.5		3.0	3.5
Recall Mode	None	None	Min	Min	None	Min	Min	None	None		None	None
Act Effct Green (s)		29.7	48.7	48.7	29.8	48.8	48.8	9.6	26.4		12.1	35.9
Actuated g/C Ratio		0.21	0.35	0.35	0.21	0.35	0.35	0.07	0.19		0.09	0.26
v/c Ratio		0.78	0.79	0.08	0.28	0.79	0.08	0.21	0.78		0.48	0.26
Control Delay (s/veh)		62.2	47.6	0.3	51.2	47.6	1.6	75.0	71.8		77.6	49.2
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay (s/veh)		62.2	47.6	0.3	51.2	47.6	1.6	75.0	71.8		77.6	49.2
LOS		E	D	A	D	D	A	E	E		E	D
Approach Delay (s/veh)			51.4			45.9			72.1			23.2
Approach LOS			D			D			E			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 176			
Actuated Cycle Length: 139.8			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay (s/veh): 46.2		Intersection LOS: D	
Intersection Capacity Utilization 94.7%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 12: Stoddard Rd & SR 219





Lane Group	SBR
Detector Phase	4
Switch Phase	
Minimum Initial (s)	10.0
Minimum Split (s)	17.0
Total Split (s)	37.0
Total Split (%)	21.0%
Maximum Green (s)	30.0
Yellow Time (s)	5.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	7.0
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.5
Recall Mode	None
Act Effct Green (s)	35.9
Actuated g/C Ratio	0.26
v/c Ratio	0.64
Control Delay (s/veh)	8.6
Queue Delay	0.0
Total Delay (s/veh)	8.6
LOS	A
Approach Delay (s/veh)	
Approach LOS	

Intersection Summary

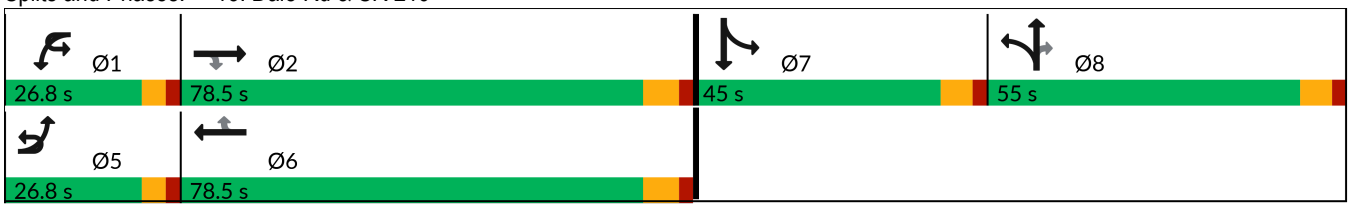
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	2	21	620	378	5	181	792	300	236	319	123	90
Future Volume (vph)	2	21	620	378	5	181	792	300	236	319	123	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		555		700		450		50	320		0	90
Storage Lanes		1		2		2		1	2		1	1
Taper Length (ft)		140				205			140			85
Lane Util. Factor	0.91	1.00	0.91	1.00	0.95	0.97	0.95	1.00	0.97	1.00	1.00	1.00
Frt				0.850				0.850			0.850	
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	1719	4940	1538	0	3335	3438	1538	3335	1810	1538	1719
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	1719	4940	1538	0	3335	3438	1538	3335	1810	1538	1719
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				394				89			97	
Link Speed (mph)			55				55			40		
Link Distance (ft)			3925				2640			1013		
Travel Time (s)			48.7				32.7			17.3		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	2	22	646	394	5	189	825	313	246	332	128	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	24	646	394	0	194	825	313	246	332	128	94
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			48				48			24		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			50				70			50		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2	1	1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left
Leading Detector (ft)		20	100	20		20	100	20	20	100	20	20
Trailing Detector (ft)		0	0	0		0	0	0	0	0	0	0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0	0	0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6	20	20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Split	NA	Perm	Split
Protected Phases	5	5	2		1	1	6		8	8		7
Permitted Phases				2				6			8	

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	238	30
Future Volume (vph)	238	30
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	1.00	1.00
Frt	0.983	
Flt Protected		
Satd. Flow (prot)	1779	0
Flt Permitted		
Satd. Flow (perm)	1779	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	3	
Link Speed (mph)	55	
Link Distance (ft)	2575	
Travel Time (s)	31.9	
Peak Hour Factor	0.96	0.96
Adj. Flow (vph)	248	31
Shared Lane Traffic (%)		
Lane Group Flow (vph)	279	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	50	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	
Detector Template	Thru	
Leading Detector (ft)	100	
Trailing Detector (ft)	0	
Detector 1 Position(ft)	0	
Detector 1 Size(ft)	6	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	
Protected Phases	7	
Permitted Phases		

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Detector Phase	5	5	2	2	1	1	6	6	8	8	8	7
Switch Phase												
Minimum Initial (s)	6.0	6.0	11.0	11.0	6.0	6.0	11.0	11.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.8	11.8	41.5	41.5	11.8	11.8	37.5	37.5	55.0	55.0	55.0	15.0
Total Split (s)	26.8	26.8	78.5	78.5	26.8	26.8	78.5	78.5	55.0	55.0	55.0	45.0
Total Split (%)	13.1%	13.1%	38.2%	38.2%	13.1%	13.1%	38.2%	38.2%	26.8%	26.8%	26.8%	21.9%
Maximum Green (s)	21.0	21.0	71.0	71.0	21.0	21.0	71.0	71.0	48.0	48.0	48.0	38.0
Yellow Time (s)	3.8	3.8	5.5	5.5	3.8	3.8	5.5	5.5	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.8	7.5	7.5		5.8	7.5	7.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lag	Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	4.5	4.5	3.0	3.0	4.5	4.5	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	None	None	Min	Min	None	None	None	None
Walk Time (s)			5.0	5.0			5.0	5.0	5.0	5.0	5.0	
Flash Don't Walk (s)			29.0	29.0			25.0	25.0	43.0	43.0	43.0	
Pedestrian Calls (#/hr)			0	0			0	0	0	0	0	
Act Effct Green (s)		8.2	39.5	39.5		15.1	53.1	53.1	34.7	34.7	34.7	30.0
Actuated g/C Ratio		0.06	0.27	0.27		0.10	0.36	0.36	0.23	0.23	0.23	0.20
v/c Ratio		0.26	0.49	0.56		0.57	0.67	0.52	0.32	0.78	0.29	0.27
Control Delay (s/veh)		86.7	48.0	7.4		76.1	46.2	32.6	51.0	70.5	18.2	58.5
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		86.7	48.0	7.4		76.1	46.2	32.6	51.0	70.5	18.2	58.5
LOS		F	D	A		E	D	C	D	E	B	E
Approach Delay (s/veh)			33.9				47.4			54.2		
Approach LOS			C				D			D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 205.3			
Actuated Cycle Length: 148.4			
Natural Cycle: 135			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay (s/veh): 47.1		Intersection LOS: D	
Intersection Capacity Utilization 73.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 13: Dale Rd & SR 219



Lane Group	SBT	SBR
Detector Phase	7	
Switch Phase		
Minimum Initial (s)	8.0	
Minimum Split (s)	15.0	
Total Split (s)	45.0	
Total Split (%)	21.9%	
Maximum Green (s)	38.0	
Yellow Time (s)	5.0	
All-Red Time (s)	2.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	7.0	
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	
Recall Mode	None	
Walk Time (s)		
Flash Don't Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)	30.0	
Actuated g/C Ratio	0.20	
v/c Ratio	0.77	
Control Delay (s/veh)	74.3	
Queue Delay	0.0	
Total Delay (s/veh)	74.3	
LOS	E	
Approach Delay (s/veh)	70.3	
Approach LOS	E	

Intersection Summary

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	13	587	0	292	0	0	4	311	485	29	0	280
Future Volume (vph)	13	587	0	292	0	0	4	311	485	29	0	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		285		0	0		0	400		300	0	
Storage Lanes		1		2	0		1	2		1	0	
Taper Length (ft)		70			25			85			25	
Lane Util. Factor	1.00	1.00	1.00	0.88	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95
Ped Bike Factor										0.98		
Frt				0.850			0.865			0.850		
Flt Protected		0.950						0.950				
Satd. Flow (prot)	0	1752	0	2760	0	0	1596	3400	3505	1568	0	3505
Flt Permitted		0.950						0.950				
Satd. Flow (perm)	0	1752	0	2760	0	0	1596	3400	3505	1533	0	3505
Right Turn on Red				Yes			Yes			No		
Satd. Flow (RTOR)				324			274					
Link Speed (mph)			35			25			45			35
Link Distance (ft)			1576			591			734			1443
Travel Time (s)			30.7			16.1			11.1			28.1
Confl. Peds. (#/hr)										3		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	14	652	0	324	0	0	4	346	539	32	0	311
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	666	0	324	0	0	4	346	539	32	0	311
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Left	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			12			12			48			36
Link Offset(ft)			0			100			0			0
Crosswalk Width(ft)			16			16			16			25
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors		1	2	1		2	1	1	2	1		2
Detector Template		Left	Thru	Right		Thru	Right	Left	Thru	Right		Thru
Leading Detector (ft)		20	100	20		100	20	20	100	20		100
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0		0			0	0	0	0		0
Detector 1 Size(ft)		20		20			20	20	6	20		6
Detector 1 Type		Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0			0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0		0.0			0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0		0.0			0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)									94			94
Detector 2 Size(ft)									6			6
Detector 2 Type									Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)									0.0			0.0
Turn Type	Prot	Prot		pm+ov			Free	Prot	NA	Perm		NA

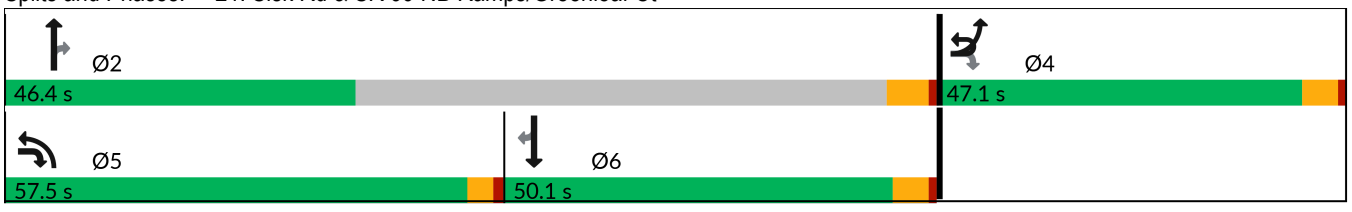


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	7
Future Volume (vph)	7
Ideal Flow (vphpl)	1900
Storage Length (ft)	245
Storage Lanes	2
Taper Length (ft)	
Lane Util. Factor	1.00
Ped Bike Factor	
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1568
Flt Permitted	
Satd. Flow (perm)	1568
Right Turn on Red	Yes
Satd. Flow (RTOR)	43
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	0.90
Adj. Flow (vph)	8
Shared Lane Traffic (%)	
Lane Group Flow (vph)	8
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	Perm

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Protected Phases	4	4		5				5	2			6
Permitted Phases				4			Free			2		
Detector Phase	4	4		5				5	2	2		6
Switch Phase												
Minimum Initial (s)	17.0	17.0		10.0				10.0	10.0	10.0		15.0
Minimum Split (s)	22.1	22.1		14.0				14.0	15.8	15.8		20.1
Total Split (s)	47.1	47.1		57.5				57.5	46.4	46.4		50.1
Total Split (%)	30.4%	30.4%		37.2%				37.2%	30.0%	30.0%		32.4%
Maximum Green (s)	42.0	42.0		53.5				53.5	40.6	40.6		45.0
Yellow Time (s)	4.1	4.1		3.0				3.0	4.8	4.8		4.1
All-Red Time (s)	1.0	1.0		1.0				1.0	1.0	1.0		1.0
Lost Time Adjust (s)		0.0		0.0				0.0	0.0	0.0		0.0
Total Lost Time (s)		5.1		4.0				4.0	5.8	5.8		5.1
Lead/Lag				Lead				Lead				Lag
Lead-Lag Optimize?				Yes				Yes				Yes
Vehicle Extension (s)	3.6	3.6		2.5				2.5	2.8	2.8		3.6
Recall Mode	None	None		None				None	Min	Min		Min
Act Effct Green (s)		42.1		61.0			85.5	13.8	32.5	32.5		15.4
Actuated g/C Ratio		0.49		0.71			1.00	0.16	0.38	0.38		0.18
v/c Ratio		0.77		0.16			0.00	0.63	0.40	0.05		0.49
Control Delay (s/veh)		26.4		0.7			0.0	38.9	20.3	16.7		35.0
Queue Delay		0.0		0.0			0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		26.4		0.7			0.0	38.9	20.3	16.7		35.0
LOS		C		A			A	D	C	B		D
Approach Delay (s/veh)			18.0						27.2			34.1
Approach LOS			B						C			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 154.7			
Actuated Cycle Length: 85.5			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay (s/veh): 24.0		Intersection LOS: C	
Intersection Capacity Utilization 65.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 21: Sisk Rd & SR 99 NB Ramps/Greenleaf Ct





Lane Group	SBR
Protected Phases	
Permitted Phases	6
Detector Phase	6
Switch Phase	
Minimum Initial (s)	15.0
Minimum Split (s)	20.1
Total Split (s)	50.1
Total Split (%)	32.4%
Maximum Green (s)	45.0
Yellow Time (s)	4.1
All-Red Time (s)	1.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	5.1
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.6
Recall Mode	Min
Act Effct Green (s)	15.4
Actuated g/C Ratio	0.18
v/c Ratio	0.03
Control Delay (s/veh)	0.1
Queue Delay	0.0
Total Delay (s/veh)	0.1
LOS	A
Approach Delay (s/veh)	
Approach LOS	

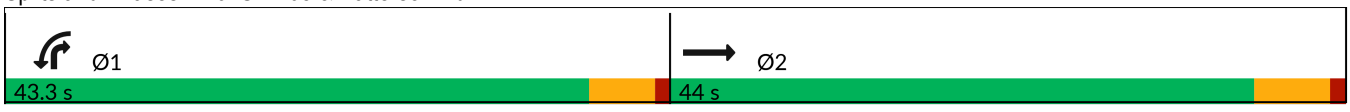
Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	619	4	142	347	0	279
Future Volume (vph)	619	4	142	347	0	279
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	525		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			125		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999					0.865
Flt Protected			0.950			
Satd. Flow (prot)	1843	0	1752	1845	0	1596
Flt Permitted			0.950			
Satd. Flow (perm)	1843	0	1752	1845	0	1596
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						152
Link Speed (mph)	35			55	45	
Link Distance (ft)	574			1403	796	
Travel Time (s)	11.2			17.4	12.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	652	4	149	365	0	294
Shared Lane Traffic (%)						
Lane Group Flow (vph)	656	0	149	365	0	294
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (ft)	100		20	100	20	20
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0		0
Detector 1 Size(ft)	6		20	6		20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0		0.0	0.0		0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA		Over
Protected Phases	2		1	Free		1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases						
Detector Phase	2		1			1
Switch Phase						
Minimum Initial (s)	8.0		8.0			8.0
Minimum Split (s)	14.0		13.3			13.3
Total Split (s)	44.0		43.3			43.3
Total Split (%)	50.4%		49.6%			49.6%
Maximum Green (s)	38.0		38.0			38.0
Yellow Time (s)	5.0		4.3			4.3
All-Red Time (s)	1.0		1.0			1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	6.0		5.3			5.3
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.2		3.2			3.2
Recall Mode	None		None			None
Act Effct Green (s)	23.1		11.8	46.9		11.8
Actuated g/C Ratio	0.49		0.25	1.00		0.25
v/c Ratio	0.72		0.34	0.20		0.57
Control Delay (s/veh)	14.8		18.8	0.2		13.7
Queue Delay	0.0		0.0	0.0		0.0
Total Delay (s/veh)	14.8		18.8	0.2		13.7
LOS	B		B	A		B
Approach Delay (s/veh)	14.8			5.6	13.7	
Approach LOS	B			A	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 87.3			
Actuated Cycle Length: 46.9			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay (s/veh): 11.4		Intersection LOS: B	
Intersection Capacity Utilization 59.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: SR 108 & Patterson Rd



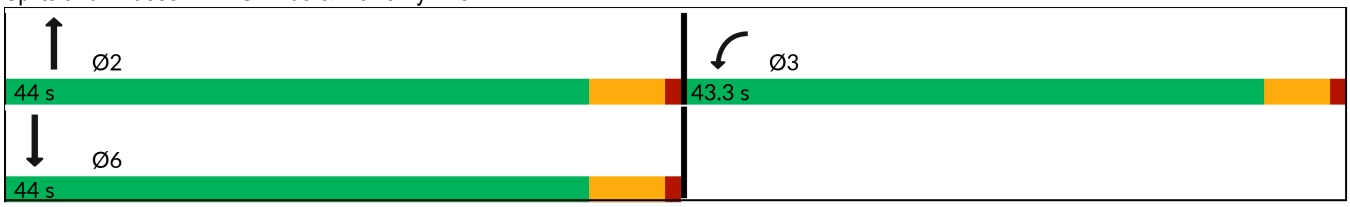


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	144	2	433	279	0	723
Future Volume (vph)	144	2	433	279	0	723
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		475	0	
Storage Lanes	1	0		1	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Frt	0.998			0.850		
Flt Protected	0.953					
Satd. Flow (prot)	1754	0	1845	1568	0	3505
Flt Permitted	0.953					
Satd. Flow (perm)	1754	0	1845	1568	0	3505
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	1			294		
Link Speed (mph)	45		55			55
Link Distance (ft)	796		700			570
Travel Time (s)	12.1		8.7			7.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	152	2	456	294	0	761
Shared Lane Traffic (%)						
Lane Group Flow (vph)	154	0	456	294	0	761
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1		2	1		2
Detector Template	Left		Thru	Right		Thru
Leading Detector (ft)	20		100	20		100
Trailing Detector (ft)	0		0	0		0
Detector 1 Position(ft)	0		0	0		0
Detector 1 Size(ft)	20		6	20		6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0		0.0	0.0		0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot		NA	Free		NA
Protected Phases	3		2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases				Free		
Detector Phase	3		2			6
Switch Phase						
Minimum Initial (s)	8.0		8.0			8.0
Minimum Split (s)	13.3		14.0			14.0
Total Split (s)	43.3		44.0			44.0
Total Split (%)	49.6%		50.4%			50.4%
Maximum Green (s)	38.0		38.0			38.0
Yellow Time (s)	4.3		5.0			5.0
All-Red Time (s)	1.0		1.0			1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.3		6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.2		3.2			3.2
Recall Mode	None		None			None
Act Effct Green (s)	10.7		17.7	33.1		17.7
Actuated g/C Ratio	0.32		0.53	1.00		0.53
v/c Ratio	0.27		0.46	0.19		0.41
Control Delay (s/veh)	12.8		9.9	0.3		8.2
Queue Delay	0.0		0.0	0.0		0.0
Total Delay (s/veh)	12.8		9.9	0.3		8.2
LOS	B		A	A		A
Approach Delay (s/veh)	12.8		6.1			8.2
Approach LOS	B		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 87.3			
Actuated Cycle Length: 33.1			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay (s/veh): 7.7		Intersection LOS: A	
Intersection Capacity Utilization 40.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 7: SR 108 & McHenry Ave



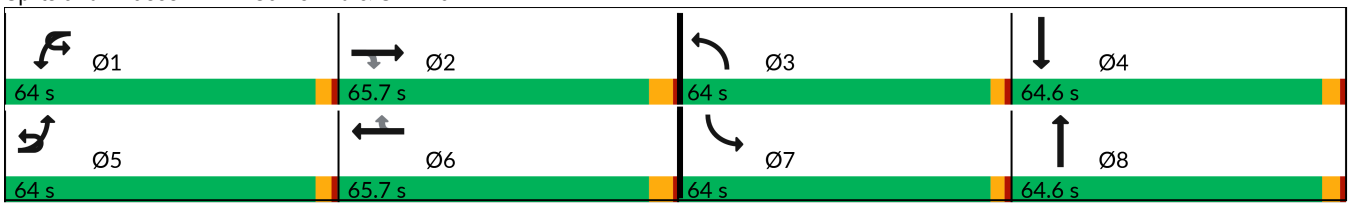
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	1	33	1056	88	2	62	734	17	48	83	77	13
Future Volume (vph)	1	33	1056	88	2	62	734	17	48	83	77	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		430		580		595		540	260		0	95
Storage Lanes		1		2		1		1	1		0	1
Taper Length (ft)		110				90			115			115
Lane Util. Factor	0.91	1.00	0.91	1.00	0.91	1.00	0.91	1.00	1.00	1.00	1.00	1.00
Frt				0.850				0.850		0.928		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	1752	5036	1568	0	1752	5036	1568	1752	1712	0	1752
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	1752	5036	1568	0	1752	5036	1568	1752	1712	0	1752
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				93				41		17		
Link Speed (mph)			55				55			35		
Link Distance (ft)			1479				1299			1261		
Travel Time (s)			18.3				16.1			24.6		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	1	35	1112	93	2	65	773	18	51	87	81	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	1112	93	0	67	773	18	51	168	0	14
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			12				12			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			16				16			16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2		1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)		20	100	20		20	100	20	20	100		20
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0		0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA		Prot
Protected Phases	5	5	2		1	1	6		3	8		7

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	102	19
Future Volume (vph)	102	19
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	1.00	1.00
Frt	0.976	
Flt Protected		
Satd. Flow (prot)	1800	0
Flt Permitted		
Satd. Flow (perm)	1800	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	3	
Link Speed (mph)	35	
Link Distance (ft)	1396	
Travel Time (s)	27.2	
Peak Hour Factor	0.95	0.95
Heavy Vehicles (%)	3%	3%
Adj. Flow (vph)	107	20
Shared Lane Traffic (%)		
Lane Group Flow (vph)	127	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane	Yes	
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	
Detector Template	Thru	
Leading Detector (ft)	100	
Trailing Detector (ft)	0	
Detector 1 Position(ft)	0	
Detector 1 Size(ft)	6	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	
Protected Phases	4	

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Permitted Phases				2				6				
Detector Phase	5	5	2	2	1	1	6	6	3	8		7
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	14.0	14.0	15.7	15.7	14.0	14.0	15.7	15.7	14.0	14.5		14.0
Total Split (s)	64.0	64.0	65.7	65.7	64.0	64.0	65.7	65.7	64.0	64.6		64.0
Total Split (%)	24.8%	24.8%	25.4%	25.4%	24.8%	24.8%	25.4%	25.4%	24.8%	25.0%		24.8%
Maximum Green (s)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.1		60.0
Yellow Time (s)	3.0	3.0	4.7	4.7	3.0	3.0	4.7	4.7	3.0	3.5		3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		4.0	5.7	5.7		4.0	5.7	5.7	4.0	4.5		4.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	2.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0		1.0
Recall Mode	None	None	Min	Min	None	None	Min	Min	None	None		None
Act Effct Green (s)		10.3	27.3	27.3		10.6	31.5	31.5	10.3	19.4		10.3
Actuated g/C Ratio		0.13	0.36	0.36		0.14	0.41	0.41	0.13	0.25		0.13
v/c Ratio		0.15	0.62	0.15		0.28	0.37	0.03	0.22	0.38		0.06
Control Delay (s/veh)		36.6	23.1	5.3		37.8	19.0	1.9	37.4	26.9		35.9
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		36.6	23.1	5.3		37.8	19.0	1.9	37.4	26.9		35.9
LOS		D	C	A		D	B	A	D	C		D
Approach Delay (s/veh)			22.1				20.1			29.4		
Approach LOS			C				C			C		

Intersection Summary			
Area Type:	Other		
Cycle Length: 258.3			
Actuated Cycle Length: 76.8			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay (s/veh): 22.7		Intersection LOS: C	
Intersection Capacity Utilization 61.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 14: Carver Rd & SR 219





Lane Group	SBT	SBR
Permitted Phases		
Detector Phase	4	
Switch Phase		
Minimum Initial (s)	10.0	
Minimum Split (s)	14.6	
Total Split (s)	64.6	
Total Split (%)	25.0%	
Maximum Green (s)	60.0	
Yellow Time (s)	3.6	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	4.6	
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	2.0	
Recall Mode	None	
Act Effct Green (s)	13.6	
Actuated g/C Ratio	0.18	
v/c Ratio	0.40	
Control Delay (s/veh)	33.7	
Queue Delay	0.0	
Total Delay (s/veh)	33.7	
LOS	C	
Approach Delay (s/veh)	33.9	
Approach LOS	C	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	26	961	69	16	174	828	15	107	161	129	13	139
Future Volume (vph)	26	961	69	16	174	828	15	107	161	129	13	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	715		355		665		415	275		395	300	
Storage Lanes	1		1		2		1	1		1	1	
Taper Length (ft)	95				190			120			100	
Lane Util. Factor	1.00	0.91	1.00	0.91	0.97	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850				0.850			0.850		0.987
Flt Protected	0.950				0.950			0.950			0.950	
Satd. Flow (prot)	1770	5085	1583	0	3433	5085	1583	1770	1863	1583	1770	1839
Flt Permitted	0.950				0.950			0.950			0.950	
Satd. Flow (perm)	1770	5085	1583	0	3433	5085	1583	1770	1863	1583	1770	1839
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)			82				82			136		2
Link Speed (mph)		55				55			35			35
Link Distance (ft)		1306				1234			1372			1326
Travel Time (s)		16.2				15.3			26.7			25.8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	27	1012	73	17	183	872	16	113	169	136	14	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	1012	73	0	200	872	16	113	169	136	14	160
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)		24				24			12			12
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		16				16			16			16
Two way Left Turn Lane									Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Number of Detectors	1	2	1		1	2	1	1	2	1	1	2
Detector Template	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left	Thru
Leading Detector (ft)	20	100	20		20	100	20	20	100	20	20	100
Trailing Detector (ft)	0	0	0		0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0		0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20		20	6	20	20	6	20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94				94			94			94
Detector 2 Size(ft)		6				6			6			6
Detector 2 Type		Cl+Ex				Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0				0.0			0.0			0.0
Turn Type	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	5	2		1	1	6		3	8		7	4

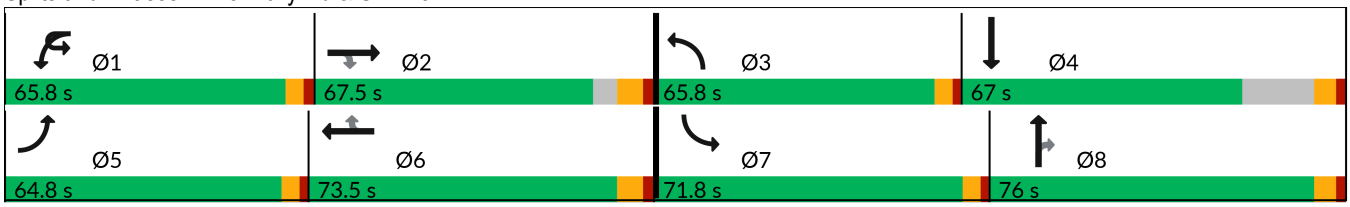


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	13
Future Volume (vph)	13
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.95
Heavy Vehicles (%)	2%
Adj. Flow (vph)	14
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Permitted Phases			2				6			8		
Detector Phase	5	2	2	1	1	6	6	3	8	8	7	4
Switch Phase												
Minimum Initial (s)	9.0	10.0	10.0	10.0	10.0	16.0	16.0	10.0	19.0	19.0	16.0	10.0
Minimum Split (s)	14.8	17.5	17.5	15.8	15.8	23.5	23.5	15.8	26.0	26.0	21.8	17.0
Total Split (s)	64.8	67.5	67.5	65.8	65.8	73.5	73.5	65.8	76.0	76.0	71.8	67.0
Total Split (%)	22.6%	23.6%	23.6%	23.0%	23.0%	25.7%	25.7%	23.0%	26.6%	26.6%	25.1%	23.4%
Maximum Green (s)	59.0	60.0	60.0	60.0	60.0	66.0	66.0	60.0	69.0	69.0	66.0	60.0
Yellow Time (s)	3.8	5.5	5.5	3.8	3.8	5.5	5.5	3.8	5.0	5.0	3.8	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	7.5	7.5		5.8	7.5	7.5	5.8	7.0	7.0	5.8	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	1.0	2.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0
Recall Mode	None	Min	Min	None	None	Min	Min	None	None	None	None	None
Act Effct Green (s)	9.3	29.0	29.0		12.2	39.1	39.1	13.0	28.0	28.0	16.4	16.5
Actuated g/C Ratio	0.10	0.30	0.30		0.13	0.40	0.40	0.13	0.29	0.29	0.17	0.17
v/c Ratio	0.16	0.67	0.14		0.47	0.43	0.02	0.48	0.32	0.25	0.05	0.51
Control Delay (s/veh)	49.9	33.0	6.0		46.2	23.9	0.1	49.6	34.8	8.1	42.5	44.7
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	49.9	33.0	6.0		46.2	23.9	0.1	49.6	34.8	8.1	42.5	44.7
LOS	D	C	A		D	C	A	D	C	A	D	D
Approach Delay (s/veh)		31.6				27.7			30.1			44.5
Approach LOS		C				C			C			D

Intersection Summary			
Area Type:	Other		
Cycle Length: 286.1			
Actuated Cycle Length: 97.5			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay (s/veh): 30.7		Intersection LOS: C	
Intersection Capacity Utilization 73.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 15: Tully Rd & SR 219





Lane Group	SBR
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	

Intersection Summary

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Lane Configurations												
Traffic Volume (vph)	27	155	825	140	4	134	564	111	194	432	364	1
Future Volume (vph)	27	155	825	140	4	134	564	111	194	432	364	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		765		650		960		75	140		210	
Storage Lanes		2		1		2		1	1		1	
Taper Length (ft)		255				255			80			
Lane Util. Factor	0.91	0.97	0.91	1.00	0.95	0.97	0.95	1.00	1.00	0.95	1.00	0.95
Frt				0.850				0.850			0.850	
Flt Protected		0.950				0.950			0.950			
Satd. Flow (prot)	0	3433	5085	1583	0	3433	3539	1583	1770	3539	1583	0
Flt Permitted		0.950				0.950			0.950			
Satd. Flow (perm)	0	3433	5085	1583	0	3433	3539	1583	1770	3539	1583	0
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				147				90			344	
Link Speed (mph)			55				55			35		
Link Distance (ft)			1356				1655			1513		
Travel Time (s)			16.8				20.5			29.5		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	28	163	868	147	4	141	594	117	204	455	383	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	191	868	147	0	145	594	117	204	455	383	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	R NA
Median Width(ft)			24				24			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			16				16			16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	9
Number of Detectors		1	2	1		1	2	1	1	2	1	
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	
Leading Detector (ft)		20	100	20		20	100	20	20	100	20	
Trailing Detector (ft)		0	0	0		0	0	0	0	0	0	
Detector 1 Position(ft)		0	0	0		0	0	0	0	0	0	
Detector 1 Size(ft)		20	6	20		20	6	20	20	6	20	
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot
Protected Phases	5	5	2		1	1	6		3	8		7

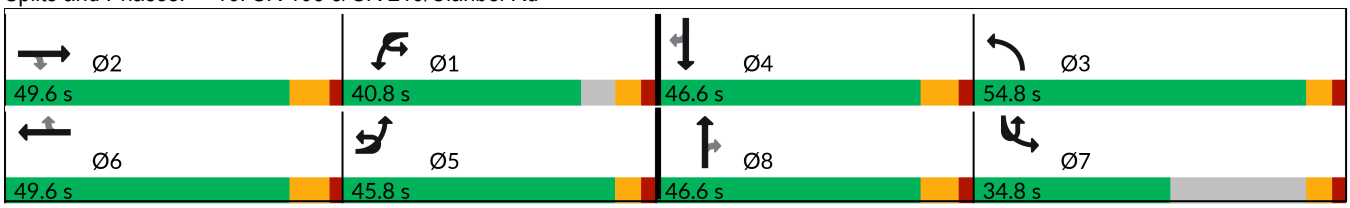


Lane Group	SBL	SBT	SBR
Lane Configurations			
Traffic Volume (vph)	280	521	139
Future Volume (vph)	280	521	139
Ideal Flow (vphpl)	1900	1900	1900
Storage Length (ft)	420		535
Storage Lanes	1		1
Taper Length (ft)	115		
Lane Util. Factor	1.00	0.95	1.00
Frt			0.850
Flt Protected	0.950		
Satd. Flow (prot)	1770	3539	1583
Flt Permitted	0.950		
Satd. Flow (perm)	1770	3539	1583
Right Turn on Red			Yes
Satd. Flow (RTOR)			146
Link Speed (mph)		45	
Link Distance (ft)		1304	
Travel Time (s)		19.8	
Peak Hour Factor	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%
Adj. Flow (vph)	295	548	146
Shared Lane Traffic (%)			
Lane Group Flow (vph)	296	548	146
Enter Blocked Intersection	No	No	No
Lane Alignment	Left	Left	Right
Median Width(ft)		12	
Link Offset(ft)		0	
Crosswalk Width(ft)		16	
Two way Left Turn Lane		Yes	
Headway Factor	1.00	1.00	1.00
Turning Speed (mph)	15		9
Number of Detectors	1	2	1
Detector Template	Left	Thru	Right
Leading Detector (ft)	20	100	20
Trailing Detector (ft)	0	0	0
Detector 1 Position(ft)	0	0	0
Detector 1 Size(ft)	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel			
Detector 1 Extend (s)	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0
Detector 2 Position(ft)		94	
Detector 2 Size(ft)		6	
Detector 2 Type		Cl+Ex	
Detector 2 Channel			
Detector 2 Extend (s)		0.0	
Turn Type	Prot	NA	Perm
Protected Phases	7	4	

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Permitted Phases				2				6			8	
Detector Phase	5	5	2	2	1	1	6	6	3	8	8	7
Switch Phase												
Minimum Initial (s)	15.0	15.0	12.0	12.0	15.0	15.0	12.0	12.0	14.0	14.0	14.0	14.0
Minimum Split (s)	20.8	20.8	50.6	50.6	20.8	20.8	55.6	55.6	19.8	58.6	58.6	19.8
Total Split (s)	45.8	45.8	49.6	49.6	40.8	40.8	49.6	49.6	54.8	46.6	46.6	34.8
Total Split (%)	23.3%	23.3%	25.2%	25.2%	20.7%	20.7%	25.2%	25.2%	27.8%	23.7%	23.7%	17.7%
Maximum Green (s)	40.0	40.0	42.0	42.0	35.0	35.0	42.0	42.0	49.0	39.0	39.0	29.0
Yellow Time (s)	3.8	3.8	5.6	5.6	3.8	3.8	5.6	5.6	3.8	5.6	5.6	3.8
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		5.8	7.6	7.6		5.8	7.6	7.6	5.8	7.6	7.6	
Lead/Lag	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.5	2.5	2.1	2.1	2.5	2.5	2.0	2.0	2.5	3.6	3.6	2.5
Recall Mode	None	None	Min	Min	None	None	Min	Min	None	None	None	None
Walk Time (s)			7.0	7.0			7.0	7.0		7.0	7.0	
Flash Don't Walk (s)			35.0	35.0			41.0	41.0		44.0	44.0	
Pedestrian Calls (#/hr)			0	0			0	0		0	0	
Act Effct Green (s)		16.8	28.2	28.2		15.5	26.9	26.9	25.8	26.2	26.2	
Actuated g/C Ratio		0.14	0.23	0.23		0.13	0.22	0.22	0.21	0.21	0.21	
v/c Ratio		0.41	0.74	0.31		0.33	0.76	0.28	0.55	0.60	0.63	
Control Delay (s/veh)		54.5	48.8	8.1		54.6	52.7	14.9	51.1	47.9	12.0	
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)		54.5	48.8	8.1		54.6	52.7	14.9	51.1	47.9	12.0	
LOS		D	D	A		D	D	B	D	D	B	
Approach Delay (s/veh)			44.8				47.9			35.3		
Approach LOS			D				D			D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 196.8			
Actuated Cycle Length: 122.5			
Natural Cycle: 160			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay (s/veh): 44.2		Intersection LOS: D	
Intersection Capacity Utilization 88.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 16: SR 108 & SR 219/Claribel Rd





Lane Group	SBL	SBT	SBR
Permitted Phases			4
Detector Phase	7	4	4
Switch Phase			
Minimum Initial (s)	14.0	14.0	14.0
Minimum Split (s)	19.8	60.6	60.6
Total Split (s)	34.8	46.6	46.6
Total Split (%)	17.7%	23.7%	23.7%
Maximum Green (s)	29.0	39.0	39.0
Yellow Time (s)	3.8	5.6	5.6
All-Red Time (s)	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0
Total Lost Time (s)	5.8	7.6	7.6
Lead/Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes
Vehicle Extension (s)	2.5	2.3	2.3
Recall Mode	None	None	None
Walk Time (s)		7.0	7.0
Flash Don't Walk (s)		46.0	46.0
Pedestrian Calls (#/hr)		0	0
Act Effct Green (s)	25.4	25.7	25.7
Actuated g/C Ratio	0.21	0.21	0.21
v/c Ratio	0.81	0.74	0.33
Control Delay (s/veh)	65.3	52.6	8.6
Queue Delay	0.0	0.0	0.0
Total Delay (s/veh)	65.3	52.6	8.6
LOS	E	D	A
Approach Delay (s/veh)		49.9	
Approach LOS		D	

Intersection Summary

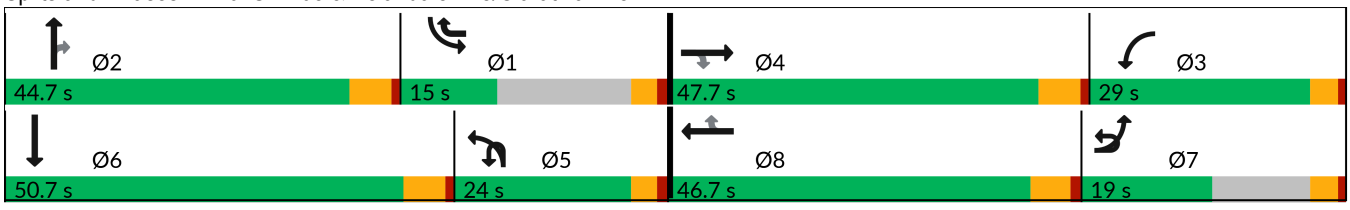
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	7	180	584	214	48	334	119	9	201	711	70	248
Future Volume (vph)	7	180	584	214	48	334	119	9	201	711	70	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		300		380	195		320		325		260	175
Storage Lanes		1		1	2		1		2		1	2
Taper Length (ft)		150			150				105			95
Lane Util. Factor	0.95	0.97	0.95	1.00	0.97	0.91	1.00	0.95	0.97	0.95	1.00	0.97
Ped Bike Factor				0.99								
Frt				0.850			0.850				0.850	
Flt Protected		0.950			0.950				0.950			0.950
Satd. Flow (prot)	0	3467	3574	1599	3467	5136	1599	0	3467	3574	1599	3467
Flt Permitted		0.950			0.950				0.950			0.950
Satd. Flow (perm)	0	3467	3574	1578	3467	5136	1599	0	3467	3574	1599	3467
Right Turn on Red				Yes			Yes				Yes	
Satd. Flow (RTOR)				225			114				118	
Link Speed (mph)			45			45				35		
Link Distance (ft)			850			651				829		
Travel Time (s)			12.9			9.9				16.1		
Confl. Peds. (#/hr)				1								
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	7	189	615	225	51	352	125	9	212	748	74	261
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	196	615	225	51	352	125	0	221	748	74	261
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	Left
Median Width(ft)			24			24				24		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	9	15		9	15
Number of Detectors		1	2	1	1	2	1		1	2	1	1
Detector Template		Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left
Leading Detector (ft)		20	100	20	20	100	20		20	100	20	20
Trailing Detector (ft)		0	0	0	0	0	0		0	0	0	0
Detector 1 Position(ft)		0	0	0	0	0	0		0	0	0	0
Detector 1 Size(ft)		20	6	20	20	6	20		20	6	20	20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94				94		
Detector 2 Size(ft)			6			6				6		
Detector 2 Type			Cl+Ex			Cl+Ex				Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0				0.0		

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	814	140
Future Volume (vph)	814	140
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	0.95	0.95
Ped Bike Factor	1.00	
Frt	0.978	
Flt Protected		
Satd. Flow (prot)	3484	0
Flt Permitted		
Satd. Flow (perm)	3484	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	13	
Link Speed (mph)	35	
Link Distance (ft)	2580	
Travel Time (s)	50.3	
Confl. Peds. (#/hr)		5
Peak Hour Factor	0.95	0.95
Heavy Vehicles (%)	1%	1%
Adj. Flow (vph)	857	147
Shared Lane Traffic (%)		
Lane Group Flow (vph)	1004	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	24	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	
Detector Template	Thru	
Leading Detector (ft)	100	
Trailing Detector (ft)	0	
Detector 1 Position(ft)	0	
Detector 1 Size(ft)	6	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Turn Type	Prot	Prot	NA	Perm	Prot	NA	pm+ov	Prot	Prot	NA	Perm	Prot
Protected Phases	7	7	4		3	8	1	5	5	2		1
Permitted Phases				4			8				2	
Detector Phase	7	7	4	4	3	8	1	5	5	2	2	1
Switch Phase												
Minimum Initial (s)	10.0	10.0	15.0	15.0	25.0	10.0	10.0	10.0	10.0	25.0	25.0	10.0
Minimum Split (s)	14.0	14.0	47.7	47.7	29.0	46.7	14.0	14.0	14.0	44.7	44.7	14.0
Total Split (s)	19.0	19.0	47.7	47.7	29.0	46.7	15.0	24.0	24.0	44.7	44.7	15.0
Total Split (%)	12.5%	12.5%	31.5%	31.5%	19.2%	30.8%	9.9%	15.9%	15.9%	29.5%	29.5%	9.9%
Maximum Green (s)	15.0	15.0	42.0	42.0	25.0	41.0	11.0	20.0	20.0	39.0	39.0	11.0
Yellow Time (s)	3.0	3.0	4.7	4.7	3.0	4.7	3.0	3.0	3.0	4.7	4.7	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		4.0	5.7	5.7	4.0	5.7	4.0		4.0	5.7	5.7	4.0
Lead/Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.5	2.5	2.0	2.5	2.3	2.2	2.2	3.0	3.0	2.3
Recall Mode	None	None	None	None	Min	None	Min	None	None	Min	Min	Min
Walk Time (s)			10.0	10.0		10.0				5.0	5.0	
Flash Don't Walk (s)			32.0	32.0		31.0				34.0	34.0	
Pedestrian Calls (#/hr)			1	1		0				0	0	
Act Effct Green (s)		40.2	28.9	28.9	25.3	14.0	42.9		13.2	32.9	32.9	23.1
Actuated g/C Ratio		0.31	0.22	0.22	0.19	0.11	0.33		0.10	0.25	0.25	0.18
v/c Ratio		0.18	0.77	0.43	0.08	0.64	0.21		0.63	0.83	0.15	0.42
Control Delay (s/veh)		34.5	54.7	7.5	47.7	62.2	8.3		65.8	55.1	1.8	52.0
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)		34.5	54.7	7.5	47.7	62.2	8.3		65.8	55.1	1.8	52.0
LOS		C	D	A	D	E	A		E	E	A	D
Approach Delay (s/veh)			40.7			48.0				53.6		
Approach LOS			D			D				D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 151.4			
Actuated Cycle Length: 129.9			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay (s/veh): 48.4		Intersection LOS: D	
Intersection Capacity Utilization 78.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 26: SR 108 & Pelandale Ave/Claratina Ave





Lane Group	SBT	SBR
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Detector Phase	6	
Switch Phase		
Minimum Initial (s)	20.0	
Minimum Split (s)	50.7	
Total Split (s)	50.7	
Total Split (%)	33.5%	
Maximum Green (s)	45.0	
Yellow Time (s)	4.7	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	5.7	
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	
Recall Mode	Min	
Walk Time (s)	10.0	
Flash Don't Walk (s)	10.0	
Pedestrian Calls (#/hr)	5	
Act Effct Green (s)	42.9	
Actuated g/C Ratio	0.33	
v/c Ratio	0.87	
Control Delay (s/veh)	50.2	
Queue Delay	0.0	
Total Delay (s/veh)	50.2	
LOS	D	
Approach Delay (s/veh)	50.5	
Approach LOS	D	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	0	499	197	16	278	506	0	0	0	0	522	5
Future Volume (vph)	0	499	197	16	278	506	0	0	0	0	522	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		0		0		0	0		0	450	
Storage Lanes	2		1		2		0	0		0	1	
Taper Length (ft)	25				25			25			105	
Lane Util. Factor	1.00	0.81	0.81	0.95	0.97	0.95	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor		1.00	0.99									
Frt		0.981	0.850									
Flt Protected					0.950						0.950	0.953
Satd. Flow (prot)	0	5852	1270	0	3400	3505	0	0	0	0	1665	1670
Flt Permitted					0.950						0.950	0.953
Satd. Flow (perm)	0	5852	1252	0	3400	3505	0	0	0	0	1665	1670
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)		38	134									
Link Speed (mph)		25				40			35			35
Link Distance (ft)		417				419			778			1218
Travel Time (s)		11.4				7.1			15.2			23.7
Confl. Peds. (#/hr)			2				3					
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	537	212	17	299	544	0	0	0	0	561	5
Shared Lane Traffic (%)			37%								50%	
Lane Group Flow (vph)	0	615	134	0	316	544	0	0	0	0	280	286
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Right	Left
Median Width(ft)		24				24			12			12
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		50				16			16			30
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Number of Detectors		2	1		1	2			2		1	2
Detector Template		Thru	Right		Left	Thru			Thru		Left	Thru
Leading Detector (ft)		100	20		20	100			100		20	100
Trailing Detector (ft)		0	0		0	0			0		0	0
Detector 1 Position(ft)		0	0		0	0					0	0
Detector 1 Size(ft)		6	20		20	6					20	6
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0		0.0	0.0					0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0					0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0					0.0	0.0
Detector 2 Position(ft)		94				94						94
Detector 2 Size(ft)		6				6						6
Detector 2 Type		Cl+Ex				Cl+Ex						Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0				0.0						0.0
Turn Type		NA	Perm	Prot	Prot	NA					Split	NA



Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	128
Future Volume (vph)	128
Ideal Flow (vphpl)	1900
Storage Length (ft)	450
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Ped Bike Factor	
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1568
Flt Permitted	
Satd. Flow (perm)	1568
Right Turn on Red	Yes
Satd. Flow (RTOR)	138
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	0.93
Adj. Flow (vph)	138
Shared Lane Traffic (%)	
Lane Group Flow (vph)	138
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	Perm

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Protected Phases		2		1	1	6					4	4
Permitted Phases			2									
Detector Phase		2	2	1	1	6					4	4
Switch Phase												
Minimum Initial (s)		8.0	8.0	8.0	8.0	8.0					5.0	5.0
Minimum Split (s)		24.4	24.4	11.5	11.5	25.6					30.1	30.1
Total Split (s)		24.4	24.4	18.5	18.5	42.9					42.1	42.1
Total Split (%)		28.7%	28.7%	21.8%	21.8%	50.5%					49.5%	49.5%
Maximum Green (s)		19.8	19.8	15.0	15.0	38.3					37.0	37.0
Yellow Time (s)		3.6	3.6	3.0	3.0	3.6					3.6	3.6
All-Red Time (s)		1.0	1.0	0.5	0.5	1.0					1.5	1.5
Lost Time Adjust (s)		0.0	0.0		0.0	0.0					0.0	0.0
Total Lost Time (s)		4.6	4.6		3.5	4.6					5.1	5.1
Lead/Lag		Lead	Lead	Lag	Lag							
Lead-Lag Optimize?		Yes	Yes	Yes	Yes							
Vehicle Extension (s)		2.4	2.4	2.0	2.0	3.0					3.0	3.0
Recall Mode		C-Max	C-Max	Min	Min	C-Max					None	None
Walk Time (s)		7.0	7.0			7.0					5.0	5.0
Flash Don't Walk (s)		12.8	12.8			14.0					20.0	20.0
Pedestrian Calls (#/hr)		2	2			3					0	0
Act Effct Green (s)		35.1	35.1		15.0	53.6					21.7	21.7
Actuated g/C Ratio		0.41	0.41		0.18	0.63					0.26	0.26
v/c Ratio		0.25	0.23		0.53	0.25					0.66	0.67
Control Delay (s/veh)		16.8	5.1		22.1	8.3					35.0	35.5
Queue Delay		0.0	0.0		0.0	0.0					0.0	0.0
Total Delay (s/veh)		16.8	5.1		22.1	8.3					35.0	35.5
LOS		B	A		C	A					D	D
Approach Delay (s/veh)		14.7				13.4						29.4
Approach LOS		B				B						C

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 55 (65%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay (s/veh): 18.7		Intersection LOS: B	
Intersection Capacity Utilization 67.5%		ICU Level of Service C	
Analysis Period (min) 15			

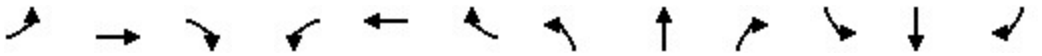
Splits and Phases: 9: SR 99 SB Ramps & Broadway Ave/SR 219





Lane Group	SBR
Protected Phases	
Permitted Phases	4
Detector Phase	4
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	30.1
Total Split (s)	42.1
Total Split (%)	49.5%
Maximum Green (s)	37.0
Yellow Time (s)	3.6
All-Red Time (s)	1.5
Lost Time Adjust (s)	0.0
Total Lost Time (s)	5.1
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Don't Walk (s)	20.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	21.7
Actuated g/C Ratio	0.26
v/c Ratio	0.27
Control Delay (s/veh)	5.3
Queue Delay	0.0
Total Delay (s/veh)	5.3
LOS	A
Approach Delay (s/veh)	
Approach LOS	

Intersection Summary

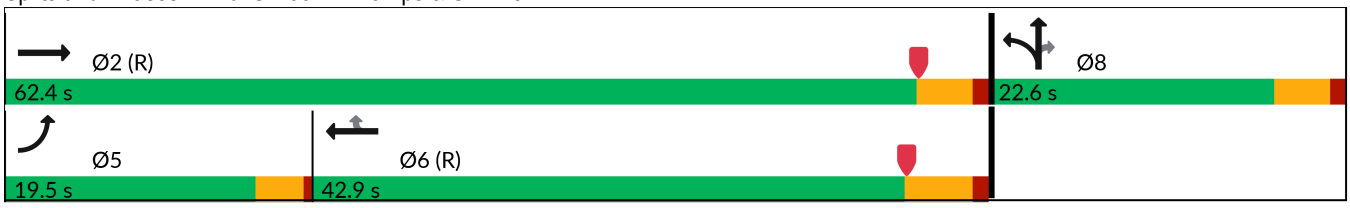


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	932	0	0	647	625	153	1	288	0	0	0
Future Volume (vph)	105	932	0	0	647	625	153	1	288	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	360		0	0		565	0		0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (ft)	25			140			25			25		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	0.88	1.00	1.00	1.00
Ped Bike Factor						0.98						
Frt						0.850			0.850			
Flt Protected	0.950							0.953				
Satd. Flow (prot)	1752	5036	0	0	5036	1568	0	1758	2760	0	0	0
Flt Permitted	0.950							0.953				
Satd. Flow (perm)	1752	5036	0	0	5036	1544	0	1758	2760	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						672			274			
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		419			622			1358			1317	
Travel Time (s)		7.1			10.6			26.5			25.7	
Confl. Peds. (#/hr)			2			3						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	113	1002	0	0	696	672	165	1	310	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	113	1002	0	0	696	672	0	166	310	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			25			25			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1		2	1		2	
Detector Template	Left	Thru			Thru	Right		Thru	Right		Thru	
Leading Detector (ft)	20	100			100	20		100	20		100	
Trailing Detector (ft)	0	0			0	0		0	0		0	
Detector 1 Position(ft)	0	0			0	0		0	0			
Detector 1 Size(ft)	20	6			6	20		6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Detector Phase	5	2			6	6	8	8	8			
Switch Phase												
Minimum Initial (s)	10.0	5.0			12.0	12.0	5.0	5.0	5.0			
Minimum Split (s)	13.5	24.6			27.3	27.3	22.6	22.6	22.6			
Total Split (s)	19.5	62.4			42.9	42.9	22.6	22.6	22.6			
Total Split (%)	22.9%	73.4%			50.5%	50.5%	26.6%	26.6%	26.6%			
Maximum Green (s)	16.0	57.8			37.6	37.6	18.0	18.0	18.0			
Yellow Time (s)	3.0	3.6			4.3	4.3	3.6	3.6	3.6			
All-Red Time (s)	0.5	1.0			1.0	1.0	1.0	1.0	1.0			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Total Lost Time (s)	3.5	4.6			5.3	5.3		4.6	4.6			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	2.0	3.0			2.0	2.0	2.0	2.0	2.0			
Recall Mode	Max	C-Max			C-Max	C-Max	None	None	None			
Walk Time (s)		7.0			7.0	7.0	5.0	5.0	5.0			
Flash Don't Walk (s)		13.0			15.0	15.0	13.0	13.0	13.0			
Pedestrian Calls (#/hr)		2			3	3	0	0	0			
Act Effct Green (s)	21.5	63.3			37.6	37.6		12.5	12.5			
Actuated g/C Ratio	0.25	0.74			0.44	0.44		0.15	0.15			
v/c Ratio	0.26	0.27			0.31	0.64		0.65	0.49			
Control Delay (s/veh)	52.2	1.3			15.8	4.4		45.2	8.6			
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0			
Total Delay (s/veh)	52.2	1.3			15.8	4.4		45.2	8.6			
LOS	D	A			B	A		D	A			
Approach Delay (s/veh)		6.4			10.2			21.4				
Approach LOS		A			B			C				

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 65 (76%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay (s/veh): 10.6		Intersection LOS: B	
Intersection Capacity Utilization 67.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 10: SR 99 NB Ramps & SR 219



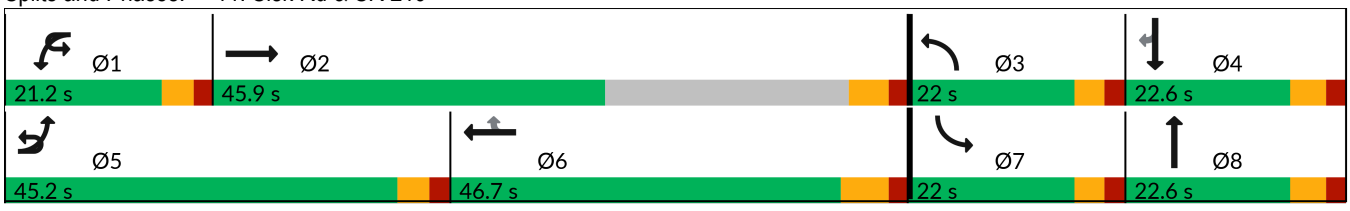
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	17	193	887	64	3	56	936	238	114	162	59	198
Future Volume (vph)	17	193	887	64	3	56	936	238	114	162	59	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		250		0		735		525	555		230	505
Storage Lanes		1		1		1		1	1		1	1
Taper Length (ft)		75				140			100			100
Lane Util. Factor	0.91	0.94	0.91	1.00	0.91	1.00	0.91	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor				0.99						1.00		
Frt				0.850				0.850		0.960		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	4942	5036	1568	0	1752	5036	1568	1752	3352	0	1752
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	4942	5036	1549	0	1752	5036	1568	1752	3352	0	1752
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				197				256		31		
Link Speed (mph)			40				55			35		
Link Distance (ft)			434				926			2020		
Travel Time (s)			7.4				11.5			39.4		
Confl. Peds. (#/hr)				1							1	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	18	208	954	69	3	60	1006	256	123	174	63	213
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	226	954	69	0	63	1006	256	123	237	0	213
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			48				36			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			25				25			25		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2		1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)		20	100	20		20	100	20	20	100		20
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0		0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Free	Prot	Prot	NA	Perm	Prot	NA		Prot

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	161	133
Future Volume (vph)	161	133
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		150
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	1.00	0.88
Ped Bike Factor		0.99
Frt		0.850
Flt Protected		
Satd. Flow (prot)	1845	2760
Flt Permitted		
Satd. Flow (perm)	1845	2720
Right Turn on Red		Yes
Satd. Flow (RTOR)		153
Link Speed (mph)	35	
Link Distance (ft)	1227	
Travel Time (s)	23.9	
Confl. Peds. (#/hr)		1
Peak Hour Factor	0.93	0.93
Adj. Flow (vph)	173	143
Shared Lane Traffic (%)		
Lane Group Flow (vph)	173	143
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	35	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	1
Detector Template	Thru	Right
Leading Detector (ft)	100	20
Trailing Detector (ft)	0	0
Detector 1 Position(ft)	0	0
Detector 1 Size(ft)	6	20
Detector 1 Type	Cl+Ex	Cl+Ex
Detector 1 Channel		
Detector 1 Extend (s)	0.0	0.0
Detector 1 Queue (s)	0.0	0.0
Detector 1 Delay (s)	0.0	0.0
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	Perm

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Protected Phases	5	5	2		1	1	6		3	8		7
Permitted Phases				Free				6				
Detector Phase	5	5	2		1	1	6	6	3	8		7
Switch Phase												
Minimum Initial (s)	5.0	5.0	10.0		6.0	6.0	10.0	10.0	5.0	5.0		5.0
Minimum Split (s)	10.2	10.2	32.9		11.2	11.2	41.7	41.7	10.0	22.6		10.0
Total Split (s)	45.2	45.2	45.9		21.2	21.2	46.7	46.7	22.0	22.6		22.0
Total Split (%)	33.1%	33.1%	33.6%		15.5%	15.5%	34.2%	34.2%	16.1%	16.6%		16.1%
Maximum Green (s)	40.0	40.0	40.0		16.0	16.0	40.0	40.0	17.0	17.0		17.0
Yellow Time (s)	3.2	3.2	3.9		3.2	3.2	4.7	4.7	3.0	3.6		3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0		2.0
Lost Time Adjust (s)		0.0	0.0			0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		5.2	5.9			5.2	6.7	6.7	5.0	5.6		5.0
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	3.0	3.0	4.6		3.0	3.0	4.6	4.6	3.0	3.2		3.0
Recall Mode	None	None	Min		None	None	Min	Min	None	None		None
Walk Time (s)			7.0				7.0	7.0		5.0		
Flash Don't Walk (s)			20.0				28.0	28.0		12.0		
Pedestrian Calls (#/hr)			1				0	0		1		
Act Effct Green (s)		10.0	37.4	95.0		9.0	32.8	32.8	12.2	12.1		17.2
Actuated g/C Ratio		0.11	0.39	1.00		0.09	0.35	0.35	0.13	0.13		0.18
v/c Ratio		0.44	0.48	0.04		0.38	0.58	0.36	0.55	0.52		0.67
Control Delay (s/veh)		44.2	23.6	0.0		50.0	27.0	4.5	50.1	38.9		50.7
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		44.2	23.6	0.0		50.0	27.0	4.5	50.1	38.9		50.7
LOS		D	C	A		D	C	A	D	D		D
Approach Delay (s/veh)			26.1				23.7			42.8		
Approach LOS			C				C			D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 136.5			
Actuated Cycle Length: 95			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay (s/veh): 28.6		Intersection LOS: C	
Intersection Capacity Utilization 58.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 11: Sisk Rd & SR 219





Lane Group	SBT	SBR
Protected Phases	4	
Permitted Phases		4
Detector Phase	4	4
Switch Phase		
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	22.6	22.6
Total Split (s)	22.6	22.6
Total Split (%)	16.6%	16.6%
Maximum Green (s)	17.0	17.0
Yellow Time (s)	3.6	3.6
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	5.6	5.6
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.2	3.2
Recall Mode	None	None
Walk Time (s)	5.0	5.0
Flash Don't Walk (s)	12.0	12.0
Pedestrian Calls (#/hr)	1	1
Act Effct Green (s)	17.2	17.2
Actuated g/C Ratio	0.18	0.18
v/c Ratio	0.52	0.23
Control Delay (s/veh)	44.5	6.8
Queue Delay	0.0	0.0
Total Delay (s/veh)	44.5	6.8
LOS	D	A
Approach Delay (s/veh)	36.8	
Approach LOS	D	

Intersection Summary

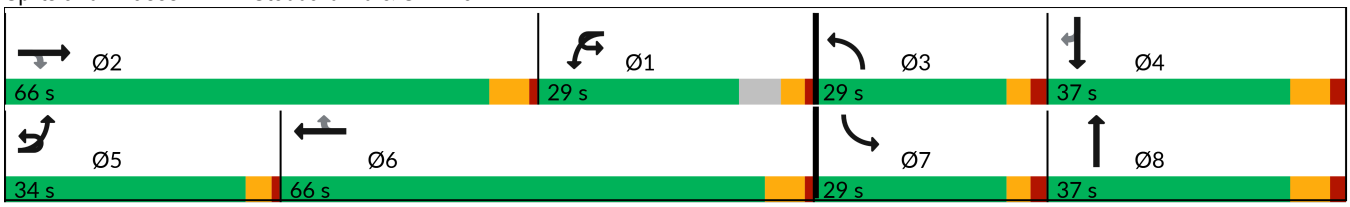
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	10	87	1014	33	5	33	963	35	48	67	134	27
Future Volume (vph)	10	87	1014	33	5	33	963	35	48	67	134	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		1000		620		495		640	70		0	155
Storage Lanes		2		1		1		1	1		0	1
Taper Length (ft)		210				140			55			160
Lane Util. Factor	0.95	0.97	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Frt				0.850				0.850		0.900		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	3400	3505	1568	0	1752	3505	1568	1752	1660	0	1752
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	3400	3505	1568	0	1752	3505	1568	1752	1660	0	1752
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				99				85		53		
Link Speed (mph)			55				55			35		
Link Distance (ft)			1694				1350			735		
Travel Time (s)			21.0				16.7			14.3		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	94	1090	35	5	35	1035	38	52	72	144	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	105	1090	35	0	40	1035	38	52	216	0	29
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			48				48			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			25				25			16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2		1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)		20	100	20		20	100	20	20	100		20
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0		0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA		Prot
Protected Phases	5	5	2		1	1	6		3	8		7
Permitted Phases				2				6				

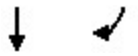
Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	20	212
Future Volume (vph)	20	212
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		155
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	1.00	1.00
Frt		0.850
Flt Protected		
Satd. Flow (prot)	1845	1568
Flt Permitted		
Satd. Flow (perm)	1845	1568
Right Turn on Red		Yes
Satd. Flow (RTOR)		228
Link Speed (mph)	35	
Link Distance (ft)	1875	
Travel Time (s)	36.5	
Peak Hour Factor	0.93	0.93
Adj. Flow (vph)	22	228
Shared Lane Traffic (%)		
Lane Group Flow (vph)	22	228
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	25	
Two way Left Turn Lane	Yes	
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	1
Detector Template	Thru	Right
Leading Detector (ft)	100	20
Trailing Detector (ft)	0	0
Detector 1 Position(ft)	0	0
Detector 1 Size(ft)	6	20
Detector 1 Type	Cl+Ex	Cl+Ex
Detector 1 Channel		
Detector 1 Extend (s)	0.0	0.0
Detector 1 Queue (s)	0.0	0.0
Detector 1 Delay (s)	0.0	0.0
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	Perm
Protected Phases	4	
Permitted Phases		4

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Detector Phase	5	5	2	2	1	1	6	6	3	8		7
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.0	10.0		9.0
Minimum Split (s)	14.0	14.0	16.0	16.0	14.0	14.0	16.0	16.0	14.0	17.0		14.0
Total Split (s)	34.0	34.0	66.0	66.0	29.0	29.0	66.0	66.0	29.0	37.0		29.0
Total Split (%)	20.5%	20.5%	39.8%	39.8%	17.5%	17.5%	39.8%	39.8%	17.5%	22.3%		17.5%
Maximum Green (s)	30.0	30.0	60.0	60.0	25.0	25.0	60.0	60.0	24.0	30.0		24.0
Yellow Time (s)	3.0	3.0	5.0	5.0	3.0	3.0	5.0	5.0	3.0	5.0		3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0		2.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		4.0	6.0	6.0		4.0	6.0	6.0	5.0	7.0		5.0
Lead/Lag	Lead	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	4.5	4.5	3.0	3.0	4.5	4.5	3.0	3.5		3.0
Recall Mode	None	None	Min	Min	None	None	Min	Min	None	None		None
Act Effct Green (s)		11.0	49.4	49.4		10.9	41.5	41.5	10.4	19.7		9.8
Actuated g/C Ratio		0.11	0.51	0.51		0.11	0.42	0.42	0.11	0.20		0.10
v/c Ratio		0.27	0.62	0.04		0.21	0.70	0.05	0.28	0.57		0.17
Control Delay (s/veh)		49.4	22.7	0.1		51.6	26.3	0.1	52.6	36.6		52.4
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		49.4	22.7	0.1		51.6	26.3	0.1	52.6	36.6		52.4
LOS		D	C	A		D	C	A	D	D		D
Approach Delay (s/veh)			24.3				26.3			39.7		
Approach LOS			C				C			D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 166			
Actuated Cycle Length: 97.8			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay (s/veh): 25.8		Intersection LOS: C	
Intersection Capacity Utilization 73.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 12: Stoddard Rd & SR 219





Lane Group	SBT	SBR
Detector Phase	4	4
Switch Phase		
Minimum Initial (s)	10.0	10.0
Minimum Split (s)	17.0	17.0
Total Split (s)	37.0	37.0
Total Split (%)	22.3%	22.3%
Maximum Green (s)	30.0	30.0
Yellow Time (s)	5.0	5.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	7.0	7.0
Lead/Lag	Lag	Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	3.5	3.5
Recall Mode	None	None
Act Effct Green (s)	15.8	15.8
Actuated g/C Ratio	0.16	0.16
v/c Ratio	0.07	0.51
Control Delay (s/veh)	41.3	10.3
Queue Delay	0.0	0.0
Total Delay (s/veh)	41.3	10.3
LOS	D	B
Approach Delay (s/veh)	17.1	
Approach LOS	B	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	24	876	280	11	163	697	10	318	147	220	51	152
Future Volume (vph)	24	876	280	11	163	697	10	318	147	220	51	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	555		700		450		50	320		0	90	
Storage Lanes	1		2		2		1	2		1	1	
Taper Length (ft)	140				205			140			85	
Lane Util. Factor	1.00	0.91	1.00	0.95	0.97	0.95	1.00	0.97	1.00	1.00	1.00	1.00
Frt			0.850				0.850			0.850		0.986
Flt Protected	0.950				0.950			0.950			0.950	
Satd. Flow (prot)	1752	5036	1568	0	3400	3505	1568	3400	1845	1568	1752	1819
Flt Permitted	0.950				0.950			0.950			0.950	
Satd. Flow (perm)	1752	5036	1568	0	3400	3505	1568	3400	1845	1568	1752	1819
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)			301				89			237		2
Link Speed (mph)		55				55			40			55
Link Distance (ft)		3925				2640			1013			2575
Travel Time (s)		48.7				32.7			17.3			31.9
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	26	942	301	12	175	749	11	342	158	237	55	163
Shared Lane Traffic (%)												
Lane Group Flow (vph)	26	942	301	0	187	749	11	342	158	237	55	180
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)		48				48			24			12
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		50				70			50			50
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Number of Detectors	1	2	1		1	2	1	1	2	1	1	2
Detector Template	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left	Thru
Leading Detector (ft)	20	100	20		20	100	20	20	100	20	20	100
Trailing Detector (ft)	0	0	0		0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0		0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20		20	6	20	20	6	20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94				94			94			94
Detector 2 Size(ft)		6				6			6			6
Detector 2 Type		Cl+Ex				Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0				0.0			0.0			0.0
Turn Type	Prot	NA	Perm	Prot	Prot	NA	Perm	Split	NA	Perm	Split	NA
Protected Phases	5	2		1	1	6		8	8		7	7
Permitted Phases			2				6			8		

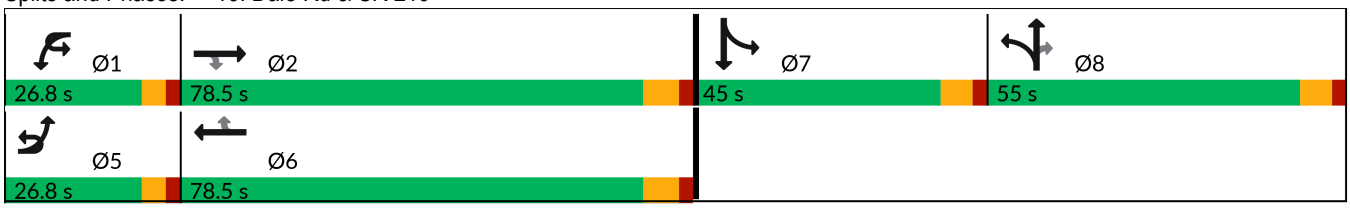


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	16
Future Volume (vph)	16
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.93
Adj. Flow (vph)	17
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	
Permitted Phases	

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Detector Phase	5	2	2	1	1	6	6	8	8	8	7	7
Switch Phase												
Minimum Initial (s)	6.0	11.0	11.0	6.0	6.0	11.0	11.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.8	41.5	41.5	11.8	11.8	37.5	37.5	55.0	55.0	55.0	15.0	15.0
Total Split (s)	26.8	78.5	78.5	26.8	26.8	78.5	78.5	55.0	55.0	55.0	45.0	45.0
Total Split (%)	13.1%	38.2%	38.2%	13.1%	13.1%	38.2%	38.2%	26.8%	26.8%	26.8%	21.9%	21.9%
Maximum Green (s)	21.0	71.0	71.0	21.0	21.0	71.0	71.0	48.0	48.0	48.0	38.0	38.0
Yellow Time (s)	3.8	5.5	5.5	3.8	3.8	5.5	5.5	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	7.5	7.5		5.8	7.5	7.5	7.0	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	4.5	4.5	3.0	3.0	4.5	4.5	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	None	Min	Min	None	None	None	None	None
Walk Time (s)		5.0	5.0			5.0	5.0	5.0	5.0	5.0		
Flash Don't Walk (s)		29.0	29.0			25.0	25.0	43.0	43.0	43.0		
Pedestrian Calls (#/hr)		0	0			0	0	0	0	0		
Act Effct Green (s)	7.9	38.5	38.5		13.1	49.8	49.8	20.4	20.4	20.4	18.7	18.7
Actuated g/C Ratio	0.07	0.32	0.32		0.11	0.42	0.42	0.17	0.17	0.17	0.16	0.16
v/c Ratio	0.23	0.58	0.42		0.50	0.51	0.02	0.59	0.50	0.51	0.20	0.63
Control Delay (s/veh)	66.3	36.0	5.5		58.7	29.7	0.0	52.1	53.9	10.2	50.5	60.0
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	66.3	36.0	5.5		58.7	29.7	0.0	52.1	53.9	10.2	50.5	60.0
LOS	E	D	A		E	C	A	D	D	B	D	E
Approach Delay (s/veh)		29.4				35.1			39.0			57.8
Approach LOS		C				D			D			E

Intersection Summary			
Area Type:	Other		
Cycle Length: 205.3			
Actuated Cycle Length: 119.1			
Natural Cycle: 125			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay (s/veh): 35.4		Intersection LOS: D	
Intersection Capacity Utilization 65.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 13: Dale Rd & SR 219





Lane Group	SBR
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	
Recall Mode	
Walk Time (s)	
Flash Don't Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	

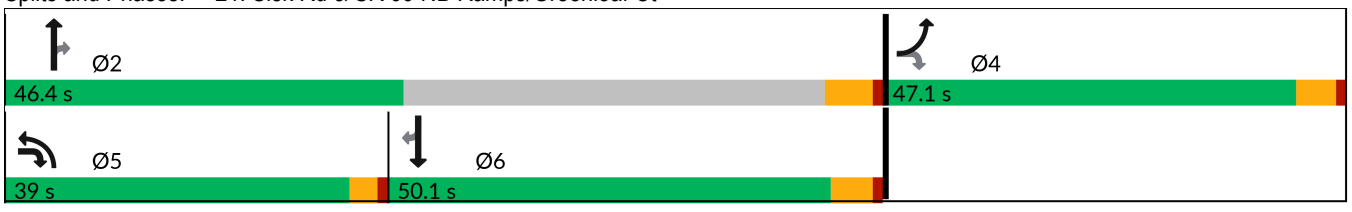
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	0	426	0	0	3	538	298	7	0	580	45
Future Volume (vph)	88	0	426	0	0	3	538	298	7	0	580	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	285		0	0		0	400		300	0		245
Storage Lanes	1		2	0		1	2		1	0		2
Taper Length (ft)	70			25			85			25		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98			
Frt			0.850			0.865			0.850			0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1787	0	2814	0	0	1627	3467	3574	1599	0	3574	1599
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1787	0	2814	0	0	1627	3467	3574	1563	0	3574	1599
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			174			629						49
Link Speed (mph)		35			25			45			35	
Link Distance (ft)		1576			591			734			1443	
Travel Time (s)		30.7			16.1			11.1			28.1	
Confl. Peds. (#/hr)									3			
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
Adj. Flow (vph)	91	0	439	0	0	3	555	307	7	0	598	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	91	0	439	0	0	3	555	307	7	0	598	46
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			48			36	
Link Offset(ft)		0			100			0			0	
Crosswalk Width(ft)		16			16			16			25	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1		2	1	1	2	1		2	1
Detector Template	Left	Thru	Right		Thru	Right	Left	Thru	Right		Thru	Right
Leading Detector (ft)	20	100	20		100	20	20	100	20		100	20
Trailing Detector (ft)	0	0	0		0	0	0	0	0		0	0
Detector 1 Position(ft)	0		0			0	0	0	0		0	0
Detector 1 Size(ft)	20		20			20	20	6	20		6	20
Detector 1 Type	Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0			0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0		0.0			0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0		0.0			0.0	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Prot		pm+ov			Free	Prot	NA	Perm		NA	Perm

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	4		5				5	2			6	
Permitted Phases			4			Free			2			6
Detector Phase	4		5				5	2	2		6	6
Switch Phase												
Minimum Initial (s)	17.0		10.0				10.0	10.0	10.0		15.0	15.0
Minimum Split (s)	22.1		14.0				14.0	15.8	15.8		20.1	20.1
Total Split (s)	47.1		39.0				39.0	46.4	46.4		50.1	50.1
Total Split (%)	34.6%		28.6%				28.6%	34.1%	34.1%		36.8%	36.8%
Maximum Green (s)	42.0		35.0				35.0	40.6	40.6		45.0	45.0
Yellow Time (s)	4.1		3.0				3.0	4.8	4.8		4.1	4.1
All-Red Time (s)	1.0		1.0				1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0				0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.1		4.0				4.0	5.8	5.8		5.1	5.1
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?			Yes				Yes				Yes	Yes
Vehicle Extension (s)	3.6		2.5				2.5	2.8	2.8		3.6	3.6
Recall Mode	None		None				None	Min	Min		Min	Min
Act Effct Green (s)	18.5		34.1			64.8	18.0	44.5	44.5		20.8	20.8
Actuated g/C Ratio	0.29		0.53			1.00	0.28	0.69	0.69		0.32	0.32
v/c Ratio	0.18		0.28			0.00	0.58	0.13	0.01		0.52	0.08
Control Delay (s/veh)	25.0		5.1			0.0	24.8	5.6	5.1		22.0	6.3
Queue Delay	0.0		0.0			0.0	0.0	0.0	0.0		0.0	0.0
Total Delay (s/veh)	25.0		5.1			0.0	24.8	5.6	5.1		22.0	6.3
LOS	C		A			A	C	A	A		C	A
Approach Delay (s/veh)		8.5						17.9			20.9	
Approach LOS		A						B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 136.2			
Actuated Cycle Length: 64.8			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay (s/veh): 16.4		Intersection LOS: B	
Intersection Capacity Utilization 47.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 21: Sisk Rd & SR 99 NB Ramps/Greenleaf Ct



95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
6. Patterson Rd/SR 108	EBTR	477	157	358
	WBL	525	124	99
	WBT	1,387	26	5
	NBR	683	73	171
7. McHenry Ave/SR 108	WBLR	683	180	118
	NBT	693	173	230
	SBT	493	231	282
	SBT	493	217	279
14. Carver Rd/SR 219	EBUL	430	72	59
	EBTR	1,445	205	241
	EBTR	1,445	166	193
	EBTR	580	104	110
	EBR	580	69	52
	WBUL	595	87	101
	WBT	1,236	228	139
	WBT	1,236	244	146
	WBT	1,236	277	149
	WBR	540	14	27
	NBL	260	197	70
	NBTR	1,190	119	123
	SBL	95	34	33
	SBTR	1,325	149	121
15. Tully Rd/SR 219	EBL	715	50	46
	EBTR	1,232	187	247
	EBTR	1,232	186	234
	EBTR	1,232	185	209
	EBR	355	74	53
	WBUL	665	113	112
	WBL	665	126	129
	WBT	1,382	229	188
	WBT	1,382	239	198
	WBT	1,382	250	215
	WBR	415	15	24
	NBL	275	164	122
	NBT	1,296	99	145

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
	NBR	395	58	70
	SBL	300	41	33
	SBTR	1,249	239	150
16. SR 108/SR 219/Claribel Rd	EBUL	765	100	115
	EBL	765	120	132
	EBTR	1,198	145	285
	EBTR	1,198	145	289
	EBTR	1,198	135	287
	EBR	650	92	74
	WBL	960	136	82
	WBL	960	176	127
	WBT	1,594	450	322
	WBT	1,594	396	286
	WBR	75	220	157
	NBL	140	160	244
	NBT	1,402	303	348
	NBT	1,402	315	315
	NBR	210	64	218
	SBL	420	175	359
	SBT	1,240	301	300
	SBT	1,240	271	265
	SBR	535	95	80
26. Pelandale Ave/SR 108	EBUL	300	116	95
	EBL	793	174	145
	EBT	793	282	323
	EBT	793	253	295
	EBR	380	71	140
	WBL	195	43	50
	WBL	195	65	66
	WBT	590	200	176
	WBT	590	187	163
	WBT	590	160	139
	WBR	320	80	
	NBUL	325	95	177
	NBL	325	161	229

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
	NBT	776	284	384
	NBT	776	250	357
	NBR	260		
	SBL	175	80	175
	SBL	175	137	346
	SBT	2,486	353	686
	SBTR	2,486	370	706

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
9. SR 99 SB Ramps/SR 219	EBT	350	153	104
	EBT	350	206	124
	EBT	248	199	138
	EBTR	248	159	113
	EBR	248	95	79
	WBUL	361	217	127
	WBL	361	228	145
	WBT	361	103	164
	WBT	361	71	136
	SBL	450	363	235
	SBLT	1,118	312	201
	SBR	450	67	78
10. SR 99 NB Ramps/SR 219	EBL	361	176	139
	EBT	361	98	25
	EBT	361	85	30
	EBT	361	66	12
	WBT	360	178	106
	WBT	541	224	156
	WBT	541	357	270
	WBR	541	315	298
	NBLT	1,264	114	172
	NBR	1,264	77	111
	NBR	565	41	73
11. Sisk Rd/SR 219	EBUL	250	69	50
	EBL	327	113	99
	EBL	327	133	122
	EBT	868	401	245
	EBT	868	372	265
	EBT	868	332	227
	EBR			
	WBUL	735	105	99
	WBT	819	314	231
	WBT	819	317	254
	WBT	819	311	259
	WBR	525	170	102

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
	NBL	555	196	157
	NBT	1,927	463	122
	NBTR	230	339	114
	SBL	505	745	228
	SBT	1,125	1,435	172
	SBT	1,125	1,237	68
	SBR	150	137	52
12. Stoddard Rd/SR 219	EBUL	1,000	315	61
	EBL	1,000	339	90
	EBT	2,430	430	339
	EBT	2,430	507	406
	EBR	620	35	11
	WBL	495	150	65
	WBT	1,265	486	334
	WBT	1,265	540	388
	WBR	640	60	32
	NBL	70	98	105
	NBTR	658	385	206
	SBL	155	132	54
	SBT	1,772	281	38
	SBR	155	431	152
13. Dale Rd/SR 219	EBUL	555	54	55
	EBT	3,810	296	311
	EBT	3,810	296	300
	EBT	700	274	276
	EBR	700	302	153
	WBUL	450	161	118
	WBL	450	232	142
	WBT	2,533	506	266
	WBT	2,533	548	246
	WBR	50	165	48
	NBL	320	192	221
	NBL	320	336	245
	NBT	890	569	190
	NBR	890	177	123

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
	SBL	90	209	128
	SBTR	2,440	527	247

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
21. Sisk Rd/SR 99 NB Ramps	EBUL	285	386	103
	EBR	1,475	422	111
	EBR	1,475	146	78
	WBR			
	NBL	400	119	145
	NBL	400	145	175
	NBT	622	152	42
	NBT	622	131	55
	NBR	300	24	7
	SBT	1,312	110	169
	SBT	245	102	164
	SBR	245		4

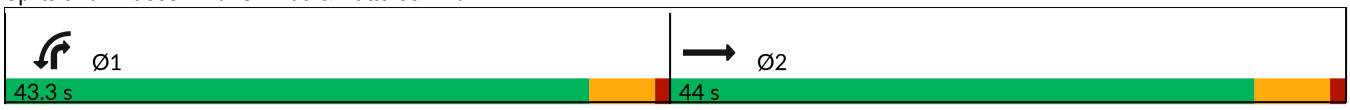
Appendix B. Queuing Analysis Worksheets – Existing Plus Project Conditions

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	280	0	291	648	0	151
Future Volume (vph)	280	0	291	648	0	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	525		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			125		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.865
Flt Protected			0.950			
Satd. Flow (prot)	1792	0	1703	1792	0	1550
Flt Permitted			0.950			
Satd. Flow (perm)	1792	0	1703	1792	0	1550
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						452
Link Speed (mph)	35			55	45	
Link Distance (ft)	574			1403	796	
Travel Time (s)	11.2			17.4	12.1	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	298	0	310	689	0	161
Shared Lane Traffic (%)						
Lane Group Flow (vph)	298	0	310	689	0	161
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (ft)	100		20	100	20	20
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0		0
Detector 1 Size(ft)	6		20	6		20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0		0.0	0.0		0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA		Over
Protected Phases	2		1	Free		1
Permitted Phases						

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	2		1			1
Switch Phase						
Minimum Initial (s)	8.0		8.0			8.0
Minimum Split (s)	14.0		13.3			13.3
Total Split (s)	44.0		43.3			43.3
Total Split (%)	50.4%		49.6%			49.6%
Maximum Green (s)	38.0		38.0			38.0
Yellow Time (s)	5.0		4.3			4.3
All-Red Time (s)	1.0		1.0			1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	6.0		5.3			5.3
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.2		3.2			3.2
Recall Mode	None		None			None
Act Effct Green (s)	12.2		12.8	36.8		12.8
Actuated g/C Ratio	0.33		0.35	1.00		0.35
v/c Ratio	0.50		0.52	0.38		0.19
Control Delay (s/veh)	13.8		13.6	0.6		0.5
Queue Delay	0.0		0.0	0.0		0.0
Total Delay (s/veh)	13.8		13.6	0.6		0.5
LOS	B		B	A		A
Approach Delay (s/veh)	13.8			4.7	0.5	
Approach LOS	B			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 87.3			
Actuated Cycle Length: 36.8			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay (s/veh): 6.1		Intersection LOS: A	
Intersection Capacity Utilization 40.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: SR 108 & Patterson Rd



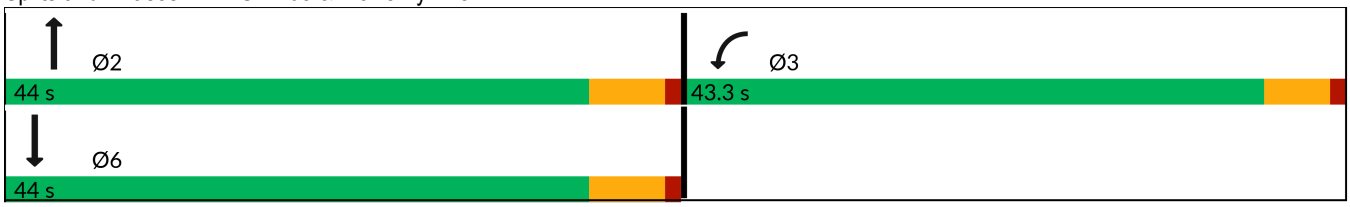


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	290	1	307	151	0	525
Future Volume (vph)	290	1	307	151	0	525
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		475	0	
Storage Lanes	1	0		1	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Frt				0.850		
Flt Protected	0.953					
Satd. Flow (prot)	1708	0	1792	1524	0	3406
Flt Permitted	0.953					
Satd. Flow (perm)	1708	0	1792	1524	0	3406
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)				161		
Link Speed (mph)	45		55			55
Link Distance (ft)	796		700			570
Travel Time (s)	12.1		8.7			7.1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	309	1	327	161	0	559
Shared Lane Traffic (%)						
Lane Group Flow (vph)	310	0	327	161	0	559
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1		2	1		2
Detector Template	Left		Thru	Right		Thru
Leading Detector (ft)	20		100	20		100
Trailing Detector (ft)	0		0	0		0
Detector 1 Position(ft)	0		0	0		0
Detector 1 Size(ft)	20		6	20		6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0		0.0	0.0		0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot		NA	Free		NA
Protected Phases	3		2			6
Permitted Phases				Free		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	3		2			6
Switch Phase						
Minimum Initial (s)	8.0		8.0			8.0
Minimum Split (s)	13.3		14.0			14.0
Total Split (s)	43.3		44.0			44.0
Total Split (%)	49.6%		50.4%			50.4%
Maximum Green (s)	38.0		38.0			38.0
Yellow Time (s)	4.3		5.0			5.0
All-Red Time (s)	1.0		1.0			1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.3		6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.2		3.2			3.2
Recall Mode	None		None			None
Act Effct Green (s)	13.0		13.0	37.7		13.0
Actuated g/C Ratio	0.34		0.34	1.00		0.34
v/c Ratio	0.53		0.53	0.11		0.48
Control Delay (s/veh)	14.2		14.0	0.1		11.6
Queue Delay	0.0		0.0	0.0		0.0
Total Delay (s/veh)	14.2		14.0	0.1		11.6
LOS	B		B	A		B
Approach Delay (s/veh)	14.2		9.4			11.6
Approach LOS	B		A			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 87.3			
Actuated Cycle Length: 37.7			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay (s/veh): 11.4		Intersection LOS: B	
Intersection Capacity Utilization 41.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 7: SR 108 & McHenry Ave



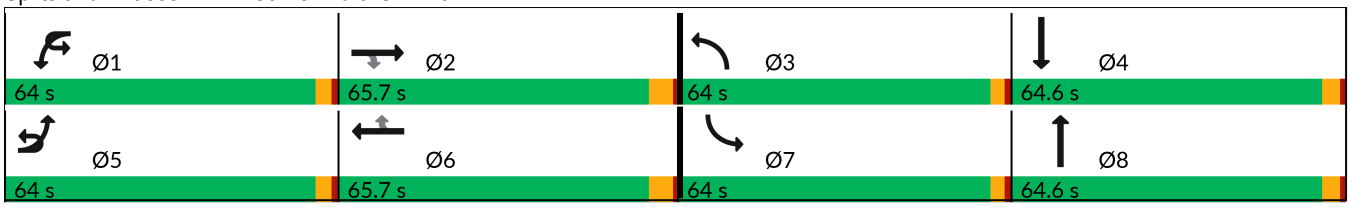
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	7	30	814	161	2	53	1268	5	243	97	55	12
Future Volume (vph)	7	30	814	161	2	53	1268	5	243	97	55	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		430		580		595		540	260		0	95
Storage Lanes		1		2		1		1	1		0	1
Taper Length (ft)		110				90			115			115
Lane Util. Factor	0.91	1.00	0.91	1.00	0.91	1.00	0.91	1.00	1.00	1.00	1.00	1.00
Frt				0.850				0.850		0.946		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	1719	4940	1538	0	1719	4940	1538	1719	1712	0	1719
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	1719	4940	1538	0	1719	4940	1538	1719	1712	0	1719
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				177				41		10		
Link Speed (mph)			55				55			35		
Link Distance (ft)			1479				1299			1261		
Travel Time (s)			18.3				16.1			24.6		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	8	33	895	177	2	58	1393	5	267	107	60	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	41	895	177	0	60	1393	5	267	167	0	13
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			12				12			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			16				16			16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2		1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)		20	100	20		20	100	20	20	100		20
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0		0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA		Prot
Protected Phases	5	5	2		1	1	6		3	8		7

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	101	54
Future Volume (vph)	101	54
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	1.00	1.00
Frt	0.948	
Flt Protected		
Satd. Flow (prot)	1715	0
Flt Permitted		
Satd. Flow (perm)	1715	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	10	
Link Speed (mph)	35	
Link Distance (ft)	1396	
Travel Time (s)	27.2	
Peak Hour Factor	0.91	0.91
Heavy Vehicles (%)	5%	5%
Adj. Flow (vph)	111	59
Shared Lane Traffic (%)		
Lane Group Flow (vph)	170	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane	Yes	
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	
Detector Template	Thru	
Leading Detector (ft)	100	
Trailing Detector (ft)	0	
Detector 1 Position(ft)	0	
Detector 1 Size(ft)	6	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	
Protected Phases	4	

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Permitted Phases				2				6				
Detector Phase	5	5	2	2	1	1	6	6	3	8		7
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	14.0	14.0	15.7	15.7	14.0	14.0	15.7	15.7	14.0	14.5		14.0
Total Split (s)	64.0	64.0	65.7	65.7	64.0	64.0	65.7	65.7	64.0	64.6		64.0
Total Split (%)	24.8%	24.8%	25.4%	25.4%	24.8%	24.8%	25.4%	25.4%	24.8%	25.0%		24.8%
Maximum Green (s)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.1		60.0
Yellow Time (s)	3.0	3.0	4.7	4.7	3.0	3.0	4.7	4.7	3.0	3.5		3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		4.0	5.7	5.7		4.0	5.7	5.7	4.0	4.5		4.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	2.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0		1.0
Recall Mode	None	None	Min	Min	None	None	Min	Min	None	None		None
Act Effct Green (s)		10.4	57.0	57.0		10.9	61.2	61.2	24.7	41.9		10.2
Actuated g/C Ratio		0.08	0.44	0.44		0.08	0.47	0.47	0.19	0.32		0.08
v/c Ratio		0.30	0.41	0.23		0.42	0.60	0.01	0.81	0.30		0.10
Control Delay (s/veh)		68.1	27.0	4.7		70.7	29.1	0.0	70.9	33.6		64.3
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		68.1	27.0	4.7		70.7	29.1	0.0	70.9	33.6		64.3
LOS		E	C	A		E	C	A	E	C		E
Approach Delay (s/veh)			24.9				30.7			56.5		
Approach LOS			C				C			E		

Intersection Summary			
Area Type:	Other		
Cycle Length: 258.3			
Actuated Cycle Length: 129.3			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay (s/veh): 34.3		Intersection LOS: C	
Intersection Capacity Utilization 70.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 14: Carver Rd & SR 219





Lane Group	SBT	SBR
Permitted Phases		
Detector Phase	4	
Switch Phase		
Minimum Initial (s)	10.0	
Minimum Split (s)	14.6	
Total Split (s)	64.6	
Total Split (%)	25.0%	
Maximum Green (s)	60.0	
Yellow Time (s)	3.6	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	4.6	
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	2.0	
Recall Mode	None	
Act Effct Green (s)	18.0	
Actuated g/C Ratio	0.14	
v/c Ratio	0.69	
Control Delay (s/veh)	66.2	
Queue Delay	0.0	
Total Delay (s/veh)	66.2	
LOS	E	
Approach Delay (s/veh)	66.0	
Approach LOS	E	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	26	746	136	18	154	1098	7	189	99	95	13	218
Future Volume (vph)	26	746	136	18	154	1098	7	189	99	95	13	218
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	715		355		665		415	275		395	300	
Storage Lanes	1		1		2		1	1		1	1	
Taper Length (ft)	95				190			120			100	
Lane Util. Factor	1.00	0.91	1.00	0.91	0.97	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor										0.99		
Frt			0.850				0.850			0.850		0.980
Flt Protected	0.950				0.950			0.950			0.950	
Satd. Flow (prot)	1736	4988	1553	0	3367	4988	1553	1736	1827	1553	1736	1790
Flt Permitted	0.950				0.950			0.950			0.950	
Satd. Flow (perm)	1736	4988	1553	0	3367	4988	1553	1736	1827	1532	1736	1790
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)			123				82			104		3
Link Speed (mph)		55				55			35			35
Link Distance (ft)		1306				1950			1372			1326
Travel Time (s)		16.2				24.2			26.7			25.8
Confl. Peds. (#/hr)										1		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	29	820	149	20	169	1207	8	208	109	104	14	240
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	820	149	0	189	1207	8	208	109	104	14	277
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)		24				24			12			12
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		16				16			16			16
Two way Left Turn Lane									Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Number of Detectors	1	2	1		1	2	1	1	2	1	1	2
Detector Template	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left	Thru
Leading Detector (ft)	20	100	20		20	100	20	20	100	20	20	100
Trailing Detector (ft)	0	0	0		0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0		0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20		20	6	20	20	6	20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94				94			94			94
Detector 2 Size(ft)		6				6			6			6
Detector 2 Type		Cl+Ex				Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0				0.0			0.0			0.0

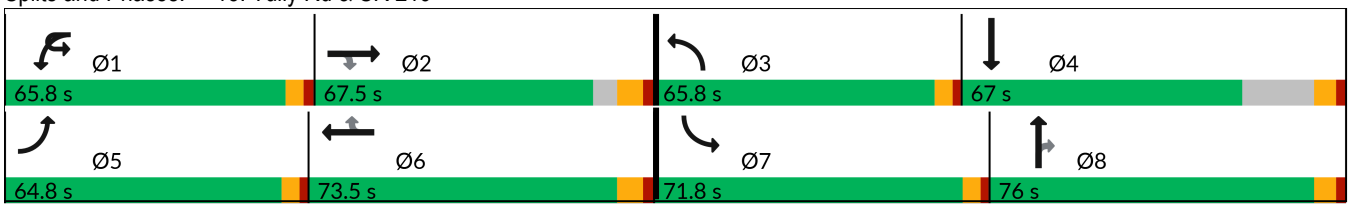


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	34
Future Volume (vph)	34
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	
Lane Util. Factor	1.00
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	0.91
Heavy Vehicles (%)	4%
Adj. Flow (vph)	37
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Turn Type	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	5	2		1	1	6		3	8		7	4
Permitted Phases			2				6			8		
Detector Phase	5	2	2	1	1	6	6	3	8	8	7	4
Switch Phase												
Minimum Initial (s)	9.0	10.0	10.0	10.0	10.0	16.0	16.0	10.0	19.0	19.0	16.0	10.0
Minimum Split (s)	14.8	17.5	17.5	15.8	15.8	23.5	23.5	15.8	26.0	26.0	21.8	17.0
Total Split (s)	64.8	67.5	67.5	65.8	65.8	73.5	73.5	65.8	76.0	76.0	71.8	67.0
Total Split (%)	22.6%	23.6%	23.6%	23.0%	23.0%	25.7%	25.7%	23.0%	26.6%	26.6%	25.1%	23.4%
Maximum Green (s)	59.0	60.0	60.0	60.0	60.0	66.0	66.0	60.0	69.0	69.0	66.0	60.0
Yellow Time (s)	3.8	5.5	5.5	3.8	3.8	5.5	5.5	3.8	5.0	5.0	3.8	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	7.5	7.5		5.8	7.5	7.5	5.8	7.0	7.0	5.8	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	1.0	2.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0
Recall Mode	None	Min	Min	None	None	Min	Min	None	None	None	None	None
Act Effct Green (s)	9.4	48.3	48.3		13.8	56.6	56.6	23.8	51.5	51.5	16.4	29.4
Actuated g/C Ratio	0.07	0.34	0.34		0.10	0.40	0.40	0.17	0.36	0.36	0.12	0.21
v/c Ratio	0.25	0.48	0.24		0.58	0.61	0.01	0.72	0.16	0.17	0.07	0.74
Control Delay (s/veh)	77.0	40.2	11.1		72.0	38.3	0.0	72.3	34.6	7.1	66.5	66.5
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	77.0	40.2	11.1		72.0	38.3	0.0	72.3	34.6	7.1	66.5	66.5
LOS	E	D	B		E	D	A	E	C	A	E	E
Approach Delay (s/veh)		37.0				42.6			46.4			66.5
Approach LOS		D				D			D			E

Intersection Summary			
Area Type:	Other		
Cycle Length: 286.1			
Actuated Cycle Length: 142			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay (s/veh): 43.6		Intersection LOS: D	
Intersection Capacity Utilization 79.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 15: Tully Rd & SR 219





Lane Group	SBR
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	

Intersection Summary

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	11	137	436	160	229	920	139	169	294	112	117	503
Future Volume (vph)	11	137	436	160	229	920	139	169	294	112	117	503
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		765		650	960		75	140		210	420	
Storage Lanes		2		1	2		1	1		1	1	
Taper Length (ft)		255			255			80			115	
Lane Util. Factor	0.91	0.97	0.91	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor				0.98								
Frt				0.850			0.850			0.850		
Flt Protected		0.950			0.950			0.950			0.950	
Satd. Flow (prot)	0	3335	4940	1538	3335	3438	1538	1719	3438	1538	1719	3438
Flt Permitted		0.950			0.950			0.950			0.950	
Satd. Flow (perm)	0	3335	4940	1503	3335	3438	1538	1719	3438	1538	1719	3438
Right Turn on Red				Yes			Yes			Yes		
Satd. Flow (RTOR)				176			90			123		
Link Speed (mph)			55			55			35			45
Link Distance (ft)			1306			1655			1522			1304
Travel Time (s)			16.2			20.5			29.6			19.8
Confl. Peds. (#/hr)				8								
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	12	151	479	176	252	1011	153	186	323	123	129	553
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	163	479	176	252	1011	153	186	323	123	129	553
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			24			24			12			12
Link Offset(ft)			0			0			0			0
Crosswalk Width(ft)			16			16			16			16
Two way Left Turn Lane												Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors		1	2	1	1	2	1	1	2	1	1	2
Detector Template		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru
Leading Detector (ft)		20	100	20	20	100	20	20	100	20	20	100
Trailing Detector (ft)		0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)		0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)		20	6	20	20	6	20	20	6	20	20	6
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94			94			94
Detector 2 Size(ft)			6			6			6			6
Detector 2 Type			Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0			0.0			0.0

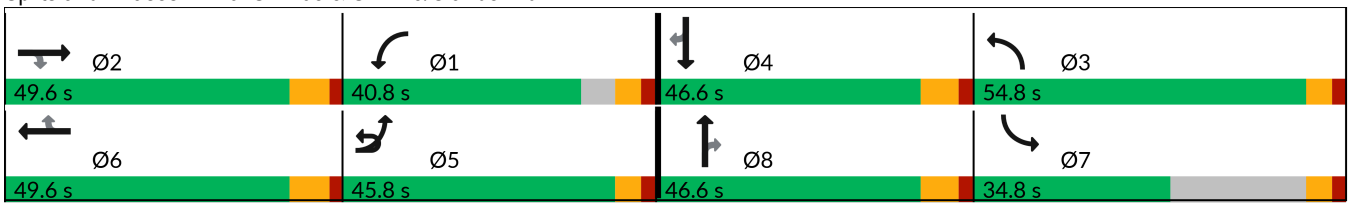


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	153
Future Volume (vph)	153
Ideal Flow (vphpl)	1900
Storage Length (ft)	535
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Ped Bike Factor	
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1538
Flt Permitted	
Satd. Flow (perm)	1538
Right Turn on Red	Yes
Satd. Flow (RTOR)	168
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	0.91
Heavy Vehicles (%)	5%
Adj. Flow (vph)	168
Shared Lane Traffic (%)	
Lane Group Flow (vph)	168
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Turn Type	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	5	5	2		1	6		3	8		7	4
Permitted Phases				2			6			8		
Detector Phase	5	5	2	2	1	6	6	3	8	8	7	4
Switch Phase												
Minimum Initial (s)	15.0	15.0	12.0	12.0	15.0	12.0	12.0	14.0	14.0	14.0	14.0	14.0
Minimum Split (s)	20.8	20.8	50.6	50.6	20.8	55.6	55.6	19.8	58.6	58.6	19.8	60.6
Total Split (s)	45.8	45.8	49.6	49.6	40.8	49.6	49.6	54.8	46.6	46.6	34.8	46.6
Total Split (%)	23.3%	23.3%	25.2%	25.2%	20.7%	25.2%	25.2%	27.8%	23.7%	23.7%	17.7%	23.7%
Maximum Green (s)	40.0	40.0	42.0	42.0	35.0	42.0	42.0	49.0	39.0	39.0	29.0	39.0
Yellow Time (s)	3.8	3.8	5.6	5.6	3.8	5.6	5.6	3.8	5.6	5.6	3.8	5.6
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.8	7.6	7.6	5.8	7.6	7.6	5.8	7.6	7.6	5.8	7.6
Lead/Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.5	2.5	2.1	2.1	2.5	2.0	2.0	2.5	3.6	3.6	2.5	2.3
Recall Mode	None	None	Min	Min	None	Min	Min	None	None	None	None	None
Walk Time (s)			7.0	7.0		7.0	7.0		7.0	7.0		7.0
Flash Don't Walk (s)			35.0	35.0		41.0	41.0		44.0	44.0		46.0
Pedestrian Calls (#/hr)			8	8		0	0		0	0		0
Act Effct Green (s)		16.2	20.8	20.8	37.8	42.4	42.4	20.3	19.4	19.4	28.1	27.2
Actuated g/C Ratio		0.12	0.16	0.16	0.28	0.32	0.32	0.15	0.15	0.15	0.21	0.20
v/c Ratio		0.40	0.62	0.46	0.27	0.92	0.28	0.71	0.65	0.37	0.36	0.79
Control Delay (s/veh)		59.4	56.0	10.3	43.1	58.8	18.1	70.2	61.0	12.2	48.0	59.4
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		59.4	56.0	10.3	43.1	58.8	18.1	70.2	61.0	12.2	48.0	59.4
LOS		E	E	B	D	E	B	E	E	B	D	E
Approach Delay (s/veh)			46.8			51.6			54.2			47.7
Approach LOS			D			D			D			D

Intersection Summary			
Area Type:	Other		
Cycle Length: 196.8			
Actuated Cycle Length: 133.2			
Natural Cycle: 160			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay (s/veh): 50.1		Intersection LOS: D	
Intersection Capacity Utilization 85.8%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 16: SR 108 & SR 219/Claribel Rd





Lane Group	SBR
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Detector Phase	4
Switch Phase	
Minimum Initial (s)	14.0
Minimum Split (s)	60.6
Total Split (s)	46.6
Total Split (%)	23.7%
Maximum Green (s)	39.0
Yellow Time (s)	5.6
All-Red Time (s)	2.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	7.6
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	2.3
Recall Mode	None
Walk Time (s)	7.0
Flash Don't Walk (s)	46.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	27.2
Actuated g/C Ratio	0.20
v/c Ratio	0.38
Control Delay (s/veh)	8.8
Queue Delay	0.0
Total Delay (s/veh)	8.8
LOS	A
Approach Delay (s/veh)	
Approach LOS	

Intersection Summary

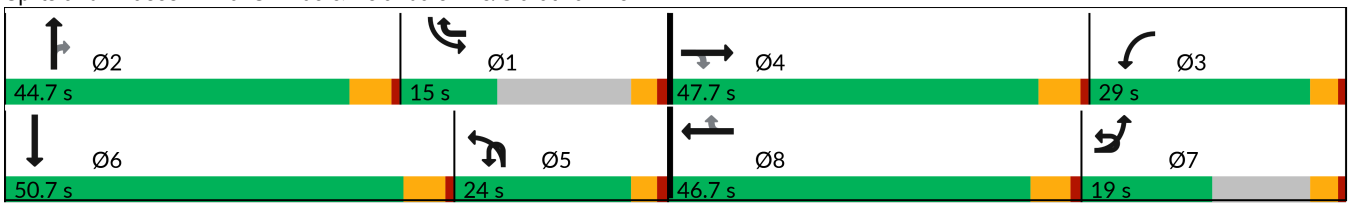
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	15	193	489	200	51	503	238	2	130	561	26	77
Future Volume (vph)	15	193	489	200	51	503	238	2	130	561	26	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		300		380	195		320		325		260	175
Storage Lanes		1		1	2		1		2		1	2
Taper Length (ft)		150			150				105			95
Lane Util. Factor	0.95	0.97	0.95	1.00	0.97	0.91	1.00	0.95	0.97	0.95	1.00	0.97
Ped Bike Factor							0.99					
Frt				0.850			0.850				0.850	
Flt Protected		0.950			0.950				0.950			0.950
Satd. Flow (prot)	0	3400	3505	1568	3400	5036	1568	0	3400	3505	1568	3400
Flt Permitted		0.950			0.950				0.950			0.950
Satd. Flow (perm)	0	3400	3505	1568	3400	5036	1547	0	3400	3505	1568	3400
Right Turn on Red				Yes			Yes				Yes	
Satd. Flow (RTOR)				220			111				118	
Link Speed (mph)			45			45				35		
Link Distance (ft)			850			721				829		
Travel Time (s)			12.9			10.9				16.1		
Confl. Peds. (#/hr)							1					
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	16	212	537	220	56	553	262	2	143	616	29	85
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	228	537	220	56	553	262	0	145	616	29	85
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	Left
Median Width(ft)			24			24				24		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	9	15		9	15
Number of Detectors		1	2	1	1	2	1		1	2	1	1
Detector Template		Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left
Leading Detector (ft)		20	100	20	20	100	20		20	100	20	20
Trailing Detector (ft)		0	0	0	0	0	0		0	0	0	0
Detector 1 Position(ft)		0	0	0	0	0	0		0	0	0	0
Detector 1 Size(ft)		20	6	20	20	6	20		20	6	20	20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94				94		
Detector 2 Size(ft)			6			6				6		
Detector 2 Type			Cl+Ex			Cl+Ex				Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0				0.0		

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	556	90
Future Volume (vph)	556	90
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	0.95	0.95
Ped Bike Factor	1.00	
Frt	0.979	
Flt Protected		
Satd. Flow (prot)	3422	0
Flt Permitted		
Satd. Flow (perm)	3422	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	12	
Link Speed (mph)	35	
Link Distance (ft)	2570	
Travel Time (s)	50.1	
Confl. Peds. (#/hr)		3
Peak Hour Factor	0.91	0.91
Heavy Vehicles (%)	3%	3%
Adj. Flow (vph)	611	99
Shared Lane Traffic (%)		
Lane Group Flow (vph)	710	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	24	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	
Detector Template	Thru	
Leading Detector (ft)	100	
Trailing Detector (ft)	0	
Detector 1 Position(ft)	0	
Detector 1 Size(ft)	6	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Turn Type	Prot	Prot	NA	Perm	Prot	NA	pm+ov	Prot	Prot	NA	Perm	Prot
Protected Phases	7	7	4		3	8	1	5	5	2		1
Permitted Phases				4			8				2	
Detector Phase	7	7	4	4	3	8	1	5	5	2	2	1
Switch Phase												
Minimum Initial (s)	10.0	10.0	15.0	15.0	25.0	10.0	10.0	10.0	10.0	25.0	25.0	10.0
Minimum Split (s)	14.0	14.0	47.7	47.7	29.0	46.7	14.0	14.0	14.0	44.7	44.7	14.0
Total Split (s)	19.0	19.0	47.7	47.7	29.0	46.7	15.0	24.0	24.0	44.7	44.7	15.0
Total Split (%)	12.5%	12.5%	31.5%	31.5%	19.2%	30.8%	9.9%	15.9%	15.9%	29.5%	29.5%	9.9%
Maximum Green (s)	15.0	15.0	42.0	42.0	25.0	41.0	11.0	20.0	20.0	39.0	39.0	11.0
Yellow Time (s)	3.0	3.0	4.7	4.7	3.0	4.7	3.0	3.0	3.0	4.7	4.7	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		4.0	5.7	5.7	4.0	5.7	4.0		4.0	5.7	5.7	4.0
Lead/Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.5	2.5	2.0	2.5	2.3	2.2	2.2	3.0	3.0	2.3
Recall Mode	None	None	None	None	Min	None	Min	None	None	Min	Min	Min
Walk Time (s)			10.0	10.0		10.0				5.0	5.0	
Flash Don't Walk (s)			32.0	32.0		31.0				34.0	34.0	
Pedestrian Calls (#/hr)			0	0		1				0	0	
Act Effct Green (s)		28.1	23.2	23.2	25.3	20.4	35.4		12.1	28.1	28.1	13.2
Actuated g/C Ratio		0.26	0.21	0.21	0.23	0.19	0.32		0.11	0.26	0.26	0.12
v/c Ratio		0.26	0.72	0.44	0.07	0.59	0.45		0.39	0.68	0.06	0.21
Control Delay (s/veh)		37.4	46.7	7.8	37.7	42.9	16.5		51.6	42.0	0.2	46.8
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)		37.4	46.7	7.8	37.7	42.9	16.5		51.6	42.0	0.2	46.8
LOS		D	D	A	D	D	B		D	D	A	D
Approach Delay (s/veh)			35.9			34.6				42.3		
Approach LOS			D			C				D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 151.4			
Actuated Cycle Length: 109.5			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay (s/veh): 38.7		Intersection LOS: D	
Intersection Capacity Utilization 70.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 26: SR 108 & Pelandale Ave/Claratina Ave





Lane Group	SBT	SBR
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Detector Phase	6	
Switch Phase		
Minimum Initial (s)	20.0	
Minimum Split (s)	50.7	
Total Split (s)	50.7	
Total Split (%)	33.5%	
Maximum Green (s)	45.0	
Yellow Time (s)	4.7	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	5.7	
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	
Recall Mode	Min	
Walk Time (s)	10.0	
Flash Don't Walk (s)	10.0	
Pedestrian Calls (#/hr)	3	
Act Effct Green (s)	29.2	
Actuated g/C Ratio	0.27	
v/c Ratio	0.77	
Control Delay (s/veh)	42.8	
Queue Delay	0.0	
Total Delay (s/veh)	42.8	
LOS	D	
Approach Delay (s/veh)	43.2	
Approach LOS	D	

Intersection Summary

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
6. Patterson Rd/SR 108	EBTR	477	166	383
	WBL	525	137	112
	WBT	1,387	48	169
	NBR	683	71	0
7. McHenry Ave/SR 108	WBLR	683	181	123
	NBT	693	175	229
	SBT	493	244	276
	SBT	493	234	277
14. Carver Rd/SR 219	EBUL	430	76	67
	EBTR	1,445	221	279
	EBTR	1,445	184	225
	EBTR	580	126	148
	EBR	580	70	62
	WBUL	595	89	98
	WBT	1,236	280	171
	WBT	1,236	304	187
	WBT	1,236	339	198
	WBR	540	16	25
	NBL	260	237	104
	NBTR	1,190	135	138
	SBL	95	41	38
	SBTR	1,325	154	126
15. Tully Rd/SR 219	EBL	715	54	54
	EBTR	1,232	223	286
	EBTR	1,232	219	271
	EBTR	1,232	214	244
	EBR	355	92	70
	WBUL	665	112	118
	WBL	665	126	136
	WBT	1,874	259	194
	WBT	1,874	286	223
	WBT	1,874	317	255
	WBR	415	14	21
	NBL	275	224	163
	NBT	1,296	101	146

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
	NBR	395	64	76
	SBL	300	42	36
	SBTR	1,249	254	154
16. SR 108/SR 219/Claribel Rd	EBUL	765	104	129
	EBL	765	124	140
	EBTR	1,219	162	297
	EBTR	1,219	174	315
	EBTR	1,219	176	329
	EBR	650	112	87
	WBL	960	135	82
	WBL	960	171	129
	WBT	1,594	653	382
	WBT	1,594	600	345
	WBR	75	248	201
	NBL	140	229	263
	NBT	1,418	342	425
	NBT	1,418	311	396
	NBR	210	71	299
	SBL	420	160	381
	SBT	1,240	304	325
	SBT	1,240	266	281
	SBR	535	105	87
26. Pelandale Ave/SR 108	EBUL	300	108	111
	EBL	793	163	165
	EBT	793	291	354
	EBT	793	256	311
	EBR	380	95	170
	WBL	195	45	50
	WBL	195	62	57
	WBT	640	207	180
	WBT	640	197	169
	WBT	640	168	143
	WBR	320	86	23
	NBUL	325	106	183
	NBL	325	165	287

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
	NBT	776	324	447
	NBT	776	280	407
	NBR	260		112
	SBL	175	81	178
	SBL	175	137	348
	SBT	2,472	352	903
	SBTR	2,472	378	922

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
9. SR 99 SB Ramps/SR 219	EBT	350	157	111
	EBT	350	209	140
	EBT	248	209	150
	EBTR	248	184	121
	EBR	248	104	80
	WBUL	361	243	174
	WBL	361	248	188
	WBT	361	105	169
	WBT	361	79	147
	SBL	450	428	260
	SBLT	1,118	427	221
	SBR	450	121	81
10. SR 99 NB Ramps/SR 219	EBL	361	162	136
	EBT	361	98	23
	EBT	361	90	26
	EBT	361	63	11
	WBT	360	181	139
	WBT	868	240	194
	WBT	868	347	325
	WBR	1,013	367	390
	NBLT	1,264	108	168
	NBR	1,264	121	134
	NBR	565	65	98
11. Sisk Rd/SR 219	EBUL	250	70	57
	EBL	327	111	104
	EBL	327	128	126
	EBT	868	556	297
	EBT	868	504	315
	EBT	654	420	292
	EBR			
	WBUL	735	103	105
	WBT	2,430	334	330
	WBT	2,430	343	333
	WBT	819	330	341
	WBR	525	150	110

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
	NBL	555	411	155
	NBT	1,927	742	130
	NBTR	230	366	118
	SBL	505	726	275
	SBT	1,125	1,582	176
	SBR	1,125	1,544	62
	SBR	150	154	50
12. Stoddard Rd/SR 219	EBUL	1,000	347	96
	EBL	1,000	380	115
	EBT	1,611	538	457
	EBT	1,611	585	493
	EBR	620	78	74
	WBL	495	134	82
	WBT	1,265	472	377
	WBT	1,265	515	430
	WBR	640	51	34
	NBL	70	103	115
	NBTR	658	460	223
	SBL	155	129	66
	SBT	1,772	461	49
	SBR	155	477	191
13. Dale Rd/SR 219	EBUL	555	841	790
	EBT	829	1,063	844
	EBT	829	853	721
	EBT	700	265	375
	EBR	700	181	130
	WBUL	450	162	168
	WBL	450	804	208
	WBT	2,533	3,032	527
	WBT	2,533	2,989	584
	WBT			
	WBR	50	172	125
	NBL	320	213	325
	NBL	320	611	399
	NBT	890	932	554

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
	NBR	890	1,095	341
	SBL	90	221	223
	SBTR	492	584	580
28. Southwest Drwy/SR 219	EBL	300	430	327
	EBT	2,074	1,461	1,142
	EBT	2,074	1,488	1,159
	WBT	783	217	256
	WBT	783	232	266
	WBR	500	46	43
	SBL	100	155	135
	SBR	672	235	213

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
21. Sisk Rd/SR 99 NB Ramps	EBUL	285	391	104
	EBR	1,475	547	117
	EBR	1,475	329	87
	WBR			
	NBL	400	112	159
	NBL	400	139	184
	NBT	622	117	39
	NBT	622	128	53
	NBR	300	31	3
	SBT	1,312	95	171
	SBT	245	109	160
	SBR	245		5

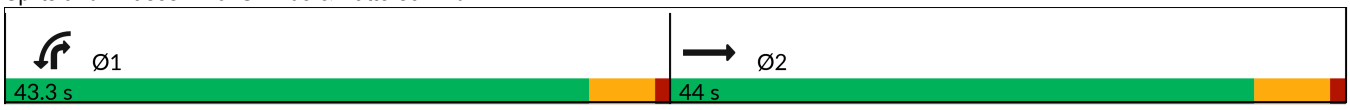
Appendix C. Queuing Analysis Worksheets – Cumulative No Project Conditions

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	430	10	230	920	0	95
Future Volume (vph)	430	10	230	920	0	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	525		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			125		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.997					0.865
Flt Protected			0.950			
Satd. Flow (prot)	1787	0	1703	1792	0	1550
Flt Permitted			0.950			
Satd. Flow (perm)	1787	0	1703	1792	0	1550
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	2					278
Link Speed (mph)	35			55	45	
Link Distance (ft)	574			1403	796	
Travel Time (s)	11.2			17.4	12.1	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	457	11	245	979	0	101
Shared Lane Traffic (%)						
Lane Group Flow (vph)	468	0	245	979	0	101
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (ft)	100		20	100	20	20
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0		0
Detector 1 Size(ft)	6		20	6		20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0		0.0	0.0		0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA		Over
Protected Phases	2		1	Free		1
Permitted Phases						

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	2		1			1
Switch Phase						
Minimum Initial (s)	8.0		8.0			8.0
Minimum Split (s)	14.0		13.3			13.3
Total Split (s)	44.0		43.3			43.3
Total Split (%)	50.4%		49.6%			49.6%
Maximum Green (s)	38.0		38.0			38.0
Yellow Time (s)	5.0		4.3			4.3
All-Red Time (s)	1.0		1.0			1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	6.0		5.3			5.3
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.2		3.2			3.2
Recall Mode	None		None			None
Act Effct Green (s)	16.5		12.6	41.0		12.6
Actuated g/C Ratio	0.40		0.31	1.00		0.31
v/c Ratio	0.65		0.47	0.55		0.15
Control Delay (s/veh)	15.1		15.8	1.2		0.5
Queue Delay	0.0		0.0	0.0		0.0
Total Delay (s/veh)	15.1		15.8	1.2		0.5
LOS	B		B	A		A
Approach Delay (s/veh)	15.1			4.1	0.5	
Approach LOS	B			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 87.3			
Actuated Cycle Length: 41			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay (s/veh): 6.8		Intersection LOS: A	
Intersection Capacity Utilization 51.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: SR 108 & Patterson Rd

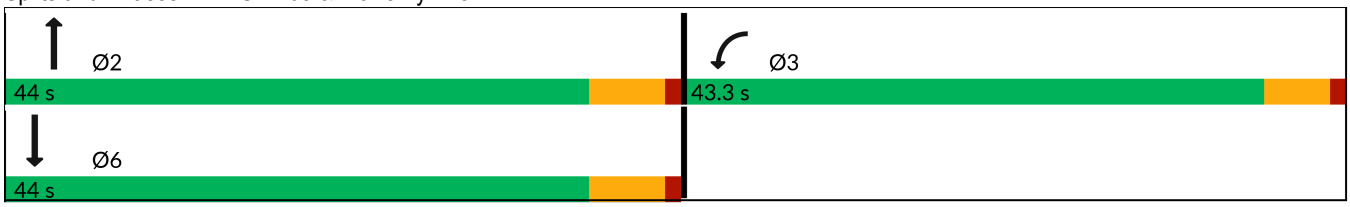


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	230	10	390	95	0	690
Future Volume (vph)	230	10	390	95	0	690
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		475	0	
Storage Lanes	1	0		1	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Frt	0.994			0.850		
Flt Protected	0.954					
Satd. Flow (prot)	1700	0	1792	1524	0	3406
Flt Permitted	0.954					
Satd. Flow (perm)	1700	0	1792	1524	0	3406
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	3			101		
Link Speed (mph)	45		55			55
Link Distance (ft)	796		700			570
Travel Time (s)	12.1		8.7			7.1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	245	11	415	101	0	734
Shared Lane Traffic (%)						
Lane Group Flow (vph)	256	0	415	101	0	734
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1		2	1		2
Detector Template	Left		Thru	Right		Thru
Leading Detector (ft)	20		100	20		100
Trailing Detector (ft)	0		0	0		0
Detector 1 Position(ft)	0		0	0		0
Detector 1 Size(ft)	20		6	20		6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0		0.0	0.0		0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot		NA	Free		NA
Protected Phases	3		2			6
Permitted Phases				Free		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	3		2			6
Switch Phase						
Minimum Initial (s)	8.0		8.0			8.0
Minimum Split (s)	13.3		14.0			14.0
Total Split (s)	43.3		44.0			44.0
Total Split (%)	49.6%		50.4%			50.4%
Maximum Green (s)	38.0		38.0			38.0
Yellow Time (s)	4.3		5.0			5.0
All-Red Time (s)	1.0		1.0			1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.3		6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.2		3.2			3.2
Recall Mode	None		None			None
Act Effct Green (s)	12.4		15.3	39.5		15.3
Actuated g/C Ratio	0.31		0.39	1.00		0.39
v/c Ratio	0.48		0.60	0.07		0.56
Control Delay (s/veh)	15.0		14.2	0.1		11.5
Queue Delay	0.0		0.0	0.0		0.0
Total Delay (s/veh)	15.0		14.2	0.1		11.5
LOS	B		B	A		B
Approach Delay (s/veh)	15.0		11.4			11.5
Approach LOS	B		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 87.3			
Actuated Cycle Length: 39.5			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay (s/veh): 12.1		Intersection LOS: B	
Intersection Capacity Utilization 43.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 7: SR 108 & McHenry Ave



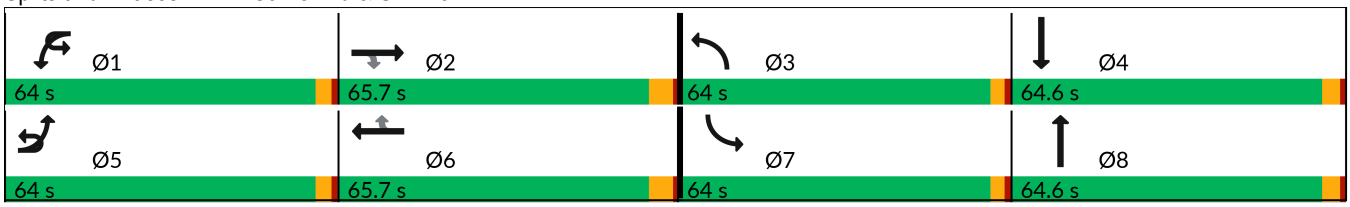
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	10	60	750	160	10	65	1200	10	250	120	70	10
Future Volume (vph)	10	60	750	160	10	65	1200	10	250	120	70	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		430		580		595		540	260		0	95
Storage Lanes		1		2		1		1	1		0	1
Taper Length (ft)		110				90			115			115
Lane Util. Factor	0.91	1.00	0.91	1.00	0.91	1.00	0.91	1.00	1.00	1.00	1.00	1.00
Frt				0.850				0.850		0.945		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	1719	4940	1538	0	1719	4940	1538	1719	1710	0	1719
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	1719	4940	1538	0	1719	4940	1538	1719	1710	0	1719
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				176				41		11		
Link Speed (mph)			55				55			35		
Link Distance (ft)			1479				1299			1261		
Travel Time (s)			18.3				16.1			24.6		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	11	66	824	176	11	71	1319	11	275	132	77	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	77	824	176	0	82	1319	11	275	209	0	11
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			12				12			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			16				16			16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2		1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)		20	100	20		20	100	20	20	100		20
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0		0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA		Prot
Protected Phases	5	5	2		1	1	6		3	8		7

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	130	45
Future Volume (vph)	130	45
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	1.00	1.00
Frt	0.962	
Flt Protected		
Satd. Flow (prot)	1741	0
Flt Permitted		
Satd. Flow (perm)	1741	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	6	
Link Speed (mph)	35	
Link Distance (ft)	1396	
Travel Time (s)	27.2	
Peak Hour Factor	0.91	0.91
Heavy Vehicles (%)	5%	5%
Adj. Flow (vph)	143	49
Shared Lane Traffic (%)		
Lane Group Flow (vph)	192	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane	Yes	
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	
Detector Template	Thru	
Leading Detector (ft)	100	
Trailing Detector (ft)	0	
Detector 1 Position(ft)	0	
Detector 1 Size(ft)	6	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	
Protected Phases	4	

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Permitted Phases				2				6				
Detector Phase	5	5	2	2	1	1	6	6	3	8		7
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	14.0	14.0	15.7	15.7	14.0	14.0	15.7	15.7	14.0	14.5		14.0
Total Split (s)	64.0	64.0	65.7	65.7	64.0	64.0	65.7	65.7	64.0	64.6		64.0
Total Split (%)	24.8%	24.8%	25.4%	25.4%	24.8%	24.8%	25.4%	25.4%	24.8%	25.0%		24.8%
Maximum Green (s)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.1		60.0
Yellow Time (s)	3.0	3.0	4.7	4.7	3.0	3.0	4.7	4.7	3.0	3.5		3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		4.0	5.7	5.7		4.0	5.7	5.7	4.0	4.5		4.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	2.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0		1.0
Recall Mode	None	None	Min	Min	None	None	Min	Min	None	None		None
Act Effct Green (s)		11.8	59.9	59.9		12.2	60.2	60.2	27.0	47.1		10.1
Actuated g/C Ratio		0.09	0.43	0.43		0.09	0.43	0.43	0.19	0.34		0.07
v/c Ratio		0.52	0.39	0.23		0.55	0.61	0.02	0.82	0.36		0.09
Control Delay (s/veh)		77.3	29.6	5.1		77.6	33.9	0.0	74.2	35.1		68.9
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		77.3	29.6	5.1		77.6	33.9	0.0	74.2	35.1		68.9
LOS		E	C	A		E	C	A	E	D		E
Approach Delay (s/veh)			29.0				36.2			57.3		
Approach LOS			C				D			E		

Intersection Summary			
Area Type:	Other		
Cycle Length: 258.3			
Actuated Cycle Length: 138.6			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay (s/veh): 39.2		Intersection LOS: D	
Intersection Capacity Utilization 70.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 14: Carver Rd & SR 219





Lane Group	SBT	SBR
Permitted Phases		
Detector Phase	4	
Switch Phase		
Minimum Initial (s)	10.0	
Minimum Split (s)	14.6	
Total Split (s)	64.6	
Total Split (%)	25.0%	
Maximum Green (s)	60.0	
Yellow Time (s)	3.6	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	4.6	
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	2.0	
Recall Mode	None	
Act Effct Green (s)	21.0	
Actuated g/C Ratio	0.15	
v/c Ratio	0.72	
Control Delay (s/veh)	70.7	
Queue Delay	0.0	
Total Delay (s/veh)	70.7	
LOS	E	
Approach Delay (s/veh)	70.6	
Approach LOS	E	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	25	670	130	10	230	1050	10	170	120	110	15	200
Future Volume (vph)	25	670	130	10	230	1050	10	170	120	110	15	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	715		355		665		415	275		395	300	
Storage Lanes	1		1		2		1	1		1	1	
Taper Length (ft)	95				190			120			100	
Lane Util. Factor	1.00	0.91	1.00	0.91	0.97	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor										0.99		
Frt			0.850				0.850			0.850		0.959
Flt Protected	0.950				0.950			0.950			0.950	
Satd. Flow (prot)	1736	4988	1553	0	3367	4988	1553	1736	1827	1553	1736	1752
Flt Permitted	0.950				0.950			0.950			0.950	
Satd. Flow (perm)	1736	4988	1553	0	3367	4988	1553	1736	1827	1532	1736	1752
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)			131				82			121		6
Link Speed (mph)		55				55			35			35
Link Distance (ft)		1306				1950			1372			1326
Travel Time (s)		16.2				24.2			26.7			25.8
Confl. Peds. (#/hr)										1		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	27	736	143	11	253	1154	11	187	132	121	16	220
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	736	143	0	264	1154	11	187	132	121	16	302
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)		24				24			12			12
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		16				16			16			16
Two way Left Turn Lane									Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Number of Detectors	1	2	1		1	2	1	1	2	1	1	2
Detector Template	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left	Thru
Leading Detector (ft)	20	100	20		20	100	20	20	100	20	20	100
Trailing Detector (ft)	0	0	0		0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0		0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20		20	6	20	20	6	20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94				94			94			94
Detector 2 Size(ft)		6				6			6			6
Detector 2 Type		Cl+Ex				Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0				0.0			0.0			0.0

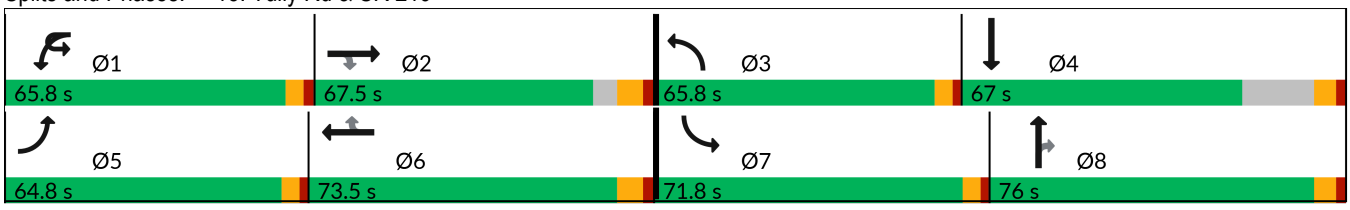


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	75
Future Volume (vph)	75
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	
Lane Util. Factor	1.00
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	0.91
Heavy Vehicles (%)	4%
Adj. Flow (vph)	82
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Turn Type	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	5	2		1	1	6		3	8		7	4
Permitted Phases			2				6			8		
Detector Phase	5	2	2	1	1	6	6	3	8	8	7	4
Switch Phase												
Minimum Initial (s)	9.0	10.0	10.0	10.0	10.0	16.0	16.0	10.0	19.0	19.0	16.0	10.0
Minimum Split (s)	14.8	17.5	17.5	15.8	15.8	23.5	23.5	15.8	26.0	26.0	21.8	17.0
Total Split (s)	64.8	67.5	67.5	65.8	65.8	73.5	73.5	65.8	76.0	76.0	71.8	67.0
Total Split (%)	22.6%	23.6%	23.6%	23.0%	23.0%	25.7%	25.7%	23.0%	26.6%	26.6%	25.1%	23.4%
Maximum Green (s)	59.0	60.0	60.0	60.0	60.0	66.0	66.0	60.0	69.0	69.0	66.0	60.0
Yellow Time (s)	3.8	5.5	5.5	3.8	3.8	5.5	5.5	3.8	5.0	5.0	3.8	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	7.5	7.5		5.8	7.5	7.5	5.8	7.0	7.0	5.8	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	1.0	2.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0
Recall Mode	None	Min	Min	None	None	Min	Min	None	None	None	None	None
Act Effct Green (s)	9.5	36.5	36.5		17.3	48.6	48.6	22.0	48.4	48.4	16.7	32.0
Actuated g/C Ratio	0.07	0.27	0.27		0.13	0.36	0.36	0.16	0.36	0.36	0.12	0.24
v/c Ratio	0.22	0.55	0.28		0.61	0.64	0.02	0.66	0.20	0.19	0.07	0.72
Control Delay (s/veh)	73.9	45.5	10.6		65.4	40.2	0.1	68.2	35.5	6.5	64.3	59.0
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	73.9	45.5	10.6		65.4	40.2	0.1	68.2	35.5	6.5	64.3	59.0
LOS	E	D	B		E	D	A	E	D	A	E	E
Approach Delay (s/veh)		40.9				44.6			41.4			59.3
Approach LOS		D				D			D			E

Intersection Summary			
Area Type:	Other		
Cycle Length: 286.1			
Actuated Cycle Length: 135			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay (s/veh): 44.6		Intersection LOS: D	
Intersection Capacity Utilization 78.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 15: Tully Rd & SR 219





Lane Group	SBR
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	

Intersection Summary

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	10	75	520	200	290	1050	160	120	360	140	150	650
Future Volume (vph)	10	75	520	200	290	1050	160	120	360	140	150	650
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		765		650	960		75	140		210	420	
Storage Lanes		2		1	2		1	1		1	1	
Taper Length (ft)		255			255			80			115	
Lane Util. Factor	0.91	0.97	0.91	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor				0.98								
Frt				0.850			0.850			0.850		
Flt Protected		0.950			0.950			0.950			0.950	
Satd. Flow (prot)	0	3335	4940	1538	3335	3438	1538	1719	3438	1538	1719	3438
Flt Permitted		0.950			0.950			0.950			0.950	
Satd. Flow (perm)	0	3335	4940	1503	3335	3438	1538	1719	3438	1538	1719	3438
Right Turn on Red				Yes			Yes			Yes		
Satd. Flow (RTOR)				220			90			154		
Link Speed (mph)			55			55			35			45
Link Distance (ft)			1301			1655			1503			1304
Travel Time (s)			16.1			20.5			29.3			19.8
Confl. Peds. (#/hr)				8								
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	11	82	571	220	319	1154	176	132	396	154	165	714
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	93	571	220	319	1154	176	132	396	154	165	714
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			24			24			12			12
Link Offset(ft)			0			0			0			0
Crosswalk Width(ft)			16			16			16			16
Two way Left Turn Lane												Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors		1	2	1	1	2	1	1	2	1	1	2
Detector Template		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru
Leading Detector (ft)		20	100	20	20	100	20	20	100	20	20	100
Trailing Detector (ft)		0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)		0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)		20	6	20	20	6	20	20	6	20	20	6
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94			94			94
Detector 2 Size(ft)			6			6			6			6
Detector 2 Type			Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0			0.0			0.0

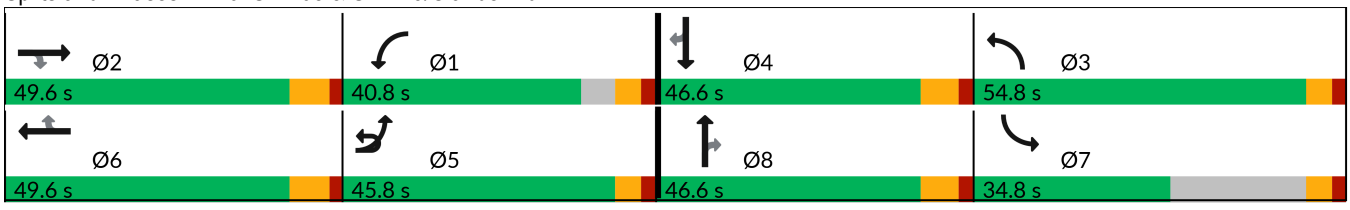


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	110
Future Volume (vph)	110
Ideal Flow (vphpl)	1900
Storage Length (ft)	535
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Ped Bike Factor	
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1538
Flt Permitted	
Satd. Flow (perm)	1538
Right Turn on Red	Yes
Satd. Flow (RTOR)	121
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	0.91
Heavy Vehicles (%)	5%
Adj. Flow (vph)	121
Shared Lane Traffic (%)	
Lane Group Flow (vph)	121
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Turn Type	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	5	5	2		1	6		3	8		7	4
Permitted Phases				2			6			8		
Detector Phase	5	5	2	2	1	6	6	3	8	8	7	4
Switch Phase												
Minimum Initial (s)	15.0	15.0	12.0	12.0	15.0	12.0	12.0	14.0	14.0	14.0	14.0	14.0
Minimum Split (s)	20.8	20.8	50.6	50.6	20.8	55.6	55.6	19.8	58.6	58.6	19.8	60.6
Total Split (s)	45.8	45.8	49.6	49.6	40.8	49.6	49.6	54.8	46.6	46.6	34.8	46.6
Total Split (%)	23.3%	23.3%	25.2%	25.2%	20.7%	25.2%	25.2%	27.8%	23.7%	23.7%	17.7%	23.7%
Maximum Green (s)	40.0	40.0	42.0	42.0	35.0	42.0	42.0	49.0	39.0	39.0	29.0	39.0
Yellow Time (s)	3.8	3.8	5.6	5.6	3.8	5.6	5.6	3.8	5.6	5.6	3.8	5.6
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.8	7.6	7.6	5.8	7.6	7.6	5.8	7.6	7.6	5.8	7.6
Lead/Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.5	2.5	2.1	2.1	2.5	2.0	2.0	2.5	3.6	3.6	2.5	2.3
Recall Mode	None	None	Min	Min	None	Min	Min	None	None	None	None	None
Walk Time (s)			7.0	7.0		7.0	7.0		7.0	7.0		7.0
Flash Don't Walk (s)			35.0	35.0		41.0	41.0		44.0	44.0		46.0
Pedestrian Calls (#/hr)			8	8		0	0		0	0		0
Act Effct Green (s)		16.7	23.5	23.5	35.4	42.1	42.1	16.8	23.0	23.0	33.0	39.1
Actuated g/C Ratio		0.12	0.17	0.17	0.25	0.30	0.30	0.12	0.16	0.16	0.23	0.28
v/c Ratio		0.24	0.70	0.51	0.38	1.13	0.34	0.65	0.71	0.41	0.41	0.75
Control Delay (s/veh)		58.5	59.9	9.8	48.2	115.9	21.4	75.2	63.7	10.7	51.6	53.4
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		58.5	59.9	9.8	48.2	115.9	21.4	75.2	63.7	10.7	51.6	53.4
LOS		E	E	A	D	F	C	E	E	B	D	D
Approach Delay (s/veh)			47.3			92.7			53.9			47.7
Approach LOS			D			F			D			D

Intersection Summary			
Area Type:	Other		
Cycle Length: 196.8			
Actuated Cycle Length: 141.6			
Natural Cycle: 160			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.13			
Intersection Signal Delay (s/veh): 66.2		Intersection LOS: E	
Intersection Capacity Utilization 93.5%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 16: SR 108 & SR 219/Claribel Rd





Lane Group	SBR
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Detector Phase	4
Switch Phase	
Minimum Initial (s)	14.0
Minimum Split (s)	60.6
Total Split (s)	46.6
Total Split (%)	23.7%
Maximum Green (s)	39.0
Yellow Time (s)	5.6
All-Red Time (s)	2.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	7.6
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	2.3
Recall Mode	None
Walk Time (s)	7.0
Flash Don't Walk (s)	46.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	39.1
Actuated g/C Ratio	0.28
v/c Ratio	0.24
Control Delay (s/veh)	8.1
Queue Delay	0.0
Total Delay (s/veh)	8.1
LOS	A
Approach Delay (s/veh)	
Approach LOS	

Intersection Summary

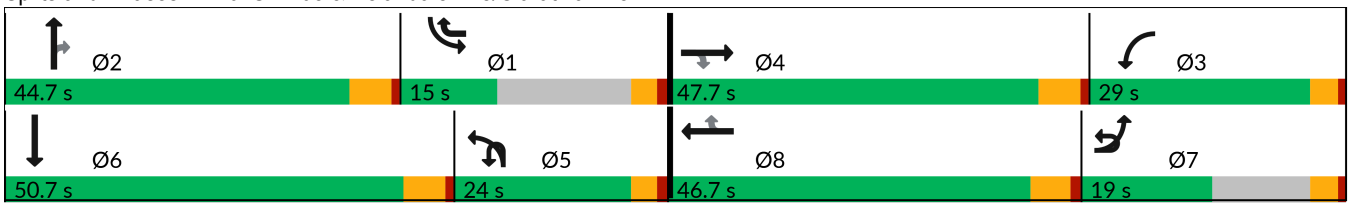
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	20	240	600	200	65	590	300	5	160	610	35	80
Future Volume (vph)	20	240	600	200	65	590	300	5	160	610	35	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		300		380	195		320		325		260	175
Storage Lanes		1		1	2		1		2		1	2
Taper Length (ft)		150			150				105			95
Lane Util. Factor	0.95	0.97	0.95	1.00	0.97	0.91	1.00	0.95	0.97	0.95	1.00	0.97
Ped Bike Factor							0.99					
Frt				0.850			0.850				0.850	
Flt Protected		0.950			0.950				0.950			0.950
Satd. Flow (prot)	0	3400	3505	1568	3400	5036	1568	0	3400	3505	1568	3400
Flt Permitted		0.950			0.950				0.950			0.950
Satd. Flow (perm)	0	3400	3505	1568	3400	5036	1547	0	3400	3505	1568	3400
Right Turn on Red				Yes			Yes				Yes	
Satd. Flow (RTOR)				220			76				118	
Link Speed (mph)			45			45				35		
Link Distance (ft)			850			691				829		
Travel Time (s)			12.9			10.5				16.1		
Confl. Peds. (#/hr)							1					
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	22	264	659	220	71	648	330	5	176	670	38	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	286	659	220	71	648	330	0	181	670	38	88
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	Left
Median Width(ft)			24			24				24		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	9	15		9	15
Number of Detectors		1	2	1	1	2	1		1	2	1	1
Detector Template		Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left
Leading Detector (ft)		20	100	20	20	100	20		20	100	20	20
Trailing Detector (ft)		0	0	0	0	0	0		0	0	0	0
Detector 1 Position(ft)		0	0	0	0	0	0		0	0	0	0
Detector 1 Size(ft)		20	6	20	20	6	20		20	6	20	20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94				94		
Detector 2 Size(ft)			6			6				6		
Detector 2 Type			Cl+Ex			Cl+Ex				Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0				0.0		

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	690	110
Future Volume (vph)	690	110
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	0.95	0.95
Ped Bike Factor	1.00	
Frt	0.979	
Flt Protected		
Satd. Flow (prot)	3422	0
Flt Permitted		
Satd. Flow (perm)	3422	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	12	
Link Speed (mph)	35	
Link Distance (ft)	2590	
Travel Time (s)	50.5	
Confl. Peds. (#/hr)		3
Peak Hour Factor	0.91	0.91
Heavy Vehicles (%)	3%	3%
Adj. Flow (vph)	758	121
Shared Lane Traffic (%)		
Lane Group Flow (vph)	879	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	24	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	
Detector Template	Thru	
Leading Detector (ft)	100	
Trailing Detector (ft)	0	
Detector 1 Position(ft)	0	
Detector 1 Size(ft)	6	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Turn Type	Prot	Prot	NA	Perm	Prot	NA	pm+ov	Prot	Prot	NA	Perm	Prot
Protected Phases	7	7	4		3	8	1	5	5	2		1
Permitted Phases				4			8				2	
Detector Phase	7	7	4	4	3	8	1	5	5	2	2	1
Switch Phase												
Minimum Initial (s)	10.0	10.0	15.0	15.0	25.0	10.0	10.0	10.0	10.0	25.0	25.0	10.0
Minimum Split (s)	14.0	14.0	47.7	47.7	29.0	46.7	14.0	14.0	14.0	44.7	44.7	14.0
Total Split (s)	19.0	19.0	47.7	47.7	29.0	46.7	15.0	24.0	24.0	44.7	44.7	15.0
Total Split (%)	12.5%	12.5%	31.5%	31.5%	19.2%	30.8%	9.9%	15.9%	15.9%	29.5%	29.5%	9.9%
Maximum Green (s)	15.0	15.0	42.0	42.0	25.0	41.0	11.0	20.0	20.0	39.0	39.0	11.0
Yellow Time (s)	3.0	3.0	4.7	4.7	3.0	4.7	3.0	3.0	3.0	4.7	4.7	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		4.0	5.7	5.7	4.0	5.7	4.0		4.0	5.7	5.7	4.0
Lead/Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.5	2.5	2.0	2.5	2.3	2.2	2.2	3.0	3.0	2.3
Recall Mode	None	None	None	None	Min	None	Min	None	None	Min	Min	Min
Walk Time (s)			10.0	10.0		10.0				5.0	5.0	
Flash Don't Walk (s)			32.0	32.0		31.0				34.0	34.0	
Pedestrian Calls (#/hr)			0	0		1				0	0	
Act Effct Green (s)		31.6	30.4	30.4	25.4	24.2	45.1		12.1	31.3	31.3	19.2
Actuated g/C Ratio		0.25	0.24	0.24	0.20	0.19	0.36		0.10	0.25	0.25	0.15
v/c Ratio		0.34	0.78	0.40	0.10	0.67	0.55		0.55	0.77	0.08	0.17
Control Delay (s/veh)		43.3	52.3	7.3	46.3	50.9	25.4		63.4	51.5	0.3	49.9
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)		43.3	52.3	7.3	46.3	50.9	25.4		63.4	51.5	0.3	49.9
LOS		D	D	A	D	D	C		E	D	A	D
Approach Delay (s/veh)			41.6			42.5				51.7		
Approach LOS			D			D				D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 151.4			
Actuated Cycle Length: 125.9			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay (s/veh): 45.8		Intersection LOS: D	
Intersection Capacity Utilization 77.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 26: SR 108 & Pelandale Ave/Claratina Ave





Lane Group	SBT	SBR
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Detector Phase	6	
Switch Phase		
Minimum Initial (s)	20.0	
Minimum Split (s)	50.7	
Total Split (s)	50.7	
Total Split (%)	33.5%	
Maximum Green (s)	45.0	
Yellow Time (s)	4.7	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	5.7	
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	
Recall Mode	Min	
Walk Time (s)	10.0	
Flash Don't Walk (s)	10.0	
Pedestrian Calls (#/hr)	3	
Act Effct Green (s)	38.3	
Actuated g/C Ratio	0.30	
v/c Ratio	0.84	
Control Delay (s/veh)	49.1	
Queue Delay	0.0	
Total Delay (s/veh)	49.1	
LOS	D	
Approach Delay (s/veh)	49.2	
Approach LOS	D	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	0	850	310	10	520	615	0	0	0	0	740	10
Future Volume (vph)	0	850	310	10	520	615	0	0	0	0	740	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		0		0		0	0		0	450	
Storage Lanes	2		1		2		0	0		0	1	
Taper Length (ft)	25				25			25			105	
Lane Util. Factor	1.00	0.81	0.81	0.95	0.97	0.95	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.984	0.850									
Flt Protected					0.950						0.950	0.954
Satd. Flow (prot)	0	5769	1246	0	3335	3438	0	0	0	0	1633	1640
Flt Permitted					0.950						0.950	0.954
Satd. Flow (perm)	0	5769	1246	0	3335	3438	0	0	0	0	1633	1640
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)		28	216									
Link Speed (mph)		25				40			35			35
Link Distance (ft)		417				419			778			1218
Travel Time (s)		11.4				7.1			15.2			23.7
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	885	323	10	542	641	0	0	0	0	771	10
Shared Lane Traffic (%)			33%								49%	
Lane Group Flow (vph)	0	992	216	0	552	641	0	0	0	0	393	388
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Right	Left
Median Width(ft)		24				24			12			12
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		50				16			16			30
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Number of Detectors		2	1		1	2			2		1	2
Detector Template		Thru	Right		Left	Thru			Thru		Left	Thru
Leading Detector (ft)		100	20		20	100			100		20	100
Trailing Detector (ft)		0	0		0	0			0		0	0
Detector 1 Position(ft)		0	0		0	0					0	0
Detector 1 Size(ft)		6	20		20	6					20	6
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0		0.0	0.0					0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0					0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0					0.0	0.0
Detector 2 Position(ft)		94				94						94
Detector 2 Size(ft)		6				6						6
Detector 2 Type		Cl+Ex				Cl+Ex						Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0				0.0						0.0
Turn Type		NA	Perm	Prot	Prot	NA					Split	NA
Protected Phases		2		1	1	6					4	4
Permitted Phases			2									

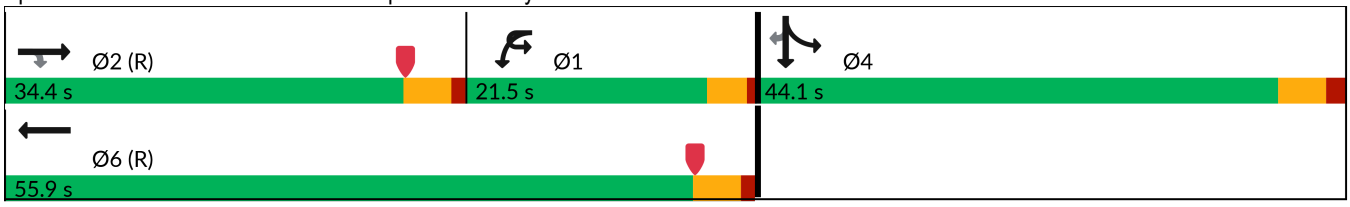


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	90
Future Volume (vph)	90
Ideal Flow (vphpl)	1900
Storage Length (ft)	450
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1538
Flt Permitted	
Satd. Flow (perm)	1538
Right Turn on Red	Yes
Satd. Flow (RTOR)	94
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.96
Adj. Flow (vph)	94
Shared Lane Traffic (%)	
Lane Group Flow (vph)	94
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	Perm
Protected Phases	
Permitted Phases	4

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Detector Phase		2	2	1	1	6					4	4
Switch Phase												
Minimum Initial (s)		8.0	8.0	8.0	8.0	8.0					5.0	5.0
Minimum Split (s)		25.6	25.6	11.5	11.5	25.6					30.1	30.1
Total Split (s)		34.4	34.4	21.5	21.5	55.9					44.1	44.1
Total Split (%)		34.4%	34.4%	21.5%	21.5%	55.9%					44.1%	44.1%
Maximum Green (s)		29.8	29.8	18.0	18.0	51.3					39.0	39.0
Yellow Time (s)		3.6	3.6	3.0	3.0	3.6					3.6	3.6
All-Red Time (s)		1.0	1.0	0.5	0.5	1.0					1.5	1.5
Lost Time Adjust (s)		0.0	0.0		0.0	0.0					0.0	0.0
Total Lost Time (s)		4.6	4.6		3.5	4.6					5.1	5.1
Lead/Lag		Lead	Lead	Lag	Lag							
Lead-Lag Optimize?		Yes	Yes	Yes	Yes							
Vehicle Extension (s)		2.4	2.4	2.0	2.0	3.0					3.0	3.0
Recall Mode		C-Max	C-Max	Max	Max	C-Max					None	None
Walk Time (s)		7.0	7.0			7.0					5.0	5.0
Flash Don't Walk (s)		14.0	14.0			14.0					20.0	20.0
Pedestrian Calls (#/hr)		0	0			0					0	0
Act Effct Green (s)		37.9	37.9		18.0	59.4					30.9	30.9
Actuated g/C Ratio		0.38	0.38		0.18	0.59					0.31	0.31
v/c Ratio		0.45	0.36		0.92	0.31					0.78	0.77
Control Delay (s/veh)		24.6	5.5		38.1	4.4					41.8	40.9
Queue Delay		0.0	0.0		0.0	0.0					0.0	0.0
Total Delay (s/veh)		24.6	5.5		38.1	4.4					41.8	40.9
LOS		C	A		D	A					D	D
Approach Delay (s/veh)		21.2				20.0						37.5
Approach LOS		C				B						D

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 12 (12%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay (s/veh): 25.1		Intersection LOS: C	
Intersection Capacity Utilization 61.3%		ICU Level of Service B	
Analysis Period (min) 15			

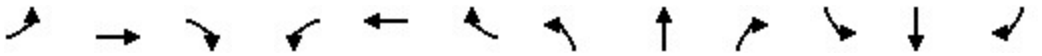
Splits and Phases: 9: SR 99 SB Ramps & Broadway Ave/SR 219





Lane Group	SBR
Detector Phase	4
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	30.1
Total Split (s)	44.1
Total Split (%)	44.1%
Maximum Green (s)	39.0
Yellow Time (s)	3.6
All-Red Time (s)	1.5
Lost Time Adjust (s)	0.0
Total Lost Time (s)	5.1
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Don't Walk (s)	20.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	30.9
Actuated g/C Ratio	0.31
v/c Ratio	0.17
Control Delay (s/veh)	5.2
Queue Delay	0.0
Total Delay (s/veh)	5.2
LOS	A
Approach Delay (s/veh)	
Approach LOS	

Intersection Summary

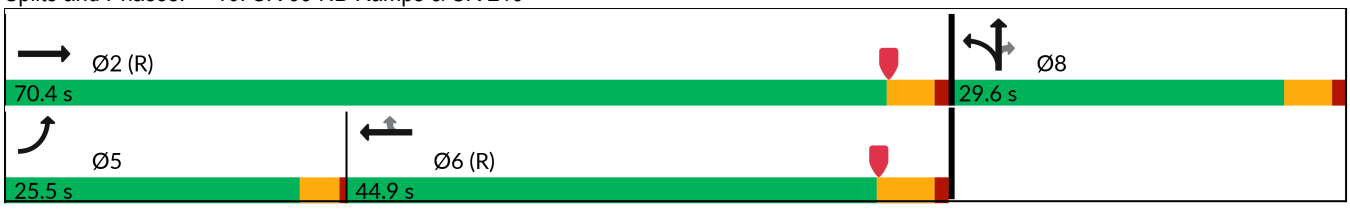


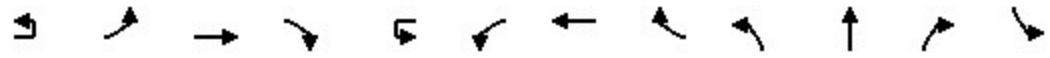
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	1450	0	0	1070	430	75	10	160	0	0	0
Future Volume (vph)	150	1450	0	0	1070	430	75	10	160	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	360		0	0		565	0		0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (ft)	25			140			25			25		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	0.88	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.958				
Satd. Flow (prot)	1719	4940	0	0	4940	1538	0	1734	2707	0	0	0
Flt Permitted	0.950							0.958				
Satd. Flow (perm)	1719	4940	0	0	4940	1538	0	1734	2707	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						448			88			
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		419			622			1358			1317	
Travel Time (s)		7.1			10.6			26.5			25.7	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	156	1510	0	0	1115	448	78	10	167	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	156	1510	0	0	1115	448	0	88	167	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			25			25			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1		2	1		2	
Detector Template	Left	Thru			Thru	Right		Thru	Right		Thru	
Leading Detector (ft)	20	100			100	20		100	20		100	
Trailing Detector (ft)	0	0			0	0		0	0		0	
Detector 1 Position(ft)	0	0			0	0		0	0			
Detector 1 Size(ft)	20	6			6	20		6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2			6	6	8	8	8			
Switch Phase												
Minimum Initial (s)	10.0	5.0			12.0	12.0	5.0	5.0	5.0			
Minimum Split (s)	13.5	24.6			27.3	27.3	29.6	29.6	29.6			
Total Split (s)	25.5	70.4			44.9	44.9	29.6	29.6	29.6			
Total Split (%)	25.5%	70.4%			44.9%	44.9%	29.6%	29.6%	29.6%			
Maximum Green (s)	22.0	65.8			39.6	39.6	25.0	25.0	25.0			
Yellow Time (s)	3.0	3.6			4.3	4.3	3.6	3.6	3.6			
All-Red Time (s)	0.5	1.0			1.0	1.0	1.0	1.0	1.0			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Total Lost Time (s)	3.5	4.6			5.3	5.3		4.6	4.6			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	2.0	3.0			2.0	2.0	2.0	2.0	2.0			
Recall Mode	Max	C-Max			C-Max	C-Max	Max	Max	Max			
Walk Time (s)		7.0			7.0	7.0	5.0	5.0	5.0			
Flash Don't Walk (s)		13.0			15.0	15.0	20.0	20.0	20.0			
Pedestrian Calls (#/hr)		0			0	0	0	0	0			
Act Effct Green (s)	22.0	65.8			39.6	39.6		25.0	25.0			
Actuated g/C Ratio	0.22	0.66			0.40	0.40		0.25	0.25			
v/c Ratio	0.41	0.46			0.57	0.51		0.20	0.23			
Control Delay (s/veh)	62.9	6.9			25.0	4.2		31.2	15.4			
Queue Delay	0.0	0.2			0.0	0.0		0.0	0.0			
Total Delay (s/veh)	62.9	7.1			25.0	4.2		31.2	15.4			
LOS	E	A			C	A		C	B			
Approach Delay (s/veh)		12.3			19.0			20.9				
Approach LOS		B			B			C				

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 27 (27%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay (s/veh): 16.0		Intersection LOS: B	
Intersection Capacity Utilization 61.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 10: SR 99 NB Ramps & SR 219





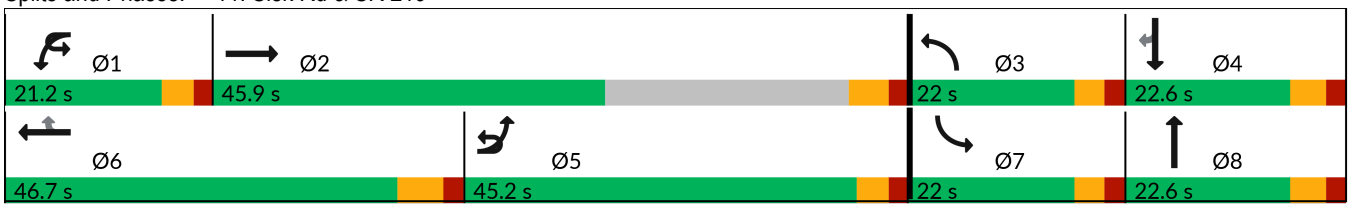
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	10	280	1200	100	10	50	850	230	160	470	90	25
Future Volume (vph)	10	280	1200	100	10	50	850	230	160	470	90	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		250		0		735		525	555		230	505
Storage Lanes		1		1		1		1	1		1	1
Taper Length (ft)		75				140			100			100
Lane Util. Factor	0.91	0.94	0.91	1.00	0.91	1.00	0.91	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor				0.99				0.99		1.00		
Frt				0.850				0.850		0.976		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	4848	4940	1538	0	1719	4940	1538	1719	3343	0	1719
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	4848	4940	1519	0	1719	4940	1518	1719	3343	0	1719
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				203				240		13		
Link Speed (mph)			40				55			35		
Link Distance (ft)			434				926			2020		
Travel Time (s)			7.4				11.5			39.4		
Confl. Peds. (#/hr)				1				1			5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	10	292	1250	104	10	52	885	240	167	490	94	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	302	1250	104	0	62	885	240	167	584	0	26
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			48				36			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			25				25			25		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2		1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)		20	100	20		20	100	20	20	100		20
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0		0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Free	Prot	Prot	NA	Perm	Prot	NA		Prot

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	230	460
Future Volume (vph)	230	460
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		150
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	1.00	0.88
Ped Bike Factor		
Frt		0.850
Flt Protected		
Satd. Flow (prot)	1810	2707
Flt Permitted		
Satd. Flow (perm)	1810	2707
Right Turn on Red		Yes
Satd. Flow (RTOR)		479
Link Speed (mph)	35	
Link Distance (ft)	1227	
Travel Time (s)	23.9	
Confl. Peds. (#/hr)		
Peak Hour Factor	0.96	0.96
Adj. Flow (vph)	240	479
Shared Lane Traffic (%)		
Lane Group Flow (vph)	240	479
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	35	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	1
Detector Template	Thru	Right
Leading Detector (ft)	100	20
Trailing Detector (ft)	0	0
Detector 1 Position(ft)	0	0
Detector 1 Size(ft)	6	20
Detector 1 Type	Cl+Ex	Cl+Ex
Detector 1 Channel		
Detector 1 Extend (s)	0.0	0.0
Detector 1 Queue (s)	0.0	0.0
Detector 1 Delay (s)	0.0	0.0
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	Perm

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Protected Phases	5	5	2		1	1	6		3	8		7
Permitted Phases				Free				6				
Detector Phase	5	5	2		1	1	6	6	3	8		7
Switch Phase												
Minimum Initial (s)	5.0	5.0	10.0		6.0	6.0	10.0	10.0	5.0	5.0		5.0
Minimum Split (s)	10.2	10.2	32.9		11.2	11.2	41.7	41.7	10.0	22.6		10.0
Total Split (s)	45.2	45.2	45.9		21.2	21.2	46.7	46.7	22.0	22.6		22.0
Total Split (%)	33.1%	33.1%	33.6%		15.5%	15.5%	34.2%	34.2%	16.1%	16.6%		16.1%
Maximum Green (s)	40.0	40.0	40.0		16.0	16.0	40.0	40.0	17.0	17.0		17.0
Yellow Time (s)	3.2	3.2	3.9		3.2	3.2	4.7	4.7	3.0	3.6		3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0		2.0
Lost Time Adjust (s)		0.0	0.0			0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		5.2	5.9			5.2	6.7	6.7	5.0	5.6		5.0
Lead/Lag	Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lead	Lag		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	4.6		3.0	3.0	4.6	4.6	3.0	3.2		3.0
Recall Mode	None	None	Min		None	None	Min	Min	None	None		None
Walk Time (s)			7.0				7.0	7.0		5.0		
Flash Don't Walk (s)			20.0				28.0	28.0		12.0		
Pedestrian Calls (#/hr)			1				1	1		5		
Act Effct Green (s)		14.6	39.5	99.7		9.1	30.4	30.4	14.7	29.7		7.1
Actuated g/C Ratio		0.15	0.40	1.00		0.09	0.30	0.30	0.15	0.30		0.07
v/c Ratio		0.43	0.64	0.07		0.40	0.59	0.38	0.66	0.58		0.21
Control Delay (s/veh)		42.0	27.1	0.1		53.0	31.2	5.2	55.2	34.9		51.0
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		42.0	27.1	0.1		53.0	31.2	5.2	55.2	34.9		51.0
LOS		D	C	A		D	C	A	E	C		D
Approach Delay (s/veh)			28.1				27.0			39.4		
Approach LOS			C				C			D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 136.5			
Actuated Cycle Length: 99.7			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay (s/veh): 29.3		Intersection LOS: C	
Intersection Capacity Utilization 67.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 11: Sisk Rd & SR 219



Lane Group	SBT	SBR
Protected Phases	4	
Permitted Phases		4
Detector Phase	4	4
Switch Phase		
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	22.6	22.6
Total Split (s)	22.6	22.6
Total Split (%)	16.6%	16.6%
Maximum Green (s)	17.0	17.0
Yellow Time (s)	3.6	3.6
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	5.6	5.6
Lead/Lag	Lag	Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	None
Walk Time (s)	5.0	5.0
Flash Don't Walk (s)	12.0	12.0
Pedestrian Calls (#/hr)	0	0
Act Effct Green (s)	17.2	17.2
Actuated g/C Ratio	0.17	0.17
v/c Ratio	0.77	0.56
Control Delay (s/veh)	59.3	6.6
Queue Delay	0.0	0.0
Total Delay (s/veh)	59.3	6.6
LOS	E	A
Approach Delay (s/veh)	25.1	
Approach LOS	C	

Intersection Summary

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	10	390	880	50	150	890	180	25	280	50	150	130
Future Volume (vph)	10	390	880	50	150	890	180	25	280	50	150	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		1000		620	495		640	70		0	155	
Storage Lanes		2		1	1		1	1		0	1	
Taper Length (ft)		210			140			55			160	
Lane Util. Factor	0.91	0.97	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850			0.850		0.977			
Flt Protected		0.950			0.950			0.950			0.950	
Satd. Flow (prot)	0	3335	4940	1538	1719	4940	1538	1719	1768	0	1719	1810
Flt Permitted		0.950			0.950			0.950			0.950	
Satd. Flow (perm)	0	3335	4940	1538	1719	4940	1538	1719	1768	0	1719	1810
Right Turn on Red				Yes			Yes			Yes		
Satd. Flow (RTOR)				93			188		4			
Link Speed (mph)			55			55			35			35
Link Distance (ft)			1694			1350			735			1875
Travel Time (s)			21.0			16.7			14.3			36.5
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	10	406	917	52	156	927	188	26	292	52	156	135
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	416	917	52	156	927	188	26	344	0	156	135
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			36			36			12			12
Link Offset(ft)			0			0			0			0
Crosswalk Width(ft)			25			25			16			25
Two way Left Turn Lane												Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors		1	2	1	1	2	1	1	2		1	2
Detector Template		Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru
Leading Detector (ft)		20	100	20	20	100	20	20	100		20	100
Trailing Detector (ft)		0	0	0	0	0	0	0	0		0	0
Detector 1 Position(ft)		0	0	0	0	0	0	0	0		0	0
Detector 1 Size(ft)		20	6	20	20	6	20	20	6		20	6
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94			94			94
Detector 2 Size(ft)			6			6			6			6
Detector 2 Type			Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0			0.0			0.0
Turn Type	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA
Protected Phases	5	5	2		1	6		3	8		7	4
Permitted Phases				2			6					

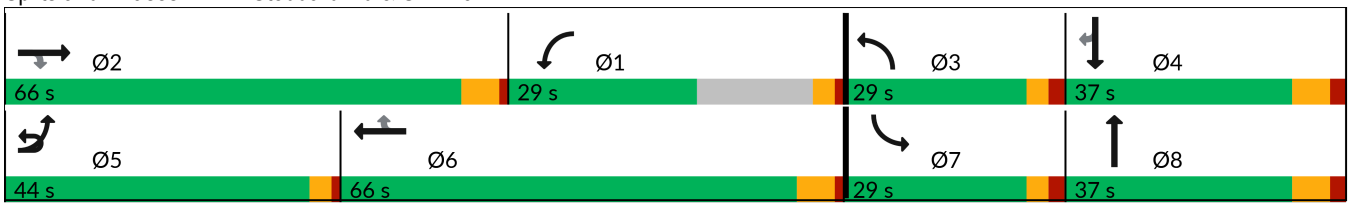


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	210
Future Volume (vph)	210
Ideal Flow (vphpl)	1900
Storage Length (ft)	155
Storage Lanes	0
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1538
Flt Permitted	
Satd. Flow (perm)	1538
Right Turn on Red	Yes
Satd. Flow (RTOR)	219
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.96
Adj. Flow (vph)	219
Shared Lane Traffic (%)	
Lane Group Flow (vph)	219
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	Perm
Protected Phases	
Permitted Phases	4

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Detector Phase	5	5	2	2	1	6	6	3	8		7	4
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.0	10.0		9.0	10.0
Minimum Split (s)	14.0	14.0	16.0	16.0	14.0	16.0	16.0	14.0	17.0		14.0	17.0
Total Split (s)	44.0	44.0	66.0	66.0	29.0	66.0	66.0	29.0	37.0		29.0	37.0
Total Split (%)	25.0%	25.0%	37.5%	37.5%	16.5%	37.5%	37.5%	16.5%	21.0%		16.5%	21.0%
Maximum Green (s)	40.0	40.0	60.0	60.0	25.0	60.0	60.0	24.0	30.0		24.0	30.0
Yellow Time (s)	3.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0		3.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)		4.0	6.0	6.0	4.0	6.0	6.0	5.0	7.0		5.0	7.0
Lead/Lag	Lead	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lag		Lead	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	4.5	4.5	3.0	4.5	4.5	3.0	3.5		3.0	3.5
Recall Mode	None	None	Min	Min	None	Min	Min	None	None		None	None
Act Effct Green (s)		22.2	35.6	35.6	24.2	37.6	37.6	9.4	30.6		17.3	45.0
Actuated g/C Ratio		0.17	0.27	0.27	0.19	0.29	0.29	0.07	0.24		0.13	0.35
v/c Ratio		0.73	0.68	0.11	0.49	0.65	0.33	0.21	0.82		0.68	0.22
Control Delay (s/veh)		60.6	45.4	0.9	54.8	43.2	6.4	68.0	65.9		72.0	36.7
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay (s/veh)		60.6	45.4	0.9	54.8	43.2	6.4	68.0	65.9		72.0	36.7
LOS		E	D	A	D	D	A	E	E		E	D
Approach Delay (s/veh)			48.3			39.2			66.1			34.5
Approach LOS			D			D			E			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 176			
Actuated Cycle Length: 130.1			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay (s/veh): 44.9		Intersection LOS: D	
Intersection Capacity Utilization 73.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 12: Stoddard Rd & SR 219





Lane Group	SBR
Detector Phase	4
Switch Phase	
Minimum Initial (s)	10.0
Minimum Split (s)	17.0
Total Split (s)	37.0
Total Split (%)	21.0%
Maximum Green (s)	30.0
Yellow Time (s)	5.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	7.0
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.5
Recall Mode	None
Act Effct Green (s)	45.0
Actuated g/C Ratio	0.35
v/c Ratio	0.32
Control Delay (s/veh)	6.3
Queue Delay	0.0
Total Delay (s/veh)	6.3
LOS	A
Approach Delay (s/veh)	
Approach LOS	

Intersection Summary

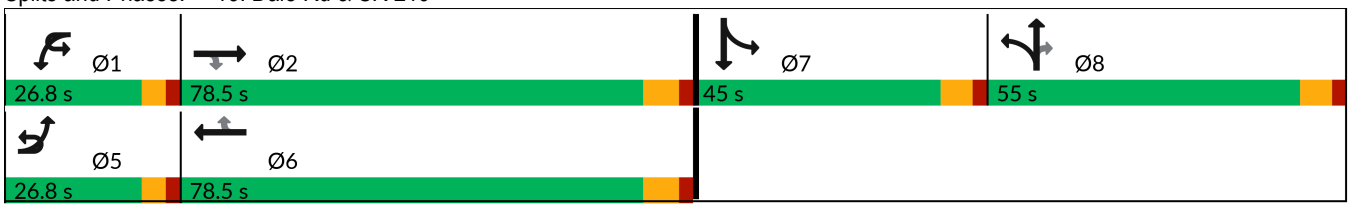
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	10	10	650	420	10	230	940	330	280	420	160	160
Future Volume (vph)	10	10	650	420	10	230	940	330	280	420	160	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		555		700		450		50	320		0	90
Storage Lanes		1		1		2		1	1		1	1
Taper Length (ft)		140				205			140			85
Lane Util. Factor	0.91	1.00	0.91	1.00	0.91	0.97	0.91	1.00	0.97	1.00	1.00	1.00
Frt				0.850				0.850			0.850	
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	1719	4940	1538	0	3335	4940	1538	3335	1810	1538	1719
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	1719	4940	1538	0	3335	4940	1538	3335	1810	1538	1719
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				438				89			96	
Link Speed (mph)			55				55			40		
Link Distance (ft)			3925				2640			1013		
Travel Time (s)			48.7				32.7			17.3		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	10	10	677	438	10	240	979	344	292	438	167	167
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	20	677	438	0	250	979	344	292	438	167	167
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	R NA	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			36				36			24		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			50				70			50		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2	1	1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left
Leading Detector (ft)		20	100	20		20	100	20	20	100	20	20
Trailing Detector (ft)		0	0	0		0	0	0	0	0	0	0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0	0	0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6	20	20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Split	NA	Perm	Split
Protected Phases	5	5	2		1	1	6		8	8		7
Permitted Phases				2				6			8	

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	360	10
Future Volume (vph)	360	10
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	1.00	1.00
Frt	0.996	
Flt Protected		
Satd. Flow (prot)	1802	0
Flt Permitted		
Satd. Flow (perm)	1802	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	1	
Link Speed (mph)	55	
Link Distance (ft)	2575	
Travel Time (s)	31.9	
Peak Hour Factor	0.96	0.96
Adj. Flow (vph)	375	10
Shared Lane Traffic (%)		
Lane Group Flow (vph)	385	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	50	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	
Detector Template	Thru	
Leading Detector (ft)	100	
Trailing Detector (ft)	0	
Detector 1 Position(ft)	0	
Detector 1 Size(ft)	6	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	
Protected Phases	7	
Permitted Phases		

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Detector Phase	5	5	2	2	1	1	6	6	8	8	8	7
Switch Phase												
Minimum Initial (s)	6.0	6.0	11.0	11.0	6.0	6.0	11.0	11.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.8	11.8	41.5	41.5	11.8	11.8	37.5	37.5	55.0	55.0	55.0	15.0
Total Split (s)	26.8	26.8	78.5	78.5	26.8	26.8	78.5	78.5	55.0	55.0	55.0	45.0
Total Split (%)	13.1%	13.1%	38.2%	38.2%	13.1%	13.1%	38.2%	38.2%	26.8%	26.8%	26.8%	21.9%
Maximum Green (s)	21.0	21.0	71.0	71.0	21.0	21.0	71.0	71.0	48.0	48.0	48.0	38.0
Yellow Time (s)	3.8	3.8	5.5	5.5	3.8	3.8	5.5	5.5	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.8	7.5	7.5		5.8	7.5	7.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lag	Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	4.5	4.5	3.0	3.0	4.5	4.5	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	None	None	Min	Min	None	None	None	None
Walk Time (s)			5.0	5.0			5.0	5.0	5.0	5.0	5.0	
Flash Don't Walk (s)			29.0	29.0			25.0	25.0	43.0	43.0	43.0	
Pedestrian Calls (#/hr)			0	0			0	0	0	0	0	
Act Effct Green (s)		7.6	38.1	38.1		17.5	53.1	53.1	48.2	48.2	48.2	38.2
Actuated g/C Ratio		0.04	0.22	0.22		0.10	0.31	0.31	0.28	0.28	0.28	0.23
v/c Ratio		0.26	0.61	0.64		0.73	0.63	0.63	0.31	0.85	0.33	0.43
Control Delay (s/veh)		90.2	61.2	8.8		87.6	52.2	42.6	50.4	74.4	23.8	62.8
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		90.2	61.2	8.8		87.6	52.2	42.6	50.4	74.4	23.8	62.8
LOS		F	E	A		F	D	D	D	E	C	E
Approach Delay (s/veh)			41.5				55.7			57.2		
Approach LOS			D				E			E		

Intersection Summary			
Area Type:	Other		
Cycle Length: 205.3			
Actuated Cycle Length: 169.4			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay (s/veh): 56.2		Intersection LOS: E	
Intersection Capacity Utilization 76.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 13: Dale Rd & SR 219





Lane Group	SBT	SBR
Detector Phase	7	
Switch Phase		
Minimum Initial (s)	8.0	
Minimum Split (s)	15.0	
Total Split (s)	45.0	
Total Split (%)	21.9%	
Maximum Green (s)	38.0	
Yellow Time (s)	5.0	
All-Red Time (s)	2.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	7.0	
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	
Recall Mode	None	
Walk Time (s)		
Flash Don't Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)	38.2	
Actuated g/C Ratio	0.23	
v/c Ratio	0.95	
Control Delay (s/veh)	96.8	
Queue Delay	0.0	
Total Delay (s/veh)	96.8	
LOS	F	
Approach Delay (s/veh)	86.5	
Approach LOS	F	

Intersection Summary

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	15	730	0	370	0	0	5	390	610	35	0	350
Future Volume (vph)	15	730	0	370	0	0	5	390	610	35	0	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		285		0	0		0	400		300	0	
Storage Lanes		1		2	0		1	2		1	0	
Taper Length (ft)		70			25			85			25	
Lane Util. Factor	1.00	1.00	1.00	0.88	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95
Ped Bike Factor										0.98		
Frt				0.850			0.865			0.850		
Flt Protected		0.950						0.950				
Satd. Flow (prot)	0	1752	0	2760	0	0	1596	3400	3505	1568	0	3505
Flt Permitted		0.950						0.950				
Satd. Flow (perm)	0	1752	0	2760	0	0	1596	3400	3505	1533	0	3505
Right Turn on Red				Yes			Yes			No		
Satd. Flow (RTOR)				333			203					
Link Speed (mph)			35			25			45			35
Link Distance (ft)			1576			591			734			1443
Travel Time (s)			30.7			16.1			11.1			28.1
Confl. Peds. (#/hr)										3		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	811	0	411	0	0	6	433	678	39	0	389
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	828	0	411	0	0	6	433	678	39	0	389
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Left	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			12			12			48			36
Link Offset(ft)			0			100			0			0
Crosswalk Width(ft)			16			16			16			25
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors		1	2	1		2	1	1	2	1		2
Detector Template		Left	Thru	Right		Thru	Right	Left	Thru	Right		Thru
Leading Detector (ft)		20	100	20		100	20	20	100	20		100
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0		0			0	0	0	0		0
Detector 1 Size(ft)		20		20			20	20	6	20		6
Detector 1 Type		Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0			0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0		0.0			0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0		0.0			0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)									94			94
Detector 2 Size(ft)									6			6
Detector 2 Type									Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)									0.0			0.0
Turn Type	Prot	Prot		pm+ov			Free	Prot	NA	Perm		NA

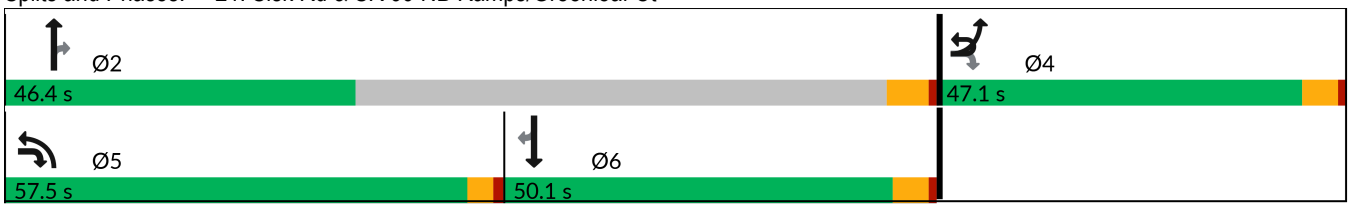


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	10
Future Volume (vph)	10
Ideal Flow (vphpl)	1900
Storage Length (ft)	245
Storage Lanes	2
Taper Length (ft)	
Lane Util. Factor	1.00
Ped Bike Factor	
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1568
Flt Permitted	
Satd. Flow (perm)	1568
Right Turn on Red	Yes
Satd. Flow (RTOR)	43
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	0.90
Adj. Flow (vph)	11
Shared Lane Traffic (%)	
Lane Group Flow (vph)	11
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	Perm

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Protected Phases	4	4		5				5	2			6
Permitted Phases				4			Free			2		
Detector Phase	4	4		5				5	2	2		6
Switch Phase												
Minimum Initial (s)	17.0	17.0		10.0				10.0	10.0	10.0		15.0
Minimum Split (s)	22.1	22.1		14.0				14.0	15.8	15.8		20.1
Total Split (s)	47.1	47.1		57.5				57.5	46.4	46.4		50.1
Total Split (%)	30.4%	30.4%		37.2%				37.2%	30.0%	30.0%		32.4%
Maximum Green (s)	42.0	42.0		53.5				53.5	40.6	40.6		45.0
Yellow Time (s)	4.1	4.1		3.0				3.0	4.8	4.8		4.1
All-Red Time (s)	1.0	1.0		1.0				1.0	1.0	1.0		1.0
Lost Time Adjust (s)		0.0		0.0				0.0	0.0	0.0		0.0
Total Lost Time (s)		5.1		4.0				4.0	5.8	5.8		5.1
Lead/Lag				Lead				Lead				Lag
Lead-Lag Optimize?				Yes				Yes				Yes
Vehicle Extension (s)	3.6	3.6		2.5				2.5	2.8	2.8		3.6
Recall Mode	None	None		None				None	Min	Min		Min
Act Effct Green (s)		42.2		64.3			90.6	17.0	37.4	37.4		17.2
Actuated g/C Ratio		0.47		0.71			1.00	0.19	0.41	0.41		0.19
v/c Ratio		1.01		0.20			0.00	0.68	0.47	0.06		0.59
Control Delay (s/veh)		62.1		1.3			0.0	40.3	20.2	15.5		37.8
Queue Delay		0.0		0.0			0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		62.1		1.3			0.0	40.3	20.2	15.5		37.8
LOS		E		A			A	D	C	B		D
Approach Delay (s/veh)			41.9						27.6			36.8
Approach LOS			D						C			D

Intersection Summary			
Area Type:	Other		
Cycle Length: 154.7			
Actuated Cycle Length: 90.6			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay (s/veh): 35.2		Intersection LOS: D	
Intersection Capacity Utilization 75.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 21: Sisk Rd & SR 99 NB Ramps/Greenleaf Ct





Lane Group	SBR
Protected Phases	
Permitted Phases	6
Detector Phase	6
Switch Phase	
Minimum Initial (s)	15.0
Minimum Split (s)	20.1
Total Split (s)	50.1
Total Split (%)	32.4%
Maximum Green (s)	45.0
Yellow Time (s)	4.1
All-Red Time (s)	1.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	5.1
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.6
Recall Mode	Min
Act Effct Green (s)	17.2
Actuated g/C Ratio	0.19
v/c Ratio	0.03
Control Delay (s/veh)	0.2
Queue Delay	0.0
Total Delay (s/veh)	0.2
LOS	A
Approach Delay (s/veh)	
Approach LOS	

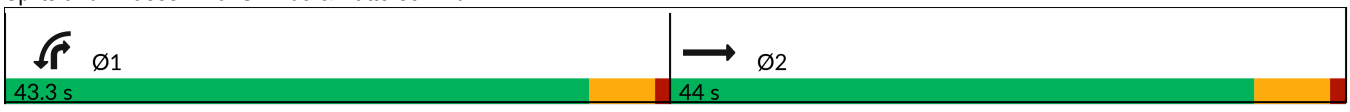
Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	930	10	75	560	0	210
Future Volume (vph)	930	10	75	560	0	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	525		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			125		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998					0.865
Flt Protected			0.950			
Satd. Flow (prot)	1841	0	1752	1845	0	1596
Flt Permitted			0.950			
Satd. Flow (perm)	1841	0	1752	1845	0	1596
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					53
Link Speed (mph)	35			55	45	
Link Distance (ft)	574			1403	796	
Travel Time (s)	11.2			17.4	12.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	979	11	79	589	0	221
Shared Lane Traffic (%)						
Lane Group Flow (vph)	990	0	79	589	0	221
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (ft)	100		20	100	20	20
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0		0
Detector 1 Size(ft)	6		20	6		20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0		0.0	0.0		0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA		Over
Protected Phases	2		1	Free		1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases						
Detector Phase	2		1			1
Switch Phase						
Minimum Initial (s)	8.0		8.0			8.0
Minimum Split (s)	14.0		13.3			13.3
Total Split (s)	44.0		43.3			43.3
Total Split (%)	50.4%		49.6%			49.6%
Maximum Green (s)	38.0		38.0			38.0
Yellow Time (s)	5.0		4.3			4.3
All-Red Time (s)	1.0		1.0			1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	6.0		5.3			5.3
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.2		3.2			3.2
Recall Mode	None		None			None
Act Effct Green (s)	38.1		12.2	61.6		12.2
Actuated g/C Ratio	0.62		0.20	1.00		0.20
v/c Ratio	0.87		0.23	0.32		0.62
Control Delay (s/veh)	22.0		21.9	0.5		24.7
Queue Delay	0.2		0.0	0.0		0.0
Total Delay (s/veh)	22.2		21.9	0.5		24.7
LOS	C		C	A		C
Approach Delay (s/veh)	22.2			3.0	24.7	
Approach LOS	C			A	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 87.3			
Actuated Cycle Length: 61.6			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay (s/veh): 15.7		Intersection LOS: B	
Intersection Capacity Utilization 72.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: SR 108 & Patterson Rd



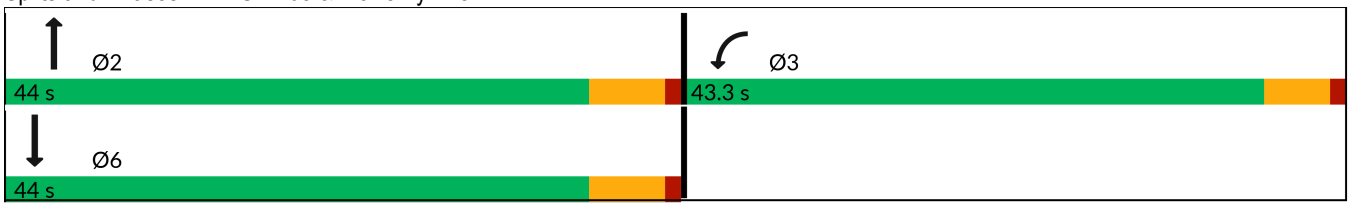


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	75	10	580	210	0	900
Future Volume (vph)	75	10	580	210	0	900
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		475	0	
Storage Lanes	1	0		1	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Frt	0.983			0.850		
Flt Protected	0.958					
Satd. Flow (prot)	1737	0	1845	1568	0	3505
Flt Permitted	0.958					
Satd. Flow (perm)	1737	0	1845	1568	0	3505
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	10			221		
Link Speed (mph)	45		55			55
Link Distance (ft)	796		700			570
Travel Time (s)	12.1		8.7			7.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	79	11	611	221	0	947
Shared Lane Traffic (%)						
Lane Group Flow (vph)	90	0	611	221	0	947
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1		2	1		2
Detector Template	Left		Thru	Right		Thru
Leading Detector (ft)	20		100	20		100
Trailing Detector (ft)	0		0	0		0
Detector 1 Position(ft)	0		0	0		0
Detector 1 Size(ft)	20		6	20		6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0		0.0	0.0		0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot		NA	Free		NA
Protected Phases	3		2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases				Free		
Detector Phase	3		2			6
Switch Phase						
Minimum Initial (s)	8.0		8.0			8.0
Minimum Split (s)	13.3		14.0			14.0
Total Split (s)	43.3		44.0			44.0
Total Split (%)	49.6%		50.4%			50.4%
Maximum Green (s)	38.0		38.0			38.0
Yellow Time (s)	4.3		5.0			5.0
All-Red Time (s)	1.0		1.0			1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.3		6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.2		3.2			3.2
Recall Mode	None		None			None
Act Effct Green (s)	10.3		23.0	32.6		23.0
Actuated g/C Ratio	0.32		0.71	1.00		0.71
v/c Ratio	0.16		0.47	0.14		0.38
Control Delay (s/veh)	13.3		7.6	0.2		5.7
Queue Delay	0.0		0.0	0.0		0.0
Total Delay (s/veh)	13.3		7.6	0.2		5.7
LOS	B		A	A		A
Approach Delay (s/veh)	13.3		5.6			5.7
Approach LOS	B		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 87.3			
Actuated Cycle Length: 32.6			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay (s/veh): 6.0		Intersection LOS: A	
Intersection Capacity Utilization 46.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 7: SR 108 & McHenry Ave



Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	10	25	1150	110	10	85	830	10	60	100	90	10
Future Volume (vph)	10	25	1150	110	10	85	830	10	60	100	90	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		430		580		595		540	260		0	95
Storage Lanes		1		2		1		1	1		0	1
Taper Length (ft)		110				90			115			115
Lane Util. Factor	0.91	1.00	0.91	1.00	0.91	1.00	0.91	1.00	1.00	1.00	1.00	1.00
Frt				0.850				0.850		0.929		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	1752	5036	1568	0	1752	5036	1568	1752	1714	0	1752
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	1752	5036	1568	0	1752	5036	1568	1752	1714	0	1752
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				115				41		16		
Link Speed (mph)			55				55			35		
Link Distance (ft)			1479				1299			1261		
Travel Time (s)			18.3				16.1			24.6		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	11	26	1211	116	11	89	874	11	63	105	95	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	37	1211	116	0	100	874	11	63	200	0	11
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			12				12			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			16				16			16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2		1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)		20	100	20		20	100	20	20	100		20
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0		0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA		Prot
Protected Phases	5	5	2		1	1	6		3	8		7

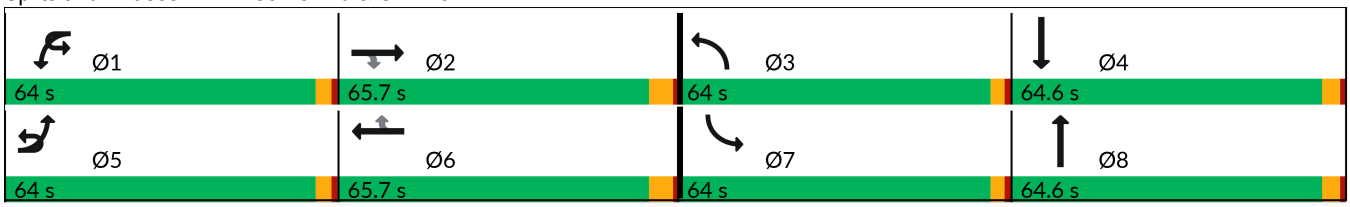


Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	130	40
Future Volume (vph)	130	40
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	1.00	1.00
Frt	0.965	
Flt Protected		
Satd. Flow (prot)	1780	0
Flt Permitted		
Satd. Flow (perm)	1780	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	6	
Link Speed (mph)	35	
Link Distance (ft)	1396	
Travel Time (s)	27.2	
Peak Hour Factor	0.95	0.95
Heavy Vehicles (%)	3%	3%
Adj. Flow (vph)	137	42
Shared Lane Traffic (%)		
Lane Group Flow (vph)	179	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane	Yes	
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	
Detector Template	Thru	
Leading Detector (ft)	100	
Trailing Detector (ft)	0	
Detector 1 Position(ft)	0	
Detector 1 Size(ft)	6	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	
Protected Phases	4	

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Permitted Phases				2				6				
Detector Phase	5	5	2	2	1	1	6	6	3	8		7
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	14.0	14.0	15.7	15.7	14.0	14.0	15.7	15.7	14.0	14.5		14.0
Total Split (s)	64.0	64.0	65.7	65.7	64.0	64.0	65.7	65.7	64.0	64.6		64.0
Total Split (%)	24.8%	24.8%	25.4%	25.4%	24.8%	24.8%	25.4%	25.4%	24.8%	25.0%		24.8%
Maximum Green (s)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.1		60.0
Yellow Time (s)	3.0	3.0	4.7	4.7	3.0	3.0	4.7	4.7	3.0	3.5		3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		4.0	5.7	5.7		4.0	5.7	5.7	4.0	4.5		4.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	2.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0		1.0
Recall Mode	None	None	Min	Min	None	None	Min	Min	None	None		None
Act Effct Green (s)		10.1	40.2	40.2		11.7	44.7	44.7	10.4	28.3		10.1
Actuated g/C Ratio		0.10	0.41	0.41		0.12	0.46	0.46	0.11	0.29		0.10
v/c Ratio		0.20	0.58	0.16		0.47	0.38	0.01	0.34	0.39		0.06
Control Delay (s/veh)		45.5	24.1	4.8		48.7	18.9	0.0	47.4	29.3		43.8
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		45.5	24.1	4.8		48.7	18.9	0.0	47.4	29.3		43.8
LOS		D	C	A		D	B	A	D	C		D
Approach Delay (s/veh)			23.0				21.7			33.6		
Approach LOS			C				C			C		

Intersection Summary			
Area Type:	Other		
Cycle Length: 258.3			
Actuated Cycle Length: 96.9			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay (s/veh): 25.0		Intersection LOS: C	
Intersection Capacity Utilization 64.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 14: Carver Rd & SR 219





Lane Group	SBT	SBR
Permitted Phases		
Detector Phase	4	
Switch Phase		
Minimum Initial (s)	10.0	
Minimum Split (s)	14.6	
Total Split (s)	64.6	
Total Split (%)	25.0%	
Maximum Green (s)	60.0	
Yellow Time (s)	3.6	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	4.6	
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	2.0	
Recall Mode	None	
Act Effct Green (s)	16.3	
Actuated g/C Ratio	0.17	
v/c Ratio	0.59	
Control Delay (s/veh)	44.6	
Queue Delay	0.0	
Total Delay (s/veh)	44.6	
LOS	D	
Approach Delay (s/veh)	44.5	
Approach LOS	D	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	45	1100	90	10	210	790	20	120	200	160	15	180
Future Volume (vph)	45	1100	90	10	210	790	20	120	200	160	15	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	715		355		665		415	275		395	300	
Storage Lanes	1		1		2		1	1		1	1	
Taper Length (ft)	95				190			120			100	
Lane Util. Factor	1.00	0.91	1.00	0.91	0.97	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850				0.850			0.850		0.992
Flt Protected	0.950				0.950			0.950			0.950	
Satd. Flow (prot)	1770	5085	1583	0	3433	5085	1583	1770	1863	1583	1770	1848
Flt Permitted	0.950				0.950			0.950			0.950	
Satd. Flow (perm)	1770	5085	1583	0	3433	5085	1583	1770	1863	1583	1770	1848
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)			82				82			168		1
Link Speed (mph)		55				55			35			35
Link Distance (ft)		1306				1950			1372			1326
Travel Time (s)		16.2				24.2			26.7			25.8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	47	1158	95	11	221	832	21	126	211	168	16	189
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	1158	95	0	232	832	21	126	211	168	16	200
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)		24				24			12			12
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		16				16			16			16
Two way Left Turn Lane									Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Number of Detectors	1	2	1		1	2	1	1	2	1	1	2
Detector Template	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left	Thru
Leading Detector (ft)	20	100	20		20	100	20	20	100	20	20	100
Trailing Detector (ft)	0	0	0		0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0		0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20		20	6	20	20	6	20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94				94			94			94
Detector 2 Size(ft)		6				6			6			6
Detector 2 Type		Cl+Ex				Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0				0.0			0.0			0.0
Turn Type	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	5	2		1	1	6		3	8		7	4

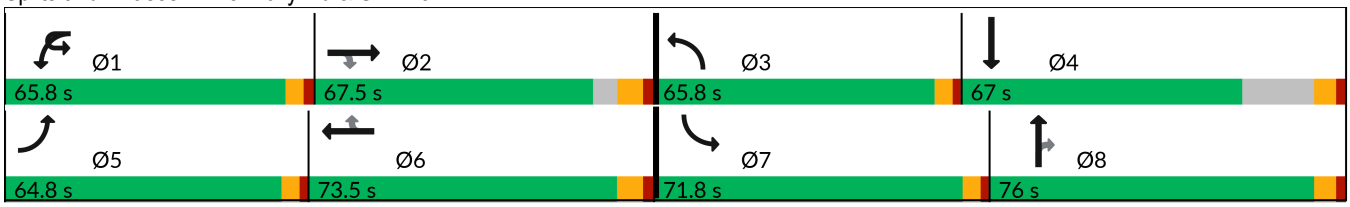


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	10
Future Volume (vph)	10
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.95
Heavy Vehicles (%)	2%
Adj. Flow (vph)	11
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Permitted Phases			2				6			8		
Detector Phase	5	2	2	1	1	6	6	3	8	8	7	4
Switch Phase												
Minimum Initial (s)	9.0	10.0	10.0	10.0	10.0	16.0	16.0	10.0	19.0	19.0	16.0	10.0
Minimum Split (s)	14.8	17.5	17.5	15.8	15.8	23.5	23.5	15.8	26.0	26.0	21.8	17.0
Total Split (s)	64.8	67.5	67.5	65.8	65.8	73.5	73.5	65.8	76.0	76.0	71.8	67.0
Total Split (%)	22.6%	23.6%	23.6%	23.0%	23.0%	25.7%	25.7%	23.0%	26.6%	26.6%	25.1%	23.4%
Maximum Green (s)	59.0	60.0	60.0	60.0	60.0	66.0	66.0	60.0	69.0	69.0	66.0	60.0
Yellow Time (s)	3.8	5.5	5.5	3.8	3.8	5.5	5.5	3.8	5.0	5.0	3.8	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	7.5	7.5		5.8	7.5	7.5	5.8	7.0	7.0	5.8	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	1.0	2.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0
Recall Mode	None	Min	Min	None	None	Min	Min	None	None	None	None	None
Act Effct Green (s)	9.6	43.0	43.0		13.9	50.9	50.9	14.5	33.0	33.0	16.3	20.2
Actuated g/C Ratio	0.08	0.36	0.36		0.12	0.43	0.43	0.12	0.28	0.28	0.14	0.17
v/c Ratio	0.33	0.63	0.15		0.58	0.38	0.03	0.58	0.41	0.30	0.07	0.63
Control Delay (s/veh)	63.5	33.9	8.8		57.4	25.3	0.1	62.8	41.7	7.9	52.7	56.6
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	63.5	33.9	8.8		57.4	25.3	0.1	62.8	41.7	7.9	52.7	56.6
LOS	E	C	A		E	C	A	E	D	A	D	E
Approach Delay (s/veh)		33.1				31.7			35.7			56.3
Approach LOS		C				C			D			E

Intersection Summary			
Area Type:	Other		
Cycle Length: 286.1			
Actuated Cycle Length: 118.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay (s/veh): 34.6		Intersection LOS: C	
Intersection Capacity Utilization 78.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 15: Tully Rd & SR 219





Lane Group	SBR
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	

Intersection Summary

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Lane Configurations												
Traffic Volume (vph)	10	55	1050	180	10	170	740	150	250	580	460	10
Future Volume (vph)	10	55	1050	180	10	170	740	150	250	580	460	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		765		650		960		75	140		210	
Storage Lanes		2		1		2		1	1		1	
Taper Length (ft)		255				255			80			
Lane Util. Factor	0.91	0.97	0.91	1.00	0.95	0.97	0.95	1.00	1.00	0.95	1.00	0.95
Frt				0.850				0.850			0.850	
Flt Protected		0.950				0.950			0.950			
Satd. Flow (prot)	0	3433	5085	1583	0	3433	3539	1583	1770	3539	1583	0
Flt Permitted		0.950				0.950			0.950			
Satd. Flow (perm)	0	3433	5085	1583	0	3433	3539	1583	1770	3539	1583	0
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				189				90			322	
Link Speed (mph)			55				55			35		
Link Distance (ft)			1297				1655			1501		
Travel Time (s)			16.1				20.5			29.2		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	11	58	1105	189	11	179	779	158	263	611	484	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	69	1105	189	0	190	779	158	263	611	484	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	R NA
Median Width(ft)			24				24			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			16				16			16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	9
Number of Detectors		1	2	1		1	2	1	1	2	1	
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	
Leading Detector (ft)		20	100	20		20	100	20	20	100	20	
Trailing Detector (ft)		0	0	0		0	0	0	0	0	0	
Detector 1 Position(ft)		0	0	0		0	0	0	0	0	0	
Detector 1 Size(ft)		20	6	20		20	6	20	20	6	20	
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot
Protected Phases	5	5	2		1	1	6		3	8		7

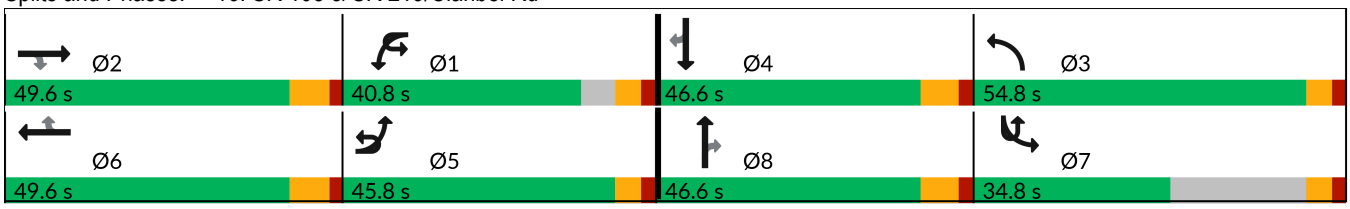


Lane Group	SBL	SBT	SBR
Lane Configurations			
Traffic Volume (vph)	370	680	25
Future Volume (vph)	370	680	25
Ideal Flow (vphpl)	1900	1900	1900
Storage Length (ft)	420		535
Storage Lanes	1		1
Taper Length (ft)	115		
Lane Util. Factor	1.00	0.95	1.00
Frt			0.850
Flt Protected	0.950		
Satd. Flow (prot)	1770	3539	1583
Flt Permitted	0.950		
Satd. Flow (perm)	1770	3539	1583
Right Turn on Red			Yes
Satd. Flow (RTOR)			90
Link Speed (mph)		45	
Link Distance (ft)		1304	
Travel Time (s)		19.8	
Peak Hour Factor	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%
Adj. Flow (vph)	389	716	26
Shared Lane Traffic (%)			
Lane Group Flow (vph)	400	716	26
Enter Blocked Intersection	No	No	No
Lane Alignment	Left	Left	Right
Median Width(ft)		12	
Link Offset(ft)		0	
Crosswalk Width(ft)		16	
Two way Left Turn Lane		Yes	
Headway Factor	1.00	1.00	1.00
Turning Speed (mph)	15		9
Number of Detectors	1	2	1
Detector Template	Left	Thru	Right
Leading Detector (ft)	20	100	20
Trailing Detector (ft)	0	0	0
Detector 1 Position(ft)	0	0	0
Detector 1 Size(ft)	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel			
Detector 1 Extend (s)	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0
Detector 2 Position(ft)		94	
Detector 2 Size(ft)		6	
Detector 2 Type		Cl+Ex	
Detector 2 Channel			
Detector 2 Extend (s)		0.0	
Turn Type	Prot	NA	Perm
Protected Phases	7	4	

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Permitted Phases				2				6			8	
Detector Phase	5	5	2	2	1	1	6	6	3	8	8	7
Switch Phase												
Minimum Initial (s)	15.0	15.0	12.0	12.0	15.0	15.0	12.0	12.0	14.0	14.0	14.0	14.0
Minimum Split (s)	20.8	20.8	50.6	50.6	20.8	20.8	55.6	55.6	19.8	58.6	58.6	19.8
Total Split (s)	45.8	45.8	49.6	49.6	40.8	40.8	49.6	49.6	54.8	46.6	46.6	34.8
Total Split (%)	23.3%	23.3%	25.2%	25.2%	20.7%	20.7%	25.2%	25.2%	27.8%	23.7%	23.7%	17.7%
Maximum Green (s)	40.0	40.0	42.0	42.0	35.0	35.0	42.0	42.0	49.0	39.0	39.0	29.0
Yellow Time (s)	3.8	3.8	5.6	5.6	3.8	3.8	5.6	5.6	3.8	5.6	5.6	3.8
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		5.8	7.6	7.6		5.8	7.6	7.6	5.8	7.6	7.6	
Lead/Lag	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.5	2.5	2.1	2.1	2.5	2.5	2.0	2.0	2.5	3.6	3.6	2.5
Recall Mode	None	None	Min	Min	None	None	Min	Min	None	None	None	None
Walk Time (s)			7.0	7.0			7.0	7.0		7.0	7.0	
Flash Don't Walk (s)			35.0	35.0			41.0	41.0		44.0	44.0	
Pedestrian Calls (#/hr)			0	0			0	0		0	0	
Act Effct Green (s)		15.6	42.1	42.1		15.6	42.1	42.1	27.2	35.2	35.2	
Actuated g/C Ratio		0.10	0.28	0.28		0.10	0.28	0.28	0.18	0.23	0.23	
v/c Ratio		0.19	0.78	0.33		0.54	0.79	0.31	0.83	0.74	0.79	
Control Delay (s/veh)		64.9	55.4	7.3		71.2	57.7	21.5	80.7	59.9	27.6	
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)		64.9	55.4	7.3		71.2	57.7	21.5	80.7	59.9	27.6	
LOS		E	E	A		E	E	C	F	E	C	
Approach Delay (s/veh)			49.2				54.9			52.4		
Approach LOS			D				D			D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 196.8			
Actuated Cycle Length: 150.8			
Natural Cycle: 160			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.10			
Intersection Signal Delay (s/veh): 59.1		Intersection LOS: E	
Intersection Capacity Utilization 104.7%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 16: SR 108 & SR 219/Claribel Rd





Lane Group	SBL	SBT	SBR
Permitted Phases			4
Detector Phase	7	4	4
Switch Phase			
Minimum Initial (s)	14.0	14.0	14.0
Minimum Split (s)	19.8	60.6	60.6
Total Split (s)	34.8	46.6	46.6
Total Split (%)	17.7%	23.7%	23.7%
Maximum Green (s)	29.0	39.0	39.0
Yellow Time (s)	3.8	5.6	5.6
All-Red Time (s)	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0
Total Lost Time (s)	5.8	7.6	7.6
Lead/Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes
Vehicle Extension (s)	2.5	2.3	2.3
Recall Mode	None	None	None
Walk Time (s)		7.0	7.0
Flash Don't Walk (s)		46.0	46.0
Pedestrian Calls (#/hr)		0	0
Act Effct Green (s)	31.1	39.1	39.1
Actuated g/C Ratio	0.21	0.26	0.26
v/c Ratio	1.10	0.78	0.05
Control Delay (s/veh)	130.1	59.5	0.2
Queue Delay	0.0	0.0	0.0
Total Delay (s/veh)	130.1	59.5	0.2
LOS	F	E	A
Approach Delay (s/veh)		82.9	
Approach LOS		F	

Intersection Summary

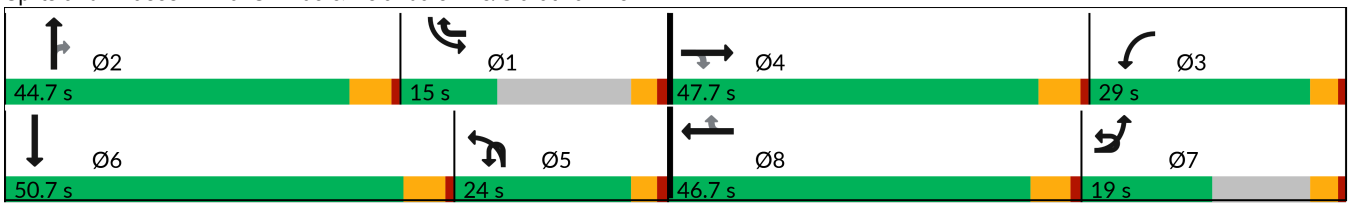
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	10	230	730	270	60	420	150	10	250	890	90	310
Future Volume (vph)	10	230	730	270	60	420	150	10	250	890	90	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		300		380	195		320		325		260	175
Storage Lanes		1		1	2		1		2		1	2
Taper Length (ft)		150			150				105			95
Lane Util. Factor	0.95	0.97	0.95	1.00	0.97	0.91	1.00	0.95	0.97	0.95	1.00	0.97
Ped Bike Factor				0.99								
Frt				0.850			0.850				0.850	
Flt Protected		0.950			0.950				0.950			0.950
Satd. Flow (prot)	0	3467	3574	1599	3467	5136	1599	0	3467	3574	1599	3467
Flt Permitted		0.950			0.950				0.950			0.950
Satd. Flow (perm)	0	3467	3574	1578	3467	5136	1599	0	3467	3574	1599	3467
Right Turn on Red				Yes			Yes				Yes	
Satd. Flow (RTOR)				284			71				118	
Link Speed (mph)			45			45				35		
Link Distance (ft)			850			681				829		
Travel Time (s)			12.9			10.3				16.1		
Confl. Peds. (#/hr)				1								
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	11	242	768	284	63	442	158	11	263	937	95	326
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	253	768	284	63	442	158	0	274	937	95	326
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	Left
Median Width(ft)			24			24				24		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	9	15		9	15
Number of Detectors		1	2	1	1	2	1		1	2	1	1
Detector Template		Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left
Leading Detector (ft)		20	100	20	20	100	20		20	100	20	20
Trailing Detector (ft)		0	0	0	0	0	0		0	0	0	0
Detector 1 Position(ft)		0	0	0	0	0	0		0	0	0	0
Detector 1 Size(ft)		20	6	20	20	6	20		20	6	20	20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94				94		
Detector 2 Size(ft)			6			6				6		
Detector 2 Type			Cl+Ex			Cl+Ex				Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0				0.0		

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	1000	180
Future Volume (vph)	1000	180
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	0.95	0.95
Ped Bike Factor	1.00	
Frt	0.977	
Flt Protected		
Satd. Flow (prot)	3480	0
Flt Permitted		
Satd. Flow (perm)	3480	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	14	
Link Speed (mph)	35	
Link Distance (ft)	2592	
Travel Time (s)	50.5	
Confl. Peds. (#/hr)		5
Peak Hour Factor	0.95	0.95
Heavy Vehicles (%)	1%	1%
Adj. Flow (vph)	1053	189
Shared Lane Traffic (%)		
Lane Group Flow (vph)	1242	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	24	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	
Detector Template	Thru	
Leading Detector (ft)	100	
Trailing Detector (ft)	0	
Detector 1 Position(ft)	0	
Detector 1 Size(ft)	6	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Turn Type	Prot	Prot	NA	Perm	Prot	NA	pm+ov	Prot	Prot	NA	Perm	Prot
Protected Phases	7	7	4		3	8	1	5	5	2		1
Permitted Phases				4			8				2	
Detector Phase	7	7	4	4	3	8	1	5	5	2	2	1
Switch Phase												
Minimum Initial (s)	10.0	10.0	15.0	15.0	25.0	10.0	10.0	10.0	10.0	25.0	25.0	10.0
Minimum Split (s)	14.0	14.0	47.7	47.7	29.0	46.7	14.0	14.0	14.0	44.7	44.7	14.0
Total Split (s)	19.0	19.0	47.7	47.7	29.0	46.7	15.0	24.0	24.0	44.7	44.7	15.0
Total Split (%)	12.5%	12.5%	31.5%	31.5%	19.2%	30.8%	9.9%	15.9%	15.9%	29.5%	29.5%	9.9%
Maximum Green (s)	15.0	15.0	42.0	42.0	25.0	41.0	11.0	20.0	20.0	39.0	39.0	11.0
Yellow Time (s)	3.0	3.0	4.7	4.7	3.0	4.7	3.0	3.0	3.0	4.7	4.7	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		4.0	5.7	5.7	4.0	5.7	4.0		4.0	5.7	5.7	4.0
Lead/Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.5	2.5	2.0	2.5	2.3	2.2	2.2	3.0	3.0	2.3
Recall Mode	None	None	None	None	Min	None	Min	None	None	Min	Min	Min
Walk Time (s)			10.0	10.0		10.0				5.0	5.0	
Flash Don't Walk (s)			32.0	32.0		31.0				34.0	34.0	
Pedestrian Calls (#/hr)			1	1		0				0	0	
Act Effct Green (s)		43.8	35.9	35.9	25.1	17.2	44.5		15.6	39.2	39.2	21.6
Actuated g/C Ratio		0.31	0.25	0.25	0.18	0.12	0.32		0.11	0.28	0.28	0.15
v/c Ratio		0.24	0.85	0.46	0.10	0.71	0.29		0.72	0.95	0.18	0.62
Control Delay (s/veh)		37.7	59.8	6.9	51.8	66.7	20.7		72.5	68.5	4.4	61.9
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)		37.7	59.8	6.9	51.8	66.7	20.7		72.5	68.5	4.4	61.9
LOS		D	E	A	D	E	C		E	E	A	E
Approach Delay (s/veh)			44.0			54.3				64.7		
Approach LOS			D			D				E		

Intersection Summary			
Area Type:	Other		
Cycle Length: 151.4			
Actuated Cycle Length: 141.2			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay (s/veh): 67.8		Intersection LOS: E	
Intersection Capacity Utilization 88.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 26: SR 108 & Pelandale Ave/Claratina Ave





Lane Group	SBT	SBR
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Detector Phase	6	
Switch Phase		
Minimum Initial (s)	20.0	
Minimum Split (s)	50.7	
Total Split (s)	50.7	
Total Split (%)	33.5%	
Maximum Green (s)	45.0	
Yellow Time (s)	4.7	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	5.7	
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	
Recall Mode	Min	
Walk Time (s)	10.0	
Flash Don't Walk (s)	10.0	
Pedestrian Calls (#/hr)	5	
Act Effct Green (s)	45.2	
Actuated g/C Ratio	0.32	
v/c Ratio	1.11	
Control Delay (s/veh)	104.7	
Queue Delay	0.0	
Total Delay (s/veh)	104.7	
LOS	F	
Approach Delay (s/veh)	95.8	
Approach LOS	F	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	0	620	250	10	350	635	0	0	0	0	500	10
Future Volume (vph)	0	620	250	10	350	635	0	0	0	0	500	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		0		0		0	0		0	450	
Storage Lanes	2		1		2		0	0		0	1	
Taper Length (ft)	25				25			25			105	
Lane Util. Factor	1.00	0.81	0.81	0.95	0.97	0.95	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor		1.00	0.99									
Frt		0.980	0.850									
Flt Protected					0.950						0.950	0.954
Satd. Flow (prot)	0	5846	1270	0	3400	3505	0	0	0	0	1665	1672
Flt Permitted					0.950						0.950	0.954
Satd. Flow (perm)	0	5846	1252	0	3400	3505	0	0	0	0	1665	1672
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)		42	167									
Link Speed (mph)		25				40			35			35
Link Distance (ft)		417				419			778			1218
Travel Time (s)		11.4				7.1			15.2			23.7
Confl. Peds. (#/hr)			2				3					
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	667	269	11	376	683	0	0	0	0	538	11
Shared Lane Traffic (%)			38%								49%	
Lane Group Flow (vph)	0	769	167	0	387	683	0	0	0	0	274	275
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Right	Left
Median Width(ft)		24				24			12			12
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		50				16			16			30
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Number of Detectors		2	1		1	2			2		1	2
Detector Template		Thru	Right		Left	Thru			Thru		Left	Thru
Leading Detector (ft)		100	20		20	100			100		20	100
Trailing Detector (ft)		0	0		0	0			0		0	0
Detector 1 Position(ft)		0	0		0	0					0	0
Detector 1 Size(ft)		6	20		20	6					20	6
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0		0.0	0.0					0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0					0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0					0.0	0.0
Detector 2 Position(ft)		94				94						94
Detector 2 Size(ft)		6				6						6
Detector 2 Type		Cl+Ex				Cl+Ex						Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0				0.0						0.0
Turn Type		NA	Perm	Prot	Prot	NA					Split	NA



Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	160
Future Volume (vph)	160
Ideal Flow (vphpl)	1900
Storage Length (ft)	450
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Ped Bike Factor	
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1568
Flt Permitted	
Satd. Flow (perm)	1568
Right Turn on Red	Yes
Satd. Flow (RTOR)	146
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	0.93
Adj. Flow (vph)	172
Shared Lane Traffic (%)	
Lane Group Flow (vph)	172
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	Perm

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Protected Phases		2		1	1	6					4	4
Permitted Phases			2									
Detector Phase		2	2	1	1	6					4	4
Switch Phase												
Minimum Initial (s)		8.0	8.0	8.0	8.0	8.0					5.0	5.0
Minimum Split (s)		24.4	24.4	11.5	11.5	25.6					30.1	30.1
Total Split (s)		24.4	24.4	18.5	18.5	42.9					42.1	42.1
Total Split (%)		28.7%	28.7%	21.8%	21.8%	50.5%					49.5%	49.5%
Maximum Green (s)		19.8	19.8	15.0	15.0	38.3					37.0	37.0
Yellow Time (s)		3.6	3.6	3.0	3.0	3.6					3.6	3.6
All-Red Time (s)		1.0	1.0	0.5	0.5	1.0					1.5	1.5
Lost Time Adjust (s)		0.0	0.0		0.0	0.0					0.0	0.0
Total Lost Time (s)		4.6	4.6		3.5	4.6					5.1	5.1
Lead/Lag		Lead	Lead	Lag	Lag							
Lead-Lag Optimize?		Yes	Yes	Yes	Yes							
Vehicle Extension (s)		2.4	2.4	2.0	2.0	3.0					3.0	3.0
Recall Mode		C-Max	C-Max	Min	Min	C-Max					None	None
Walk Time (s)		7.0	7.0			7.0					5.0	5.0
Flash Don't Walk (s)		12.8	12.8			14.0					20.0	20.0
Pedestrian Calls (#/hr)		2	2			3					0	0
Act Effct Green (s)		35.5	35.5		15.0	54.0					21.3	21.3
Actuated g/C Ratio		0.42	0.42		0.18	0.64					0.25	0.25
v/c Ratio		0.31	0.27		0.65	0.31					0.66	0.66
Control Delay (s/veh)		17.2	4.9		24.1	7.9					35.2	35.2
Queue Delay		0.0	0.0		0.0	0.0					0.0	0.0
Total Delay (s/veh)		17.2	4.9		24.1	7.9					35.2	35.2
LOS		B	A		C	A					D	D
Approach Delay (s/veh)		15.0				13.7						28.6
Approach LOS		B				B						C

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 55 (65%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay (s/veh): 18.1		Intersection LOS: B	
Intersection Capacity Utilization 60.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 9: SR 99 SB Ramps & Broadway Ave/SR 219





Lane Group	SBR
Protected Phases	
Permitted Phases	4
Detector Phase	4
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	30.1
Total Split (s)	42.1
Total Split (%)	49.5%
Maximum Green (s)	37.0
Yellow Time (s)	3.6
All-Red Time (s)	1.5
Lost Time Adjust (s)	0.0
Total Lost Time (s)	5.1
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Don't Walk (s)	20.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	21.3
Actuated g/C Ratio	0.25
v/c Ratio	0.34
Control Delay (s/veh)	7.5
Queue Delay	0.0
Total Delay (s/veh)	7.5
LOS	A
Approach Delay (s/veh)	
Approach LOS	

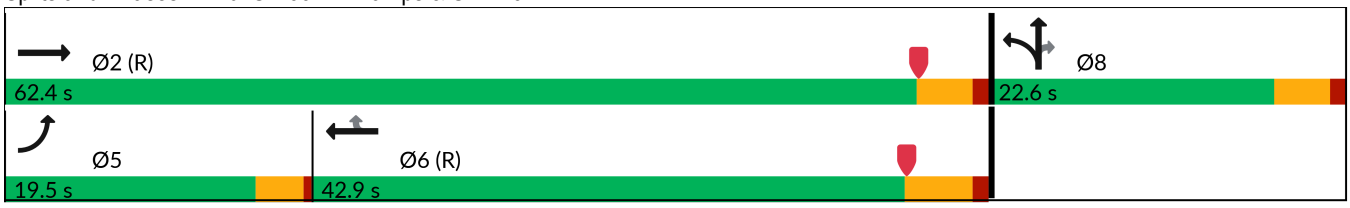
Intersection Summary

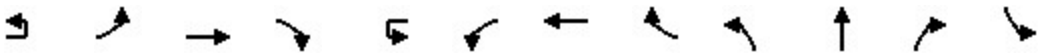
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	1000	0	0	805	470	190	10	350	0	0	0
Future Volume (vph)	130	1000	0	0	805	470	190	10	350	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	360		0	0		565	0		0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (ft)	25			140			25			25		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	0.88	1.00	1.00	1.00
Ped Bike Factor						0.98						
Frt						0.850			0.850			
Flt Protected	0.950							0.955				
Satd. Flow (prot)	1752	5036	0	0	5036	1568	0	1762	2760	0	0	0
Flt Permitted	0.950							0.955				
Satd. Flow (perm)	1752	5036	0	0	5036	1544	0	1762	2760	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						505			237			
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		419			622			1358			1317	
Travel Time (s)		7.1			10.6			26.5			25.7	
Confl. Peds. (#/hr)			2			3						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	140	1075	0	0	866	505	204	11	376	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	140	1075	0	0	866	505	0	215	376	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			25			25			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1		2	1		2	
Detector Template	Left	Thru			Thru	Right		Thru	Right		Thru	
Leading Detector (ft)	20	100			100	20		100	20		100	
Trailing Detector (ft)	0	0			0	0		0	0		0	
Detector 1 Position(ft)	0	0			0	0		0	0			
Detector 1 Size(ft)	20	6			6	20		6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Detector Phase	5	2			6	6	8	8	8			
Switch Phase												
Minimum Initial (s)	10.0	5.0			12.0	12.0	5.0	5.0	5.0			
Minimum Split (s)	13.5	24.6			27.3	27.3	22.6	22.6	22.6			
Total Split (s)	19.5	62.4			42.9	42.9	22.6	22.6	22.6			
Total Split (%)	22.9%	73.4%			50.5%	50.5%	26.6%	26.6%	26.6%			
Maximum Green (s)	16.0	57.8			37.6	37.6	18.0	18.0	18.0			
Yellow Time (s)	3.0	3.6			4.3	4.3	3.6	3.6	3.6			
All-Red Time (s)	0.5	1.0			1.0	1.0	1.0	1.0	1.0			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Total Lost Time (s)	3.5	4.6			5.3	5.3		4.6	4.6			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	2.0	3.0			2.0	2.0	2.0	2.0	2.0			
Recall Mode	Max	C-Max			C-Max	C-Max	None	None	None			
Walk Time (s)		7.0			7.0	7.0	5.0	5.0	5.0			
Flash Don't Walk (s)		13.0			15.0	15.0	13.0	13.0	13.0			
Pedestrian Calls (#/hr)		2			3	3	0	0	0			
Act Effct Green (s)	19.7	61.5			37.6	37.6		14.3	14.3			
Actuated g/C Ratio	0.23	0.72			0.44	0.44		0.17	0.17			
v/c Ratio	0.35	0.30			0.39	0.52		0.72	0.57			
Control Delay (s/veh)	54.2	1.5			16.6	3.7		47.3	15.0			
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0			
Total Delay (s/veh)	54.2	1.5			16.6	3.7		47.3	15.0			
LOS	D	A			B	A		D	B			
Approach Delay (s/veh)		7.6			11.8			26.7				
Approach LOS		A			B			C				

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 65 (76%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay (s/veh): 13.0		Intersection LOS: B	
Intersection Capacity Utilization 60.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 10: SR 99 NB Ramps & SR 219





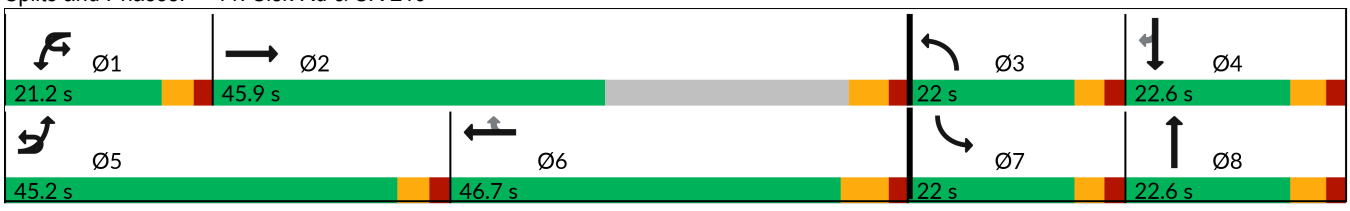
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	10	310	920	85	10	65	860	85	150	220	55	20
Future Volume (vph)	10	310	920	85	10	65	860	85	150	220	55	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		250		0		735		525	555		230	505
Storage Lanes		1		1		1		1	1		1	1
Taper Length (ft)		75				140			100			100
Lane Util. Factor	0.91	0.94	0.91	1.00	0.91	1.00	0.91	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor				0.99						1.00		
Frt				0.850				0.850		0.970		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	4942	5036	1568	0	1752	5036	1568	1752	3390	0	1752
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	4942	5036	1549	0	1752	5036	1568	1752	3390	0	1752
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				197				144		18		
Link Speed (mph)			40				55			35		
Link Distance (ft)			434				926			2020		
Travel Time (s)			7.4				11.5			39.4		
Confl. Peds. (#/hr)				1							1	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	333	989	91	11	70	925	91	161	237	59	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	344	989	91	0	81	925	91	161	296	0	22
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			48				36			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			25				25			25		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2		1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)		20	100	20		20	100	20	20	100		20
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0		0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Free	Prot	Prot	NA	Perm	Prot	NA		Prot

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	200	230
Future Volume (vph)	200	230
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		150
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	1.00	0.88
Ped Bike Factor		0.99
Frt		0.850
Flt Protected		
Satd. Flow (prot)	1845	2760
Flt Permitted		
Satd. Flow (perm)	1845	2720
Right Turn on Red		Yes
Satd. Flow (RTOR)		247
Link Speed (mph)	35	
Link Distance (ft)	1227	
Travel Time (s)	23.9	
Confl. Peds. (#/hr)		1
Peak Hour Factor	0.93	0.93
Adj. Flow (vph)	215	247
Shared Lane Traffic (%)		
Lane Group Flow (vph)	215	247
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	35	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	1
Detector Template	Thru	Right
Leading Detector (ft)	100	20
Trailing Detector (ft)	0	0
Detector 1 Position(ft)	0	0
Detector 1 Size(ft)	6	20
Detector 1 Type	Cl+Ex	Cl+Ex
Detector 1 Channel		
Detector 1 Extend (s)	0.0	0.0
Detector 1 Queue (s)	0.0	0.0
Detector 1 Delay (s)	0.0	0.0
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	Perm

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Protected Phases	5	5	2		1	1	6		3	8		7
Permitted Phases				Free				6				
Detector Phase	5	5	2		1	1	6	6	3	8		7
Switch Phase												
Minimum Initial (s)	5.0	5.0	10.0		6.0	6.0	10.0	10.0	5.0	5.0		5.0
Minimum Split (s)	10.2	10.2	32.9		11.2	11.2	41.7	41.7	10.0	22.6		10.0
Total Split (s)	45.2	45.2	45.9		21.2	21.2	46.7	46.7	22.0	22.6		22.0
Total Split (%)	33.1%	33.1%	33.6%		15.5%	15.5%	34.2%	34.2%	16.1%	16.6%		16.1%
Maximum Green (s)	40.0	40.0	40.0		16.0	16.0	40.0	40.0	17.0	17.0		17.0
Yellow Time (s)	3.2	3.2	3.9		3.2	3.2	4.7	4.7	3.0	3.6		3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0		2.0
Lost Time Adjust (s)		0.0	0.0			0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		5.2	5.9			5.2	6.7	6.7	5.0	5.6		5.0
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	3.0	3.0	4.6		3.0	3.0	4.6	4.6	3.0	3.2		3.0
Recall Mode	None	None	Min		None	None	Min	Min	None	None		None
Walk Time (s)			7.0				7.0	7.0		5.0		
Flash Don't Walk (s)			20.0				28.0	28.0		12.0		
Pedestrian Calls (#/hr)			1				0	0		1		
Act Effct Green (s)		12.4	35.2	95.2		10.0	29.1	29.1	14.2	31.2		6.9
Actuated g/C Ratio		0.13	0.37	1.00		0.11	0.31	0.31	0.15	0.33		0.07
v/c Ratio		0.53	0.53	0.06		0.44	0.60	0.16	0.62	0.26		0.18
Control Delay (s/veh)		43.3	26.1	0.1		50.4	30.1	1.5	50.9	26.0		48.9
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		43.3	26.1	0.1		50.4	30.1	1.5	50.9	26.0		48.9
LOS		D	C	A		D	C	A	D	C		D
Approach Delay (s/veh)			28.6				29.2			34.8		
Approach LOS			C				C			C		

Intersection Summary			
Area Type:	Other		
Cycle Length: 136.5			
Actuated Cycle Length: 95.2			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay (s/veh): 29.6		Intersection LOS: C	
Intersection Capacity Utilization 60.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 11: Sisk Rd & SR 219





Lane Group	SBT	SBR
Protected Phases	4	
Permitted Phases		4
Detector Phase	4	4
Switch Phase		
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	22.6	22.6
Total Split (s)	22.6	22.6
Total Split (%)	16.6%	16.6%
Maximum Green (s)	17.0	17.0
Yellow Time (s)	3.6	3.6
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	5.6	5.6
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.2	3.2
Recall Mode	None	None
Walk Time (s)	5.0	5.0
Flash Don't Walk (s)	12.0	12.0
Pedestrian Calls (#/hr)	1	1
Act Effct Green (s)	16.6	16.6
Actuated g/C Ratio	0.17	0.17
v/c Ratio	0.67	0.36
Control Delay (s/veh)	50.6	6.9
Queue Delay	0.0	0.0
Total Delay (s/veh)	50.6	6.9
LOS	D	A
Approach Delay (s/veh)	28.2	
Approach LOS	C	

Intersection Summary

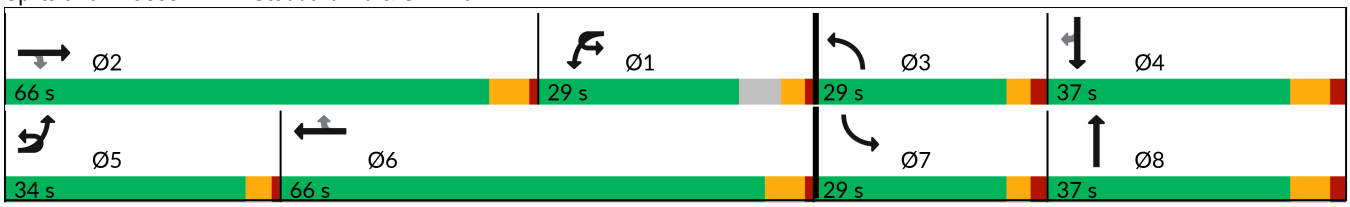
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	10	20	900	40	10	40	880	10	60	90	180	10
Future Volume (vph)	10	20	900	40	10	40	880	10	60	90	180	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		1000		620		495		640	70		0	155
Storage Lanes		2		1		1		1	1		0	1
Taper Length (ft)		210				140			55			160
Lane Util. Factor	0.91	0.97	0.91	1.00	0.91	1.00	0.91	1.00	1.00	1.00	1.00	1.00
Frt				0.850				0.850		0.900		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	3400	5036	1568	0	1752	5036	1568	1752	1660	0	1752
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	3400	5036	1568	0	1752	5036	1568	1752	1660	0	1752
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				99				85		53		
Link Speed (mph)			55				55			35		
Link Distance (ft)			1694				1350			735		
Travel Time (s)			21.0				16.7			14.3		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	22	968	43	11	43	946	11	65	97	194	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	33	968	43	0	54	946	11	65	291	0	11
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			36				36			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			25				25			16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2		1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)		20	100	20		20	100	20	20	100		20
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0		0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA		Prot
Protected Phases	5	5	2		1	1	6		3	8		7
Permitted Phases				2				6				

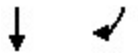
Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	25	80
Future Volume (vph)	25	80
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		155
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	1.00	1.00
Frt		0.850
Flt Protected		
Satd. Flow (prot)	1845	1568
Flt Permitted		
Satd. Flow (perm)	1845	1568
Right Turn on Red		Yes
Satd. Flow (RTOR)		118
Link Speed (mph)	35	
Link Distance (ft)	1875	
Travel Time (s)	36.5	
Peak Hour Factor	0.93	0.93
Adj. Flow (vph)	27	86
Shared Lane Traffic (%)		
Lane Group Flow (vph)	27	86
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	25	
Two way Left Turn Lane	Yes	
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	1
Detector Template	Thru	Right
Leading Detector (ft)	100	20
Trailing Detector (ft)	0	0
Detector 1 Position(ft)	0	0
Detector 1 Size(ft)	6	20
Detector 1 Type	Cl+Ex	Cl+Ex
Detector 1 Channel		
Detector 1 Extend (s)	0.0	0.0
Detector 1 Queue (s)	0.0	0.0
Detector 1 Delay (s)	0.0	0.0
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	Perm
Protected Phases	4	
Permitted Phases		4

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Detector Phase	5	5	2	2	1	1	6	6	3	8		7
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.0	10.0		9.0
Minimum Split (s)	14.0	14.0	16.0	16.0	14.0	14.0	16.0	16.0	14.0	17.0		14.0
Total Split (s)	34.0	34.0	66.0	66.0	29.0	29.0	66.0	66.0	29.0	37.0		29.0
Total Split (%)	20.5%	20.5%	39.8%	39.8%	17.5%	17.5%	39.8%	39.8%	17.5%	22.3%		17.5%
Maximum Green (s)	30.0	30.0	60.0	60.0	25.0	25.0	60.0	60.0	24.0	30.0		24.0
Yellow Time (s)	3.0	3.0	5.0	5.0	3.0	3.0	5.0	5.0	3.0	5.0		3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0		2.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		4.0	6.0	6.0		4.0	6.0	6.0	5.0	7.0		5.0
Lead/Lag	Lead	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	4.5	4.5	3.0	3.0	4.5	4.5	3.0	3.5		3.0
Recall Mode	None	None	Min	Min	None	None	Min	Min	None	None		None
Act Effct Green (s)		11.1	28.1	28.1		11.4	31.4	31.4	10.9	23.3		10.0
Actuated g/C Ratio		0.14	0.36	0.36		0.15	0.40	0.40	0.14	0.30		0.13
v/c Ratio		0.07	0.54	0.07		0.21	0.47	0.02	0.27	0.55		0.05
Control Delay (s/veh)		39.2	23.2	0.2		40.5	20.3	0.0	41.1	26.4		41.7
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		39.2	23.2	0.2		40.5	20.3	0.0	41.1	26.4		41.7
LOS		D	C	A		D	C	A	D	C		D
Approach Delay (s/veh)			22.7				21.1			29.1		
Approach LOS			C				C			C		

Intersection Summary			
Area Type:	Other		
Cycle Length: 166			
Actuated Cycle Length: 78.4			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay (s/veh): 22.6		Intersection LOS: C	
Intersection Capacity Utilization 59.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 12: Stoddard Rd & SR 219





Lane Group	SBT	SBR
Detector Phase	4	4
Switch Phase		
Minimum Initial (s)	10.0	10.0
Minimum Split (s)	17.0	17.0
Total Split (s)	37.0	37.0
Total Split (%)	22.3%	22.3%
Maximum Green (s)	30.0	30.0
Yellow Time (s)	5.0	5.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	7.0	7.0
Lead/Lag	Lag	Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	3.5	3.5
Recall Mode	None	None
Act Effct Green (s)	14.0	14.0
Actuated g/C Ratio	0.18	0.18
v/c Ratio	0.08	0.23
Control Delay (s/veh)	33.7	4.3
Queue Delay	0.0	0.0
Total Delay (s/veh)	33.7	4.3
LOS	C	A
Approach Delay (s/veh)	14.0	
Approach LOS	B	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	10	790	290	10	220	620	90	300	310	270	230	230
Future Volume (vph)	10	790	290	10	220	620	90	300	310	270	230	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	555		700		450		50	320		0	90	
Storage Lanes	1		1		2		1	1		1	1	
Taper Length (ft)	140				205			140			85	
Lane Util. Factor	1.00	0.91	1.00	0.91	0.97	0.91	1.00	0.97	1.00	1.00	1.00	1.00
Frt			0.850				0.850			0.850		0.994
Flt Protected	0.950				0.950			0.950			0.950	
Satd. Flow (prot)	1752	5036	1568	0	3400	5036	1568	3400	1845	1568	1752	1834
Flt Permitted	0.950				0.950			0.950			0.950	
Satd. Flow (perm)	1752	5036	1568	0	3400	5036	1568	3400	1845	1568	1752	1834
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)			312				89			219		1
Link Speed (mph)		55				55			40			55
Link Distance (ft)		3925				2640			1013			2575
Travel Time (s)		48.7				32.7			17.3			31.9
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	849	312	11	237	667	97	323	333	290	247	247
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	849	312	0	248	667	97	323	333	290	247	258
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)		36				36			24			12
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		50				70			50			50
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Number of Detectors	1	2	1		1	2	1	1	2	1	1	2
Detector Template	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left	Thru
Leading Detector (ft)	20	100	20		20	100	20	20	100	20	20	100
Trailing Detector (ft)	0	0	0		0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0		0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20		20	6	20	20	6	20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94				94			94			94
Detector 2 Size(ft)		6				6			6			6
Detector 2 Type		Cl+Ex				Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0				0.0			0.0			0.0
Turn Type	Prot	NA	Perm	Prot	Prot	NA	Perm	Split	NA	Perm	Split	NA
Protected Phases	5	2		1	1	6		8	8		7	7
Permitted Phases			2				6			8		

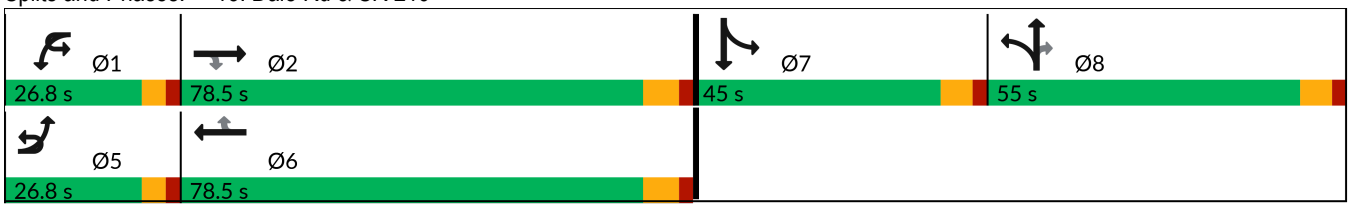


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	10
Future Volume (vph)	10
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.93
Adj. Flow (vph)	11
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	
Permitted Phases	

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Detector Phase	5	2	2	1	1	6	6	8	8	8	7	7
Switch Phase												
Minimum Initial (s)	6.0	11.0	11.0	6.0	6.0	11.0	11.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.8	41.5	41.5	11.8	11.8	37.5	37.5	55.0	55.0	55.0	15.0	15.0
Total Split (s)	26.8	78.5	78.5	26.8	26.8	78.5	78.5	55.0	55.0	55.0	45.0	45.0
Total Split (%)	13.1%	38.2%	38.2%	13.1%	13.1%	38.2%	38.2%	26.8%	26.8%	26.8%	21.9%	21.9%
Maximum Green (s)	21.0	71.0	71.0	21.0	21.0	71.0	71.0	48.0	48.0	48.0	38.0	38.0
Yellow Time (s)	3.8	5.5	5.5	3.8	3.8	5.5	5.5	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	7.5	7.5		5.8	7.5	7.5	7.0	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	4.5	4.5	3.0	3.0	4.5	4.5	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	None	Min	Min	None	None	None	None	None
Walk Time (s)		5.0	5.0			5.0	5.0	5.0	5.0	5.0		
Flash Don't Walk (s)		29.0	29.0			25.0	25.0	43.0	43.0	43.0		
Pedestrian Calls (#/hr)		0	0			0	0	0	0	0		
Act Effct Green (s)	7.0	40.1	40.1		16.8	58.4	58.4	35.1	35.1	35.1	27.4	27.4
Actuated g/C Ratio	0.05	0.27	0.27		0.11	0.39	0.39	0.24	0.24	0.24	0.19	0.19
v/c Ratio	0.13	0.62	0.48		0.64	0.34	0.14	0.40	0.76	0.54	0.76	0.76
Control Delay (s/veh)	83.9	50.9	7.2		74.9	34.4	9.1	50.9	66.9	17.9	76.3	75.1
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	83.9	50.9	7.2		74.9	34.4	9.1	50.9	66.9	17.9	76.3	75.1
LOS	F	D	A		E	C	A	D	E	B	E	E
Approach Delay (s/veh)		39.6				41.9			46.4			75.7
Approach LOS		D				D			D			E

Intersection Summary			
Area Type:	Other		
Cycle Length: 205.3			
Actuated Cycle Length: 147.9			
Natural Cycle: 135			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay (s/veh): 47.0		Intersection LOS: D	
Intersection Capacity Utilization 74.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 13: Dale Rd & SR 219





Lane Group	SBR
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	
Recall Mode	
Walk Time (s)	
Flash Don't Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	

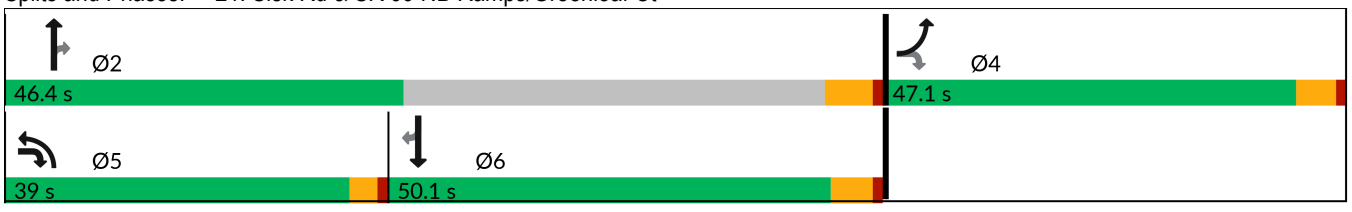
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	0	530	0	0	5	670	380	10	0	730	55
Future Volume (vph)	110	0	530	0	0	5	670	380	10	0	730	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	285		0	0		0	400		300	0		245
Storage Lanes	1		2	0		1	2		1	0		2
Taper Length (ft)	70			25			85			25		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98			
Frt			0.850			0.865			0.850			0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1787	0	2814	0	0	1627	3467	3574	1599	0	3574	1599
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1787	0	2814	0	0	1627	3467	3574	1563	0	3574	1599
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			90			545						57
Link Speed (mph)		35			25			45			35	
Link Distance (ft)		1576			591			734			1443	
Travel Time (s)		30.7			16.1			11.1			28.1	
Confl. Peds. (#/hr)									3			
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
Adj. Flow (vph)	113	0	546	0	0	5	691	392	10	0	753	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	113	0	546	0	0	5	691	392	10	0	753	57
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			48			36	
Link Offset(ft)		0			100			0			0	
Crosswalk Width(ft)		16			16			16			25	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1		2	1	1	2	1		2	1
Detector Template	Left	Thru	Right		Thru	Right	Left	Thru	Right		Thru	Right
Leading Detector (ft)	20	100	20		100	20	20	100	20		100	20
Trailing Detector (ft)	0	0	0		0	0	0	0	0		0	0
Detector 1 Position(ft)	0		0			0	0	0	0		0	0
Detector 1 Size(ft)	20		20			20	20	6	20		6	20
Detector 1 Type	Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0			0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0		0.0			0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0		0.0			0.0	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Prot		pm+ov			Free	Prot	NA	Perm		NA	Perm

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	4		5				5	2			6	
Permitted Phases			4			Free			2			6
Detector Phase	4		5				5	2	2		6	6
Switch Phase												
Minimum Initial (s)	17.0		10.0				10.0	10.0	10.0		15.0	15.0
Minimum Split (s)	22.1		14.0				14.0	15.8	15.8		20.1	20.1
Total Split (s)	47.1		39.0				39.0	46.4	46.4		50.1	50.1
Total Split (%)	34.6%		28.6%				28.6%	34.1%	34.1%		36.8%	36.8%
Maximum Green (s)	42.0		35.0				35.0	40.6	40.6		45.0	45.0
Yellow Time (s)	4.1		3.0				3.0	4.8	4.8		4.1	4.1
All-Red Time (s)	1.0		1.0				1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0				0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.1		4.0				4.0	5.8	5.8		5.1	5.1
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?			Yes				Yes				Yes	Yes
Vehicle Extension (s)	3.6		2.5				2.5	2.8	2.8		3.6	3.6
Recall Mode	None		None				None	Min	Min		Min	Min
Act Effct Green (s)	17.4		46.4			82.1	23.8	53.6	53.6		26.4	26.4
Actuated g/C Ratio	0.21		0.57			1.00	0.29	0.65	0.65		0.32	0.32
v/c Ratio	0.30		0.34			0.00	0.69	0.17	0.01		0.66	0.10
Control Delay (s/veh)	33.9		9.0			0.0	30.1	5.4	4.3		27.3	6.6
Queue Delay	0.0		0.0			0.0	0.0	0.0	0.0		0.0	0.0
Total Delay (s/veh)	33.9		9.0			0.0	30.1	5.4	4.3		27.3	6.6
LOS	C		A			A	C	A	A		C	A
Approach Delay (s/veh)		13.3						21.0			25.9	
Approach LOS		B						C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 136.2			
Actuated Cycle Length: 82.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay (s/veh): 20.5		Intersection LOS: C	
Intersection Capacity Utilization 56.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 21: Sisk Rd & SR 99 NB Ramps/Greenleaf Ct



95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
6. Patterson Rd/SR 108	EBTR	477	211	429
	WBL	525	921	108
	WBT	1,387	1,714	304
	NBR	683	63	134
7. McHenry Ave/SR 108	WBLR	683	181	80
	NBT	693	258	275
	SBT	493	283	318
	SBT	493	270	311
14. Carver Rd/SR 219	EBUL	430	115	62
	EBTR	1,445	222	301
	EBTR	1,445	186	246
	EBTR	580	127	149
	EBR	580	71	59
	WBUL	595	119	134
	WBT	1,236	265	167
	WBT	1,236	297	191
	WBT	1,236	327	209
	WBR	540	20	17
	NBL	260	255	88
	NBTR	1,190	153	170
	SBL	95	30	30
	SBTR	1,325	188	160
15. Tully Rd/SR 219	EBL	715	47	73
	EBTR	1,232	214	292
	EBTR	1,232	210	294
	EBTR	1,232	188	275
	EBR	355	90	68
	WBUL	665	171	146
	WBL	665	180	162
	WBT	1,875	264	198
	WBT	1,875	297	217
	WBT	1,875	323	233
	WBR	415	38	30
	NBL	275	208	138
	NBT	1,296	115	184

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
	NBR	395	61	89
	SBL	300	42	35
	SBTR	1,249	259	198
16. SR 108/SR 219/Claribel Rd	EBUL	765	75	59
	EBL	765	88	65
	EBTR	1,214	194	360
	EBTR	1,214	208	377
	EBTR	1,214	208	394
	EBR	650	151	126
	WBL	960	190	133
	WBL	960	1,267	165
	WBT	1,594	1,670	447
	WBT	1,594	1,632	401
	WBR	75	260	240
	NBL	140	195	260
	NBT	1,398	392	511
	NBT	1,398	396	514
	NBR	210	86	381
	SBL	420	207	628
	SBT	1,240	369	1,427
	SBT	1,240	337	1,306
	SBR	535	91	32
26. Pelandale Ave/SR 108	EBUL	300	171	178
	EBL	793	209	247
	EBT	793	358	468
	EBT	793	317	424
	EBR	380	120	168
	WBL	195	61	60
	WBL	195	77	68
	WBT	610	232	194
	WBT	610	223	186
	WBT	610	201	167
	WBR	320	169	36
	NBUL	325	142	189
	NBL	325	196	543

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
	NBT	776	349	838
	NBT	776	318	781
	NBR	260		449
	SBL	175	85	181
	SBL	175	227	372
	SBT	2,493	434	3,011
	SBTR	2,493	458	3,014

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
9. SR 99 SB Ramps/SR 219	EBT	350	180	122
	EBT	350	225	144
	EBT	248	215	139
	EBTR	248	205	156
	EBR	248	130	101
	WBUL	361	295	166
	WBL	361	304	194
	WBT	361	151	270
	WBT	361	106	257
	SBL	450	318	200
	SBLT	1,118	312	221
	SBR	450	80	104
10. SR 99 NB Ramps/SR 219	EBL	361	190	153
	EBT	361	102	19
	EBT	361	55	14
	EBT	361	77	31
	WBT	360	219	139
	WBT	541	271	240
	WBT	541	429	375
	WBR	541	328	317
	NBLT	1,264	115	206
	NBR	1,264	88	113
	NBR	565	54	89
11. Sisk Rd/SR 219	EBUL	250	87	86
	EBL	327	139	149
	EBL	327	166	173
	EBT	868	333	164
	EBT	868	309	216
	EBT	868	328	243
	EBR	327	14	
	WBUL	735	111	123
	WBT	819	344	263
	WBT	819	362	289
	WBT	819	349	296
	WBR	525	146	68

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
	NBL	555	214	192
	NBT	1,927	248	142
	NBTR	230	239	121
	SBL	505	55	50
	SBT	1,125	314	238
	SBT	1,125	191	105
	SBR	150	129	68
12. Stoddard Rd/SR 219	EBUL	1,000	255	35
	EBL	1,000	272	40
	EBT	2,430	254	571
	EBT	2,430	335	618
	EBT	2,430	363	655
	EBR	620	34	9
	WBL	495	214	79
	WBT	1,265	337	170
	WBT	1,265	375	206
	WBT	1,265	406	241
	WBR	640	167	16
	NBL	70	103	106
	NBTR	652	717	225
	SBL	155	231	30
	SBT	1,766	170	43
	SBR	1,766	162	59
13. Dale Rd/SR 219	EBUL	555	38	33
	EBT	3,798	317	305
	EBT	3,798	340	351
	EBT	3,798	357	363
	EBR	700	277	193
	WBUL	450	217	207
	WBL	450	253	227
	WBT	2,532	389	249
	WBT	2,532	377	228
	WBT	2,532	396	183
	WBR	50	162	85
	NBL	320	419	240

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
	NBL	897	1,141	267
	NBT	897	1,080	483
	NBR	897	1,090	175
	SBL	90	220	216
	SBTR	2,434	2,905	967

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
21. Sisk Rd/SR 99 NB Ramps	EBUL	285	1,578	127
	EBR	1,475	3,112	152
	EBR	1,475	3,153	104
	WBR	508	2	
	NBL	400	157	198
	NBL	400	184	226
	NBT	622	150	44
	NBT	622	165	63
	NBR	300	29	7
	SBT	1,312	155	238
	SBT	245	142	245
	SBR	245		8

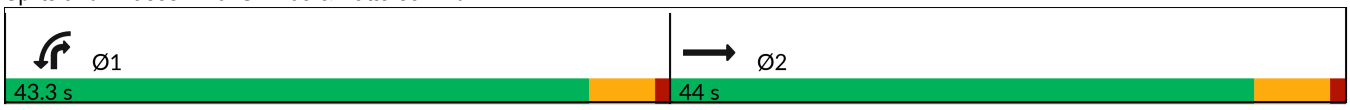
Appendix D. Queuing Analysis Worksheets – Cumulative Plus Project Conditions

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	453	10	236	957	0	101
Future Volume (vph)	453	10	236	957	0	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	525		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			125		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.997					0.865
Flt Protected			0.950			
Satd. Flow (prot)	1787	0	1703	1792	0	1550
Flt Permitted			0.950			
Satd. Flow (perm)	1787	0	1703	1792	0	1550
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	2					257
Link Speed (mph)	35			55	45	
Link Distance (ft)	574			1403	796	
Travel Time (s)	11.2			17.4	12.1	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	482	11	251	1018	0	107
Shared Lane Traffic (%)						
Lane Group Flow (vph)	493	0	251	1018	0	107
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (ft)	100		20	100	20	20
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0		0
Detector 1 Size(ft)	6		20	6		20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0		0.0	0.0		0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA		Over
Protected Phases	2		1	Free		1
Permitted Phases						

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	2		1			1
Switch Phase						
Minimum Initial (s)	8.0		8.0			8.0
Minimum Split (s)	14.0		13.3			13.3
Total Split (s)	44.0		43.3			43.3
Total Split (%)	50.4%		49.6%			49.6%
Maximum Green (s)	38.0		38.0			38.0
Yellow Time (s)	5.0		4.3			4.3
All-Red Time (s)	1.0		1.0			1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	6.0		5.3			5.3
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.2		3.2			3.2
Recall Mode	None		None			None
Act Effct Green (s)	17.7		13.1	42.8		13.1
Actuated g/C Ratio	0.41		0.31	1.00		0.31
v/c Ratio	0.67		0.48	0.57		0.16
Control Delay (s/veh)	15.5		16.8	1.3		0.5
Queue Delay	0.0		0.0	0.0		0.0
Total Delay (s/veh)	15.5		16.8	1.3		0.5
LOS	B		B	A		A
Approach Delay (s/veh)	15.5			4.4	0.5	
Approach LOS	B			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 87.3			
Actuated Cycle Length: 42.8			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay (s/veh): 7.1		Intersection LOS: A	
Intersection Capacity Utilization 53.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: SR 108 & Patterson Rd



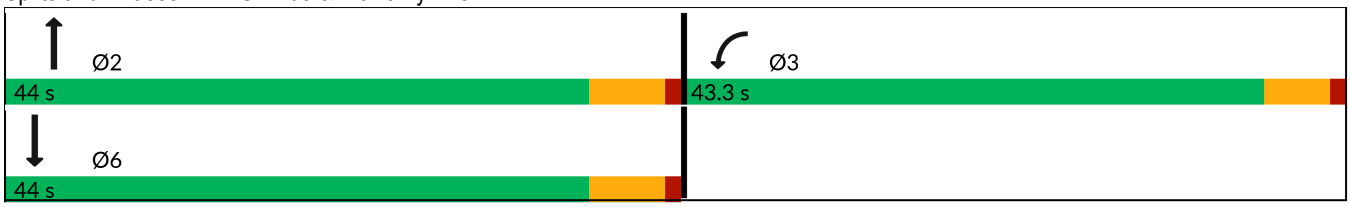


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	236	10	390	101	0	690
Future Volume (vph)	236	10	390	101	0	690
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		475	0	
Storage Lanes	1	0		1	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Frt	0.994			0.850		
Flt Protected	0.954					
Satd. Flow (prot)	1700	0	1792	1524	0	3406
Flt Permitted	0.954					
Satd. Flow (perm)	1700	0	1792	1524	0	3406
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	3			107		
Link Speed (mph)	45		55			55
Link Distance (ft)	796		700			570
Travel Time (s)	12.1		8.7			7.1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	251	11	415	107	0	734
Shared Lane Traffic (%)						
Lane Group Flow (vph)	262	0	415	107	0	734
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1		2	1		2
Detector Template	Left		Thru	Right		Thru
Leading Detector (ft)	20		100	20		100
Trailing Detector (ft)	0		0	0		0
Detector 1 Position(ft)	0		0	0		0
Detector 1 Size(ft)	20		6	20		6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0		0.0	0.0		0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot		NA	Free		NA
Protected Phases	3		2			6
Permitted Phases				Free		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	3		2			6
Switch Phase						
Minimum Initial (s)	8.0		8.0			8.0
Minimum Split (s)	13.3		14.0			14.0
Total Split (s)	43.3		44.0			44.0
Total Split (%)	49.6%		50.4%			50.4%
Maximum Green (s)	38.0		38.0			38.0
Yellow Time (s)	4.3		5.0			5.0
All-Red Time (s)	1.0		1.0			1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.3		6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.2		3.2			3.2
Recall Mode	None		None			None
Act Effct Green (s)	12.5		15.4	39.7		15.4
Actuated g/C Ratio	0.31		0.39	1.00		0.39
v/c Ratio	0.49		0.60	0.07		0.56
Control Delay (s/veh)	15.1		14.3	0.1		11.6
Queue Delay	0.0		0.0	0.0		0.0
Total Delay (s/veh)	15.1		14.3	0.1		11.6
LOS	B		B	A		B
Approach Delay (s/veh)	15.1		11.4			11.6
Approach LOS	B		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 87.3			
Actuated Cycle Length: 39.7			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay (s/veh): 12.1		Intersection LOS: B	
Intersection Capacity Utilization 43.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 7: SR 108 & McHenry Ave



Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	10	60	855	169	10	65	1378	10	286	120	70	10
Future Volume (vph)	10	60	855	169	10	65	1378	10	286	120	70	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		430		580		595		540	260		0	95
Storage Lanes		1		2		1		1	1		0	1
Taper Length (ft)		110				90			115			115
Lane Util. Factor	0.91	1.00	0.91	1.00	0.91	1.00	0.91	1.00	1.00	1.00	1.00	1.00
Frt				0.850				0.850		0.945		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	1719	4940	1538	0	1719	4940	1538	1719	1710	0	1719
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	1719	4940	1538	0	1719	4940	1538	1719	1710	0	1719
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				186				41		11		
Link Speed (mph)			55				55			35		
Link Distance (ft)			1479				1299			1261		
Travel Time (s)			18.3				16.1			24.6		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	11	66	940	186	11	71	1514	11	314	132	77	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	77	940	186	0	82	1514	11	314	209	0	11
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			12				12			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			16				16			16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2		1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)		20	100	20		20	100	20	20	100		20
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0		0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA		Prot
Protected Phases	5	5	2		1	1	6		3	8		7

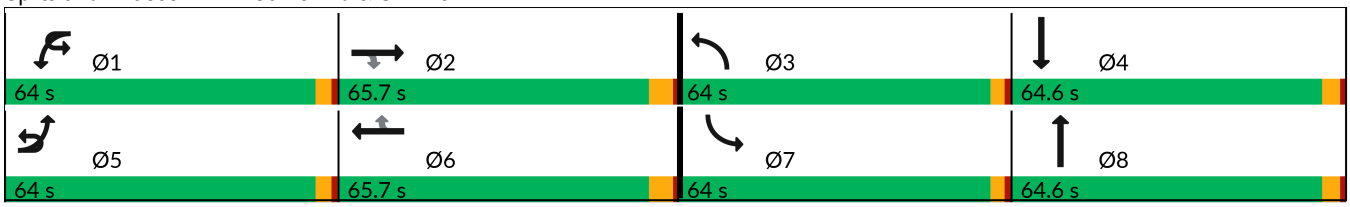


Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	130	45
Future Volume (vph)	130	45
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	1.00	1.00
Frt	0.962	
Flt Protected		
Satd. Flow (prot)	1741	0
Flt Permitted		
Satd. Flow (perm)	1741	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	6	
Link Speed (mph)	35	
Link Distance (ft)	1396	
Travel Time (s)	27.2	
Peak Hour Factor	0.91	0.91
Heavy Vehicles (%)	5%	5%
Adj. Flow (vph)	143	49
Shared Lane Traffic (%)		
Lane Group Flow (vph)	192	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane	Yes	
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	
Detector Template	Thru	
Leading Detector (ft)	100	
Trailing Detector (ft)	0	
Detector 1 Position(ft)	0	
Detector 1 Size(ft)	6	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	
Protected Phases	4	

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Permitted Phases				2				6				
Detector Phase	5	5	2	2	1	1	6	6	3	8		7
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	14.0	14.0	15.7	15.7	14.0	14.0	15.7	15.7	14.0	14.5		14.0
Total Split (s)	64.0	64.0	65.7	65.7	64.0	64.0	65.7	65.7	64.0	64.6		64.0
Total Split (%)	24.8%	24.8%	25.4%	25.4%	24.8%	24.8%	25.4%	25.4%	24.8%	25.0%		24.8%
Maximum Green (s)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.1		60.0
Yellow Time (s)	3.0	3.0	4.7	4.7	3.0	3.0	4.7	4.7	3.0	3.5		3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		4.0	5.7	5.7		4.0	5.7	5.7	4.0	4.5		4.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	2.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0		1.0
Recall Mode	None	None	Min	Min	None	None	Min	Min	None	None		None
Act Effct Green (s)		12.1	60.5	60.5		12.4	60.8	60.8	31.2	52.0		10.1
Actuated g/C Ratio		0.08	0.42	0.42		0.09	0.42	0.42	0.22	0.36		0.07
v/c Ratio		0.54	0.45	0.25		0.56	0.73	0.02	0.85	0.34		0.09
Control Delay (s/veh)		81.2	33.3	5.3		81.6	39.7	0.0	75.6	34.0		72.6
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		81.2	33.3	5.3		81.6	39.7	0.0	75.6	34.0		72.6
LOS		F	C	A		F	D	A	E	C		E
Approach Delay (s/veh)			32.0				41.6			59.0		
Approach LOS			C				D			E		

Intersection Summary			
Area Type:	Other		
Cycle Length: 258.3			
Actuated Cycle Length: 144.3			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay (s/veh): 42.8		Intersection LOS: D	
Intersection Capacity Utilization 75.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 14: Carver Rd & SR 219





Lane Group	SBT	SBR
Permitted Phases		
Detector Phase	4	
Switch Phase		
Minimum Initial (s)	10.0	
Minimum Split (s)	14.6	
Total Split (s)	64.6	
Total Split (%)	25.0%	
Maximum Green (s)	60.0	
Yellow Time (s)	3.6	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	4.6	
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	2.0	
Recall Mode	None	
Act Effct Green (s)	21.6	
Actuated g/C Ratio	0.15	
v/c Ratio	0.72	
Control Delay (s/veh)	73.7	
Queue Delay	0.0	
Total Delay (s/veh)	73.7	
LOS	E	
Approach Delay (s/veh)	73.7	
Approach LOS	E	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	25	752	153	10	230	1179	10	219	120	110	15	200
Future Volume (vph)	25	752	153	10	230	1179	10	219	120	110	15	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	715		355		665		415	275		395	300	
Storage Lanes	1		1		2		1	1		1	1	
Taper Length (ft)	95				190			120			100	
Lane Util. Factor	1.00	0.91	1.00	0.91	0.97	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor										0.99		
Frt			0.850				0.850			0.850		0.959
Flt Protected	0.950				0.950			0.950			0.950	
Satd. Flow (prot)	1736	4988	1553	0	3367	4988	1553	1736	1827	1553	1736	1752
Flt Permitted	0.950				0.950			0.950			0.950	
Satd. Flow (perm)	1736	4988	1553	0	3367	4988	1553	1736	1827	1532	1736	1752
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)			137				82			121		6
Link Speed (mph)		55				55			35			35
Link Distance (ft)		1306				1950			1372			1326
Travel Time (s)		16.2				24.2			26.7			25.8
Confl. Peds. (#/hr)										1		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	27	826	168	11	253	1296	11	241	132	121	16	220
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	826	168	0	264	1296	11	241	132	121	16	302
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)		24				24			12			12
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		16				16			16			16
Two way Left Turn Lane									Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Number of Detectors	1	2	1		1	2	1	1	2	1	1	2
Detector Template	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left	Thru
Leading Detector (ft)	20	100	20		20	100	20	20	100	20	20	100
Trailing Detector (ft)	0	0	0		0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0		0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20		20	6	20	20	6	20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94				94			94			94
Detector 2 Size(ft)		6				6			6			6
Detector 2 Type		Cl+Ex				Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0				0.0			0.0			0.0

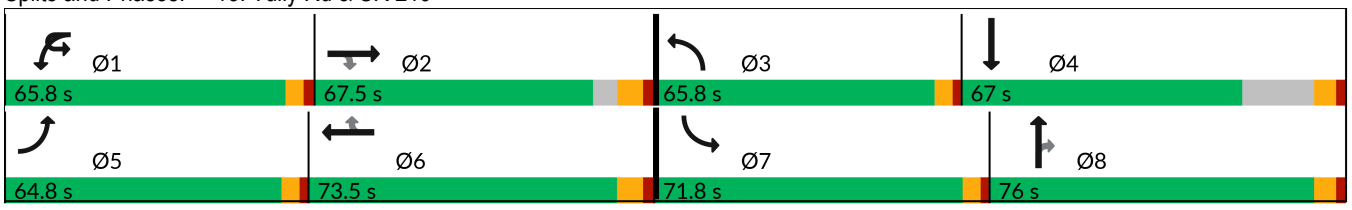


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	75
Future Volume (vph)	75
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	
Lane Util. Factor	1.00
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	0.91
Heavy Vehicles (%)	4%
Adj. Flow (vph)	82
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Turn Type	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	5	2		1	1	6		3	8		7	4
Permitted Phases			2				6			8		
Detector Phase	5	2	2	1	1	6	6	3	8	8	7	4
Switch Phase												
Minimum Initial (s)	9.0	10.0	10.0	10.0	10.0	16.0	16.0	10.0	19.0	19.0	16.0	10.0
Minimum Split (s)	14.8	17.5	17.5	15.8	15.8	23.5	23.5	15.8	26.0	26.0	21.8	17.0
Total Split (s)	64.8	67.5	67.5	65.8	65.8	73.5	73.5	65.8	76.0	76.0	71.8	67.0
Total Split (%)	22.6%	23.6%	23.6%	23.0%	23.0%	25.7%	25.7%	23.0%	26.6%	26.6%	25.1%	23.4%
Maximum Green (s)	59.0	60.0	60.0	60.0	60.0	66.0	66.0	60.0	69.0	69.0	66.0	60.0
Yellow Time (s)	3.8	5.5	5.5	3.8	3.8	5.5	5.5	3.8	5.0	5.0	3.8	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	7.5	7.5		5.8	7.5	7.5	5.8	7.0	7.0	5.8	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	1.0	2.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0
Recall Mode	None	Min	Min	None	None	Min	Min	None	None	None	None	None
Act Effct Green (s)	9.4	54.7	54.7		18.2	67.3	67.3	28.5	56.8	56.8	16.4	34.3
Actuated g/C Ratio	0.06	0.34	0.34		0.11	0.41	0.41	0.18	0.35	0.35	0.10	0.21
v/c Ratio	0.27	0.49	0.27		0.70	0.63	0.02	0.79	0.21	0.20	0.09	0.81
Control Delay (s/veh)	88.8	47.4	13.0		82.1	42.9	0.0	84.5	39.9	6.3	77.2	77.6
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	88.8	47.4	13.0		82.1	42.9	0.0	84.5	39.9	6.3	77.2	77.6
LOS	F	D	B		F	D	A	F	D	A	E	E
Approach Delay (s/veh)		42.8				49.2			53.4			77.6
Approach LOS		D				D			D			E

Intersection Summary			
Area Type:	Other		
Cycle Length: 286.1			
Actuated Cycle Length: 162.4			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay (s/veh): 50.5		Intersection LOS: D	
Intersection Capacity Utilization 81.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 15: Tully Rd & SR 219





Lane Group	SBR
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	

Intersection Summary

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	10	81	567	229	290	1127	160	166	360	140	150	650
Future Volume (vph)	10	81	567	229	290	1127	160	166	360	140	150	650
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		765		650	960		75	140		210	420	
Storage Lanes		2		1	2		1	1		1	1	
Taper Length (ft)		255			255			80			115	
Lane Util. Factor	0.91	0.97	0.91	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor				0.98								
Frt				0.850			0.850			0.850		
Flt Protected		0.950			0.950			0.950			0.950	
Satd. Flow (prot)	0	3335	4940	1538	3335	3438	1538	1719	3438	1538	1719	3438
Flt Permitted		0.950			0.950			0.950			0.950	
Satd. Flow (perm)	0	3335	4940	1503	3335	3438	1538	1719	3438	1538	1719	3438
Right Turn on Red				Yes			Yes			Yes		
Satd. Flow (RTOR)				252			90			154		
Link Speed (mph)			55			55			35			45
Link Distance (ft)			1337			1655			1505			1304
Travel Time (s)			16.6			20.5			29.3			19.8
Confl. Peds. (#/hr)				8								
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	11	89	623	252	319	1238	176	182	396	154	165	714
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	100	623	252	319	1238	176	182	396	154	165	714
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			24			24			12			12
Link Offset(ft)			0			0			0			0
Crosswalk Width(ft)			16			16			16			16
Two way Left Turn Lane												Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors		1	2	1	1	2	1	1	2	1	1	2
Detector Template		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru
Leading Detector (ft)		20	100	20	20	100	20	20	100	20	20	100
Trailing Detector (ft)		0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)		0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)		20	6	20	20	6	20	20	6	20	20	6
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94			94			94
Detector 2 Size(ft)			6			6			6			6
Detector 2 Type			Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0			0.0			0.0

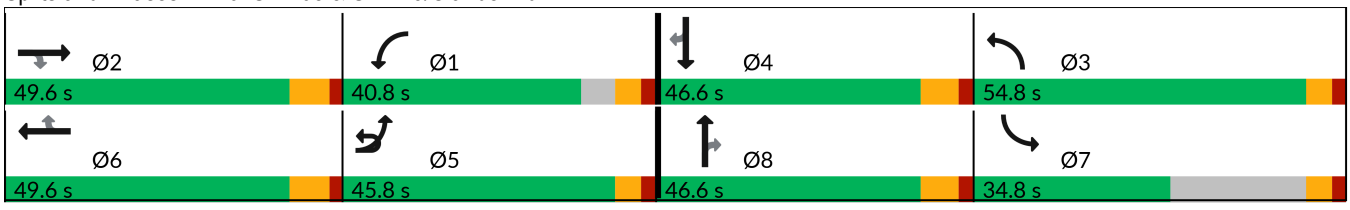


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	116
Future Volume (vph)	116
Ideal Flow (vphpl)	1900
Storage Length (ft)	535
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Ped Bike Factor	
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1538
Flt Permitted	
Satd. Flow (perm)	1538
Right Turn on Red	Yes
Satd. Flow (RTOR)	127
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	0.91
Heavy Vehicles (%)	5%
Adj. Flow (vph)	127
Shared Lane Traffic (%)	
Lane Group Flow (vph)	127
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Turn Type	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	5	5	2		1	6		3	8		7	4
Permitted Phases				2			6			8		
Detector Phase	5	5	2	2	1	6	6	3	8	8	7	4
Switch Phase												
Minimum Initial (s)	15.0	15.0	12.0	12.0	15.0	12.0	12.0	14.0	14.0	14.0	14.0	14.0
Minimum Split (s)	20.8	20.8	50.6	50.6	20.8	55.6	55.6	19.8	58.6	58.6	19.8	60.6
Total Split (s)	45.8	45.8	49.6	49.6	40.8	49.6	49.6	54.8	46.6	46.6	34.8	46.6
Total Split (%)	23.3%	23.3%	25.2%	25.2%	20.7%	25.2%	25.2%	27.8%	23.7%	23.7%	17.7%	23.7%
Maximum Green (s)	40.0	40.0	42.0	42.0	35.0	42.0	42.0	49.0	39.0	39.0	29.0	39.0
Yellow Time (s)	3.8	3.8	5.6	5.6	3.8	5.6	5.6	3.8	5.6	5.6	3.8	5.6
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.8	7.6	7.6	5.8	7.6	7.6	5.8	7.6	7.6	5.8	7.6
Lead/Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.5	2.5	2.1	2.1	2.5	2.0	2.0	2.5	3.6	3.6	2.5	2.3
Recall Mode	None	None	Min	Min	None	Min	Min	None	None	None	None	None
Walk Time (s)			7.0	7.0		7.0	7.0		7.0	7.0		7.0
Flash Don't Walk (s)			35.0	35.0		41.0	41.0		44.0	44.0		46.0
Pedestrian Calls (#/hr)			8	8		0	0		0	0		0
Act Effct Green (s)		16.9	25.2	25.2	33.9	42.2	42.2	20.6	23.5	23.5	36.2	39.1
Actuated g/C Ratio		0.12	0.17	0.17	0.23	0.29	0.29	0.14	0.16	0.16	0.25	0.27
v/c Ratio		0.26	0.73	0.54	0.41	1.25	0.35	0.75	0.71	0.41	0.39	0.77
Control Delay (s/veh)		61.2	62.1	9.8	52.1	161.4	22.8	79.5	65.7	10.9	50.3	56.6
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		61.2	62.1	9.8	52.1	161.4	22.8	79.5	65.7	10.9	50.3	56.6
LOS		E	E	A	D	F	C	E	E	B	D	E
Approach Delay (s/veh)			48.5			127.2			57.6			49.5
Approach LOS			D			F			E			D

Intersection Summary			
Area Type:	Other		
Cycle Length: 196.8			
Actuated Cycle Length: 145.7			
Natural Cycle: 160			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.25			
Intersection Signal Delay (s/veh): 80.9		Intersection LOS: F	
Intersection Capacity Utilization 95.6%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 16: SR 108 & SR 219/Claribel Rd





Lane Group	SBR
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Detector Phase	4
Switch Phase	
Minimum Initial (s)	14.0
Minimum Split (s)	60.6
Total Split (s)	46.6
Total Split (%)	23.7%
Maximum Green (s)	39.0
Yellow Time (s)	5.6
All-Red Time (s)	2.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	7.6
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	2.3
Recall Mode	None
Walk Time (s)	7.0
Flash Don't Walk (s)	46.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	39.1
Actuated g/C Ratio	0.27
v/c Ratio	0.25
Control Delay (s/veh)	8.4
Queue Delay	0.0
Total Delay (s/veh)	8.4
LOS	A
Approach Delay (s/veh)	
Approach LOS	

Intersection Summary

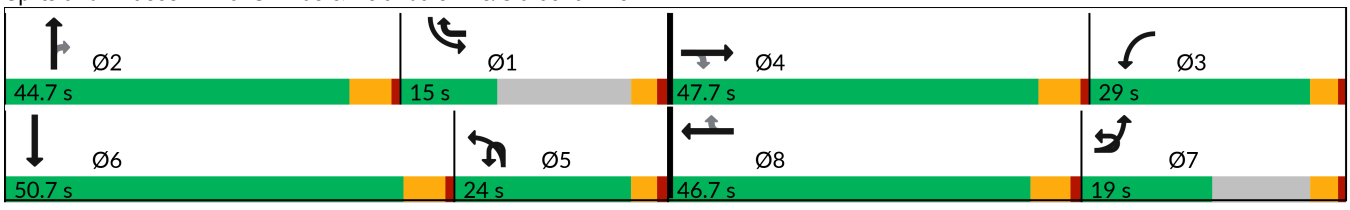
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	20	240	615	226	65	650	300	5	160	656	35	103
Future Volume (vph)	20	240	615	226	65	650	300	5	160	656	35	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		300		380	195		320		325		260	175
Storage Lanes		1		1	2		1		2		1	2
Taper Length (ft)		150			150				105			95
Lane Util. Factor	0.95	0.97	0.95	1.00	0.97	0.91	1.00	0.95	0.97	0.95	1.00	0.97
Ped Bike Factor							0.99					
Frt				0.850			0.850				0.850	
Flt Protected		0.950			0.950				0.950			0.950
Satd. Flow (prot)	0	3400	3505	1568	3400	5036	1568	0	3400	3505	1568	3400
Flt Permitted		0.950			0.950				0.950			0.950
Satd. Flow (perm)	0	3400	3505	1568	3400	5036	1547	0	3400	3505	1568	3400
Right Turn on Red				Yes			Yes				Yes	
Satd. Flow (RTOR)				248			71				118	
Link Speed (mph)			45			45				35		
Link Distance (ft)			850			721				829		
Travel Time (s)			12.9			10.9				16.1		
Confl. Peds. (#/hr)							1					
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	22	264	676	248	71	714	330	5	176	721	38	113
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	286	676	248	71	714	330	0	181	721	38	113
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	Left
Median Width(ft)			24			24				24		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	9	15		9	15
Number of Detectors		1	2	1	1	2	1		1	2	1	1
Detector Template		Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left
Leading Detector (ft)		20	100	20	20	100	20		20	100	20	20
Trailing Detector (ft)		0	0	0	0	0	0		0	0	0	0
Detector 1 Position(ft)		0	0	0	0	0	0		0	0	0	0
Detector 1 Size(ft)		20	6	20	20	6	20		20	6	20	20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94				94		
Detector 2 Size(ft)			6			6				6		
Detector 2 Type			Cl+Ex			Cl+Ex				Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0				0.0		

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	696	110
Future Volume (vph)	696	110
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	0.95	0.95
Ped Bike Factor	1.00	
Frt	0.980	
Flt Protected		
Satd. Flow (prot)	3426	0
Flt Permitted		
Satd. Flow (perm)	3426	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	12	
Link Speed (mph)	35	
Link Distance (ft)	2588	
Travel Time (s)	50.4	
Confl. Peds. (#/hr)		3
Peak Hour Factor	0.91	0.91
Heavy Vehicles (%)	3%	3%
Adj. Flow (vph)	765	121
Shared Lane Traffic (%)		
Lane Group Flow (vph)	886	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	24	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	
Detector Template	Thru	
Leading Detector (ft)	100	
Trailing Detector (ft)	0	
Detector 1 Position(ft)	0	
Detector 1 Size(ft)	6	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Turn Type	Prot	Prot	NA	Perm	Prot	NA	pm+ov	Prot	Prot	NA	Perm	Prot
Protected Phases	7	7	4		3	8	1	5	5	2		1
Permitted Phases				4			8				2	
Detector Phase	7	7	4	4	3	8	1	5	5	2	2	1
Switch Phase												
Minimum Initial (s)	10.0	10.0	15.0	15.0	25.0	10.0	10.0	10.0	10.0	25.0	25.0	10.0
Minimum Split (s)	14.0	14.0	47.7	47.7	29.0	46.7	14.0	14.0	14.0	44.7	44.7	14.0
Total Split (s)	19.0	19.0	47.7	47.7	29.0	46.7	15.0	24.0	24.0	44.7	44.7	15.0
Total Split (%)	12.5%	12.5%	31.5%	31.5%	19.2%	30.8%	9.9%	15.9%	15.9%	29.5%	29.5%	9.9%
Maximum Green (s)	15.0	15.0	42.0	42.0	25.0	41.0	11.0	20.0	20.0	39.0	39.0	11.0
Yellow Time (s)	3.0	3.0	4.7	4.7	3.0	4.7	3.0	3.0	3.0	4.7	4.7	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		4.0	5.7	5.7	4.0	5.7	4.0		4.0	5.7	5.7	4.0
Lead/Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.5	2.5	2.0	2.5	2.3	2.2	2.2	3.0	3.0	2.3
Recall Mode	None	None	None	None	Min	None	Min	None	None	Min	Min	Min
Walk Time (s)			10.0	10.0		10.0				5.0	5.0	
Flash Don't Walk (s)			32.0	32.0		31.0				34.0	34.0	
Pedestrian Calls (#/hr)			0	0		1				0	0	
Act Effct Green (s)		30.7	31.1	31.1	25.4	25.8	45.7		12.1	32.7	32.7	18.2
Actuated g/C Ratio		0.24	0.24	0.24	0.20	0.20	0.36		0.10	0.26	0.26	0.14
v/c Ratio		0.35	0.79	0.43	0.10	0.70	0.55		0.56	0.80	0.08	0.23
Control Delay (s/veh)		44.4	52.6	7.1	46.8	51.1	26.3		64.1	52.5	0.3	52.0
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)		44.4	52.6	7.1	46.8	51.1	26.3		64.1	52.5	0.3	52.0
LOS		D	D	A	D	D	C		E	D	A	D
Approach Delay (s/veh)			41.3			43.5				52.6		
Approach LOS			D			D				D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 151.4			
Actuated Cycle Length: 127.1			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay (s/veh): 46.4		Intersection LOS: D	
Intersection Capacity Utilization 79.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 26: SR 108 & Pelandale Ave/Claratina Ave





Lane Group	SBT	SBR
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Detector Phase	6	
Switch Phase		
Minimum Initial (s)	20.0	
Minimum Split (s)	50.7	
Total Split (s)	50.7	
Total Split (%)	33.5%	
Maximum Green (s)	45.0	
Yellow Time (s)	4.7	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	5.7	
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	
Recall Mode	Min	
Walk Time (s)	10.0	
Flash Don't Walk (s)	10.0	
Pedestrian Calls (#/hr)	3	
Act Effct Green (s)	38.7	
Actuated g/C Ratio	0.30	
v/c Ratio	0.84	
Control Delay (s/veh)	49.8	
Queue Delay	0.0	
Total Delay (s/veh)	49.8	
LOS	D	
Approach Delay (s/veh)	50.0	
Approach LOS	D	

Intersection Summary

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
6. Patterson Rd/SR 108	EBTR	477	216	443
	WBL	525	919	324
	WBT	1,387	1,687	855
	NBR	683	63	145
7. McHenry Ave/SR 108	WBLR	683	174	86
	NBT	693	247	274
	SBT	493	278	280
	SBT	493	268	271
14. Carver Rd/SR 219	EBUL	430	120	66
	EBTR	1,445	269	357
	EBTR	1,445	233	282
	EBTR	580	165	189
	EBR	580	83	63
	WBUL	595	127	143
	WBT	1,236	294	186
	WBT	1,236	327	204
	WBT	1,236	358	217
	WBR	540	22	16
	NBL	260	303	124
	NBTR	1,190	191	163
	SBL	95	42	38
	SBTR	1,325	182	185
15. Tully Rd/SR 219	EBL	715	58	67
	EBTR	1,232	248	334
	EBTR	1,232	249	340
	EBTR	1,232	232	307
	EBR	355	111	77
	WBUL	665	157	137
	WBL	665	171	153
	WBT	1,874	288	227
	WBT	1,874	318	245
	WBT	1,874	342	263
	WBR	415	33	25
	NBL	275	253	193
	NBT	1,296	154	201

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
	NBR	395	61	96
	SBL	300	40	41
	SBTR	1,249	291	203
16. SR 108/SR 219/Claribel Rd	EBUL	765	80	64
	EBL	765	101	72
	EBTR	1,249	226	394
	EBTR	1,249	232	411
	EBTR	1,249	237	417
	EBR	650	184	146
	WBL	960	181	144
	WBL	960	1,668	170
	WBT	1,594	1,976	509
	WBT	1,594	1,974	469
	WBR	75	267	249
	NBL	140	231	255
	NBT	1,401	438	528
	NBT	1,401	414	527
	NBR	210	94	372
	SBL	420	223	637
	SBT	1,240	381	1,404
	SBT	1,240	345	1,288
	SBR	535	93	36
26. Pelandale Ave/SR 108	EBUL	300	166	166
	EBL	793	203	236
	EBT	793	360	490
	EBT	793	323	435
	EBR	380	130	206
	WBL	195	63	61
	WBL	195	78	74
	WBT	640	249	206
	WBT	640	236	194
	WBT	640	218	166
	WBR	320	196	31
	NBUL	325	139	161
	NBL	325	208	571

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
	NBT	776	386	950
	NBT	776	350	948
	NBR	260	51	501
	SBL	175	108	185
	SBL	175	219	364
	SBT	2,488	428	2,994
	SBTR	2,488	452	2,994

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
9. SR 99 SB Ramps/SR 219	EBT	350	174	131
	EBT	350	218	151
	EBT	248	219	154
	EBTR	248	206	164
	EBR	248	128	103
	WBUL	361	415	237
	WBL	361	417	252
	WBT	361	216	316
	WBT	361	191	314
	SBL	450	335	206
	SBLT	1,118	326	221
	SBR	450	99	117
10. SR 99 NB Ramps/SR 219	EBL	361	187	159
	EBT	361	97	16
	EBT	361	53	15
	EBT	361	79	23
	WBT	360	339	166
	WBT	868	500	255
	WBT	868	589	359
	WBR	1,013	466	301
	NBLT	1,264	113	248
	NBR	1,264	126	141
	NBR	565	85	113
11. Sisk Rd/SR 219	EBUL	250	89	86
	EBL	327	144	138
	EBL	327	165	161
	EBT	868	375	198
	EBT	868	338	233
	EBT	654	440	267
	EBR			
	WBUL	735	117	126
	WBT	819	376	306
	WBT	819	395	332
	WBT	819	389	332
	WBR	525	146	64

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
	NBL	555	211	209
	NBT	1,927	261	140
	NBTR	230	250	125
	SBL	505	57	49
	SBT	1,125	361	242
	SBR	1,125	212	93
	SBR	150	154	58
12. Stoddard Rd/SR 219	EBUL	1,000	282	35
	EBL	1,000	304	59
	EBT	1,611	304	230
	EBT	1,611	357	257
	EBT	1,611	386	278
	EBR	620	39	19
	WBL	495	209	84
	WBT	1,265	337	204
	WBT	1,265	377	229
	WBT	1,265	403	253
	WBR	640	167	38
	NBL	70	110	112
	NBTR	652	819	241
	SBL	155	224	29
	SBT	1,766	185	49
	SBR	1,766	163	71
13. Dale Rd/SR 219	EBUL	555	822	570
	EBT	816	933	464
	EBT	816	622	429
	EBT	816	338	413
	EBR	700	171	101
	WBUL	450	420	244
	WBL	450	446	273
	WBT	2,532	513	336
	WBT	2,532	523	325
	WBT	2,532	553	346
	WBR	500	425	148
	NBL	320	447	489

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
	NBL	897	1,028	1,156
	NBT	897	940	1,095
	NBR	897	1,050	1,144
	SBL	300	577	555
	SBTR	486	578	578
28. Southwest Drwy/SR 219	EBL	300	174	127
	EBT	2,074	165	141
	EBT	2,074	258	181
	EBT	2,074	308	223
	WBT	783	213	160
	WBT	783	217	153
	WBT	783	229	142
	WBR	500	49	45
	SBL	100	68	77
	SBR	666	46	48

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
21. Sisk Rd/SR 99 NB Ramps	EBUL	285	1,642	135
	EBR	1,475	3,102	163
	EBR	1,475	3,133	117
	WBR			
	NBL	400	157	205
	NBL	400	184	238
	NBT	622	155	52
	NBT	622	171	68
	NBR	300	30	5
	SBT	1,312	174	236
	SBT	245	143	230
	SBR	245	0	9

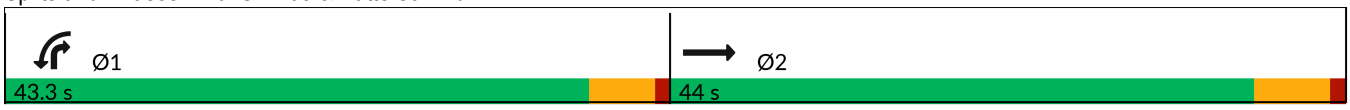
Appendix E. Queuing Analysis Worksheets – Existing Plus Project Conditions with Improvements

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	280	0	291	648	0	151
Future Volume (vph)	280	0	291	648	0	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	525		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			125		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.865
Flt Protected			0.950			
Satd. Flow (prot)	1792	0	1703	1792	0	1550
Flt Permitted			0.950			
Satd. Flow (perm)	1792	0	1703	1792	0	1550
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						452
Link Speed (mph)	35			55	45	
Link Distance (ft)	574			1403	796	
Travel Time (s)	11.2			17.4	12.1	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	298	0	310	689	0	161
Shared Lane Traffic (%)						
Lane Group Flow (vph)	298	0	310	689	0	161
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (ft)	100		20	100	20	20
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0		0
Detector 1 Size(ft)	6		20	6		20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0		0.0	0.0		0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA		Over
Protected Phases	2		1	Free		1
Permitted Phases						

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	2		1			1
Switch Phase						
Minimum Initial (s)	8.0		8.0			8.0
Minimum Split (s)	14.0		13.3			13.3
Total Split (s)	44.0		43.3			43.3
Total Split (%)	50.4%		49.6%			49.6%
Maximum Green (s)	38.0		38.0			38.0
Yellow Time (s)	5.0		4.3			4.3
All-Red Time (s)	1.0		1.0			1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	6.0		5.3			5.3
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.2		3.2			3.2
Recall Mode	None		None			None
Act Effct Green (s)	12.2		12.8	36.8		12.8
Actuated g/C Ratio	0.33		0.35	1.00		0.35
v/c Ratio	0.50		0.52	0.38		0.19
Control Delay (s/veh)	13.8		13.6	0.6		0.5
Queue Delay	0.0		0.0	0.0		0.0
Total Delay (s/veh)	13.8		13.6	0.6		0.5
LOS	B		B	A		A
Approach Delay (s/veh)	13.8			4.7	0.5	
Approach LOS	B			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 87.3			
Actuated Cycle Length: 36.8			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay (s/veh): 6.1		Intersection LOS: A	
Intersection Capacity Utilization 40.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: SR 108 & Patterson Rd



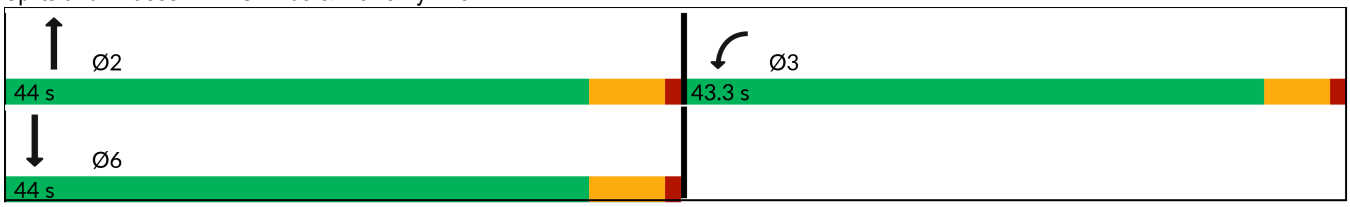


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	290	1	307	151	0	525
Future Volume (vph)	290	1	307	151	0	525
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		475	0	
Storage Lanes	1	0		1	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Frt				0.850		
Flt Protected	0.953					
Satd. Flow (prot)	1708	0	1792	1524	0	3406
Flt Permitted	0.953					
Satd. Flow (perm)	1708	0	1792	1524	0	3406
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)				161		
Link Speed (mph)	45		55			55
Link Distance (ft)	796		700			570
Travel Time (s)	12.1		8.7			7.1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	309	1	327	161	0	559
Shared Lane Traffic (%)						
Lane Group Flow (vph)	310	0	327	161	0	559
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1		2	1		2
Detector Template	Left		Thru	Right		Thru
Leading Detector (ft)	20		100	20		100
Trailing Detector (ft)	0		0	0		0
Detector 1 Position(ft)	0		0	0		0
Detector 1 Size(ft)	20		6	20		6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0		0.0	0.0		0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot		NA	Free		NA
Protected Phases	3		2			6
Permitted Phases				Free		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	3		2			6
Switch Phase						
Minimum Initial (s)	8.0		8.0			8.0
Minimum Split (s)	13.3		14.0			14.0
Total Split (s)	43.3		44.0			44.0
Total Split (%)	49.6%		50.4%			50.4%
Maximum Green (s)	38.0		38.0			38.0
Yellow Time (s)	4.3		5.0			5.0
All-Red Time (s)	1.0		1.0			1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.3		6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.2		3.2			3.2
Recall Mode	None		None			None
Act Effct Green (s)	13.0		13.0	37.7		13.0
Actuated g/C Ratio	0.34		0.34	1.00		0.34
v/c Ratio	0.53		0.53	0.11		0.48
Control Delay (s/veh)	14.2		14.0	0.1		11.6
Queue Delay	0.0		0.0	0.0		0.0
Total Delay (s/veh)	14.2		14.0	0.1		11.6
LOS	B		B	A		B
Approach Delay (s/veh)	14.2		9.4			11.6
Approach LOS	B		A			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 87.3			
Actuated Cycle Length: 37.7			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay (s/veh): 11.4		Intersection LOS: B	
Intersection Capacity Utilization 41.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 7: SR 108 & McHenry Ave



Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	7	30	814	161	2	53	1268	5	243	97	55	12
Future Volume (vph)	7	30	814	161	2	53	1268	5	243	97	55	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		430		580		595		540	260		0	95
Storage Lanes		1		2		1		1	1		0	1
Taper Length (ft)		110				90			115			115
Lane Util. Factor	0.91	1.00	0.91	1.00	0.91	1.00	0.91	1.00	1.00	1.00	1.00	1.00
Frt				0.850				0.850		0.946		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	1719	4940	1538	0	1719	4940	1538	1719	1712	0	1719
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	1719	4940	1538	0	1719	4940	1538	1719	1712	0	1719
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				177				41		10		
Link Speed (mph)			55				55			35		
Link Distance (ft)			1479				1299			1261		
Travel Time (s)			18.3				16.1			24.6		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	8	33	895	177	2	58	1393	5	267	107	60	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	41	895	177	0	60	1393	5	267	167	0	13
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			12				12			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			16				16			16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2		1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)		20	100	20		20	100	20	20	100		20
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0		0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA		Prot
Protected Phases	5	5	2		1	1	6		3	8		7

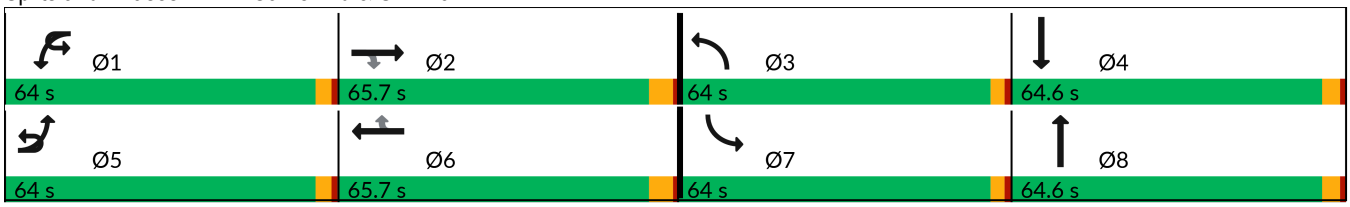


Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	101	54
Future Volume (vph)	101	54
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	1.00	1.00
Frt	0.948	
Flt Protected		
Satd. Flow (prot)	1715	0
Flt Permitted		
Satd. Flow (perm)	1715	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	10	
Link Speed (mph)	35	
Link Distance (ft)	1396	
Travel Time (s)	27.2	
Peak Hour Factor	0.91	0.91
Heavy Vehicles (%)	5%	5%
Adj. Flow (vph)	111	59
Shared Lane Traffic (%)		
Lane Group Flow (vph)	170	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane	Yes	
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	
Detector Template	Thru	
Leading Detector (ft)	100	
Trailing Detector (ft)	0	
Detector 1 Position(ft)	0	
Detector 1 Size(ft)	6	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	
Protected Phases	4	

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Permitted Phases				2				6				
Detector Phase	5	5	2	2	1	1	6	6	3	8		7
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	14.0	14.0	15.7	15.7	14.0	14.0	15.7	15.7	14.0	14.5		14.0
Total Split (s)	64.0	64.0	65.7	65.7	64.0	64.0	65.7	65.7	64.0	64.6		64.0
Total Split (%)	24.8%	24.8%	25.4%	25.4%	24.8%	24.8%	25.4%	25.4%	24.8%	25.0%		24.8%
Maximum Green (s)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.1		60.0
Yellow Time (s)	3.0	3.0	4.7	4.7	3.0	3.0	4.7	4.7	3.0	3.5		3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		4.0	5.7	5.7		4.0	5.7	5.7	4.0	4.5		4.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	2.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0		1.0
Recall Mode	None	None	Min	Min	None	None	Min	Min	None	None		None
Act Effct Green (s)		10.4	57.0	57.0		10.9	61.2	61.2	24.7	41.9		10.2
Actuated g/C Ratio		0.08	0.44	0.44		0.08	0.47	0.47	0.19	0.32		0.08
v/c Ratio		0.30	0.41	0.23		0.42	0.60	0.01	0.81	0.30		0.10
Control Delay (s/veh)		68.1	27.0	4.7		70.7	29.1	0.0	70.9	33.6		64.3
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		68.1	27.0	4.7		70.7	29.1	0.0	70.9	33.6		64.3
LOS		E	C	A		E	C	A	E	C		E
Approach Delay (s/veh)			24.9				30.7			56.5		
Approach LOS			C				C			E		

Intersection Summary			
Area Type:	Other		
Cycle Length: 258.3			
Actuated Cycle Length: 129.3			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay (s/veh): 34.3		Intersection LOS: C	
Intersection Capacity Utilization 70.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 14: Carver Rd & SR 219





Lane Group	SBT	SBR
Permitted Phases		
Detector Phase	4	
Switch Phase		
Minimum Initial (s)	10.0	
Minimum Split (s)	14.6	
Total Split (s)	64.6	
Total Split (%)	25.0%	
Maximum Green (s)	60.0	
Yellow Time (s)	3.6	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	4.6	
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	2.0	
Recall Mode	None	
Act Effct Green (s)	18.0	
Actuated g/C Ratio	0.14	
v/c Ratio	0.69	
Control Delay (s/veh)	66.2	
Queue Delay	0.0	
Total Delay (s/veh)	66.2	
LOS	E	
Approach Delay (s/veh)	66.0	
Approach LOS	E	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	26	746	136	18	154	1098	7	189	99	95	13	218
Future Volume (vph)	26	746	136	18	154	1098	7	189	99	95	13	218
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	715		355		665		415	275		395	300	
Storage Lanes	1		1		2		1	1		1	1	
Taper Length (ft)	95				190			120			100	
Lane Util. Factor	1.00	0.91	1.00	0.91	0.97	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor										0.99		
Frt			0.850				0.850			0.850		0.980
Flt Protected	0.950				0.950			0.950			0.950	
Satd. Flow (prot)	1736	4988	1553	0	3367	4988	1553	1736	1827	1553	1736	1790
Flt Permitted	0.950				0.950			0.950			0.950	
Satd. Flow (perm)	1736	4988	1553	0	3367	4988	1553	1736	1827	1532	1736	1790
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)			123				82			104		3
Link Speed (mph)		55				55			35			35
Link Distance (ft)		1306				1950			1372			1326
Travel Time (s)		16.2				24.2			26.7			25.8
Confl. Peds. (#/hr)										1		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	29	820	149	20	169	1207	8	208	109	104	14	240
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	820	149	0	189	1207	8	208	109	104	14	277
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)		24				24			12			12
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		16				16			16			16
Two way Left Turn Lane									Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Number of Detectors	1	2	1		1	2	1	1	2	1	1	2
Detector Template	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left	Thru
Leading Detector (ft)	20	100	20		20	100	20	20	100	20	20	100
Trailing Detector (ft)	0	0	0		0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0		0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20		20	6	20	20	6	20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94				94			94			94
Detector 2 Size(ft)		6				6			6			6
Detector 2 Type		Cl+Ex				Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0				0.0			0.0			0.0

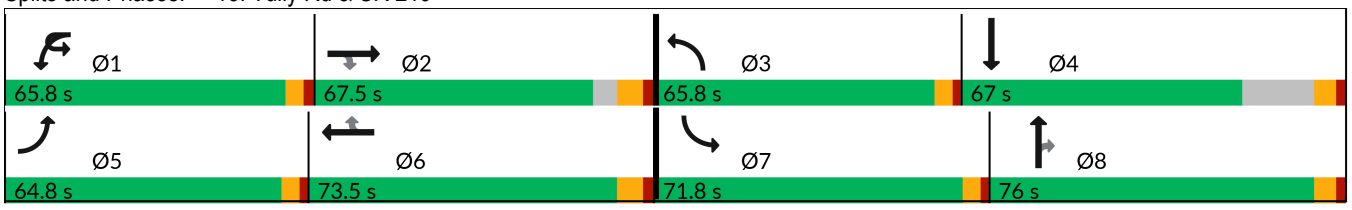


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	34
Future Volume (vph)	34
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	
Lane Util. Factor	1.00
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	0.91
Heavy Vehicles (%)	4%
Adj. Flow (vph)	37
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Turn Type	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	5	2		1	1	6		3	8		7	4
Permitted Phases			2				6			8		
Detector Phase	5	2	2	1	1	6	6	3	8	8	7	4
Switch Phase												
Minimum Initial (s)	9.0	10.0	10.0	10.0	10.0	16.0	16.0	10.0	19.0	19.0	16.0	10.0
Minimum Split (s)	14.8	17.5	17.5	15.8	15.8	23.5	23.5	15.8	26.0	26.0	21.8	17.0
Total Split (s)	64.8	67.5	67.5	65.8	65.8	73.5	73.5	65.8	76.0	76.0	71.8	67.0
Total Split (%)	22.6%	23.6%	23.6%	23.0%	23.0%	25.7%	25.7%	23.0%	26.6%	26.6%	25.1%	23.4%
Maximum Green (s)	59.0	60.0	60.0	60.0	60.0	66.0	66.0	60.0	69.0	69.0	66.0	60.0
Yellow Time (s)	3.8	5.5	5.5	3.8	3.8	5.5	5.5	3.8	5.0	5.0	3.8	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	7.5	7.5		5.8	7.5	7.5	5.8	7.0	7.0	5.8	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	1.0	2.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0
Recall Mode	None	Min	Min	None	None	Min	Min	None	None	None	None	None
Act Effct Green (s)	9.4	48.3	48.3		13.8	56.6	56.6	23.8	51.5	51.5	16.4	29.4
Actuated g/C Ratio	0.07	0.34	0.34		0.10	0.40	0.40	0.17	0.36	0.36	0.12	0.21
v/c Ratio	0.25	0.48	0.24		0.58	0.61	0.01	0.72	0.16	0.17	0.07	0.74
Control Delay (s/veh)	77.0	40.2	11.1		72.0	38.3	0.0	72.3	34.6	7.1	66.5	66.5
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	77.0	40.2	11.1		72.0	38.3	0.0	72.3	34.6	7.1	66.5	66.5
LOS	E	D	B		E	D	A	E	C	A	E	E
Approach Delay (s/veh)		37.0				42.6			46.4			66.5
Approach LOS		D				D			D			E

Intersection Summary			
Area Type:	Other		
Cycle Length: 286.1			
Actuated Cycle Length: 142			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay (s/veh): 43.6		Intersection LOS: D	
Intersection Capacity Utilization 79.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 15: Tully Rd & SR 219





Lane Group	SBR
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	

Intersection Summary

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	11	137	436	160	229	920	139	169	294	112	117	503
Future Volume (vph)	11	137	436	160	229	920	139	169	294	112	117	503
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		765		650	960		75	300		210	420	
Storage Lanes		2		1	2		1	1		1	1	
Taper Length (ft)		255			255			80			115	
Lane Util. Factor	0.91	0.97	0.91	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor				0.98								
Frt				0.850			0.850			0.850		
Flt Protected		0.950			0.950			0.950			0.950	
Satd. Flow (prot)	0	3335	4940	1538	3335	3438	1538	1719	3438	1538	1719	3438
Flt Permitted		0.950			0.950			0.950			0.950	
Satd. Flow (perm)	0	3335	4940	1503	3335	3438	1538	1719	3438	1538	1719	3438
Right Turn on Red				Yes			Yes			Yes		
Satd. Flow (RTOR)				176			90			123		
Link Speed (mph)			55			55			35			45
Link Distance (ft)			1306			1655			1522			1304
Travel Time (s)			16.2			20.5			29.6			19.8
Confl. Peds. (#/hr)				8								
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	12	151	479	176	252	1011	153	186	323	123	129	553
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	163	479	176	252	1011	153	186	323	123	129	553
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			24			24			12			12
Link Offset(ft)			0			0			0			0
Crosswalk Width(ft)			16			16			16			16
Two way Left Turn Lane									Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors		1	2	1	1	2	1	1	2	1	1	2
Detector Template		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru
Leading Detector (ft)		20	100	20	20	100	20	20	100	20	20	100
Trailing Detector (ft)		0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)		0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)		20	6	20	20	6	20	20	6	20	20	6
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94			94			94
Detector 2 Size(ft)			6			6			6			6
Detector 2 Type			Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0			0.0			0.0

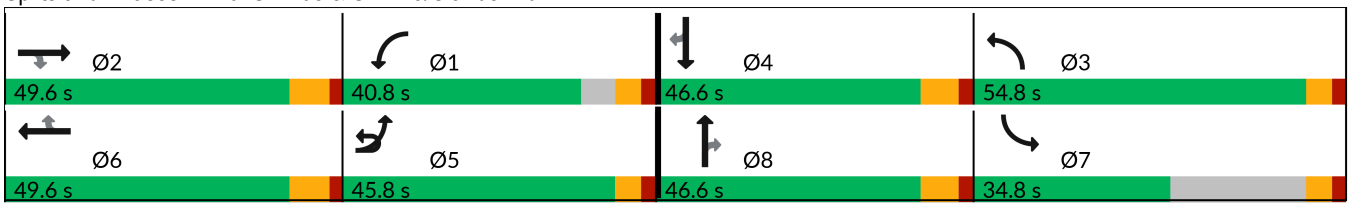


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	153
Future Volume (vph)	153
Ideal Flow (vphpl)	1900
Storage Length (ft)	535
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Ped Bike Factor	
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1538
Flt Permitted	
Satd. Flow (perm)	1538
Right Turn on Red	Yes
Satd. Flow (RTOR)	168
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	0.91
Heavy Vehicles (%)	5%
Adj. Flow (vph)	168
Shared Lane Traffic (%)	
Lane Group Flow (vph)	168
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Turn Type	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	5	5	2		1	6		3	8		7	4
Permitted Phases				2			6			8		
Detector Phase	5	5	2	2	1	6	6	3	8	8	7	4
Switch Phase												
Minimum Initial (s)	15.0	15.0	12.0	12.0	15.0	12.0	12.0	14.0	14.0	14.0	14.0	14.0
Minimum Split (s)	20.8	20.8	50.6	50.6	20.8	55.6	55.6	19.8	58.6	58.6	19.8	60.6
Total Split (s)	45.8	45.8	49.6	49.6	40.8	49.6	49.6	54.8	46.6	46.6	34.8	46.6
Total Split (%)	23.3%	23.3%	25.2%	25.2%	20.7%	25.2%	25.2%	27.8%	23.7%	23.7%	17.7%	23.7%
Maximum Green (s)	40.0	40.0	42.0	42.0	35.0	42.0	42.0	49.0	39.0	39.0	29.0	39.0
Yellow Time (s)	3.8	3.8	5.6	5.6	3.8	5.6	5.6	3.8	5.6	5.6	3.8	5.6
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.8	7.6	7.6	5.8	7.6	7.6	5.8	7.6	7.6	5.8	7.6
Lead/Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.5	2.5	2.1	2.1	2.5	2.0	2.0	2.5	3.6	3.6	2.5	2.3
Recall Mode	None	None	Min	Min	None	Min	Min	None	None	None	None	None
Walk Time (s)			7.0	7.0		7.0	7.0		7.0	7.0		7.0
Flash Don't Walk (s)			35.0	35.0		41.0	41.0		44.0	44.0		46.0
Pedestrian Calls (#/hr)			8	8		0	0		0	0		0
Act Effct Green (s)		16.2	20.8	20.8	37.8	42.4	42.4	20.3	19.4	19.4	28.1	27.2
Actuated g/C Ratio		0.12	0.16	0.16	0.28	0.32	0.32	0.15	0.15	0.15	0.21	0.20
v/c Ratio		0.40	0.62	0.46	0.27	0.92	0.28	0.71	0.65	0.37	0.36	0.79
Control Delay (s/veh)		59.4	56.0	10.3	43.1	58.8	18.1	70.2	61.0	12.2	48.0	59.4
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		59.4	56.0	10.3	43.1	58.8	18.1	70.2	61.0	12.2	48.0	59.4
LOS		E	E	B	D	E	B	E	E	B	D	E
Approach Delay (s/veh)			46.8			51.6			54.2			47.7
Approach LOS			D			D			D			D

Intersection Summary			
Area Type:	Other		
Cycle Length: 196.8			
Actuated Cycle Length: 133.2			
Natural Cycle: 160			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay (s/veh): 50.1		Intersection LOS: D	
Intersection Capacity Utilization 85.8%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 16: SR 108 & SR 219/Claribel Rd





Lane Group	SBR
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Detector Phase	4
Switch Phase	
Minimum Initial (s)	14.0
Minimum Split (s)	60.6
Total Split (s)	46.6
Total Split (%)	23.7%
Maximum Green (s)	39.0
Yellow Time (s)	5.6
All-Red Time (s)	2.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	7.6
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	2.3
Recall Mode	None
Walk Time (s)	7.0
Flash Don't Walk (s)	46.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	27.2
Actuated g/C Ratio	0.20
v/c Ratio	0.38
Control Delay (s/veh)	8.8
Queue Delay	0.0
Total Delay (s/veh)	8.8
LOS	A
Approach Delay (s/veh)	
Approach LOS	

Intersection Summary

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	15	193	489	200	51	503	238	2	130	561	26	77
Future Volume (vph)	15	193	489	200	51	503	238	2	130	561	26	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		300		380	195		320		325		260	300
Storage Lanes		1		1	2		1		2		1	2
Taper Length (ft)		150			150				105			95
Lane Util. Factor	0.95	0.97	0.95	1.00	0.97	0.91	1.00	0.95	0.97	0.95	1.00	0.97
Ped Bike Factor							0.99					
Frt				0.850			0.850				0.850	
Flt Protected		0.950			0.950				0.950			0.950
Satd. Flow (prot)	0	3400	3505	1568	3400	5036	1568	0	3400	3505	1568	3400
Flt Permitted		0.950			0.950				0.950			0.950
Satd. Flow (perm)	0	3400	3505	1568	3400	5036	1547	0	3400	3505	1568	3400
Right Turn on Red				Yes			Yes				Yes	
Satd. Flow (RTOR)				220			111				118	
Link Speed (mph)			45			45				35		
Link Distance (ft)			850			721				829		
Travel Time (s)			12.9			10.9				16.1		
Confl. Peds. (#/hr)							1					
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	16	212	537	220	56	553	262	2	143	616	29	85
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	228	537	220	56	553	262	0	145	616	29	85
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	Left
Median Width(ft)			24			24				24		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	9	15		9	15
Number of Detectors		1	2	1	1	2	1		1	2	1	1
Detector Template		Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left
Leading Detector (ft)		20	100	20	20	100	20		20	100	20	20
Trailing Detector (ft)		0	0	0	0	0	0		0	0	0	0
Detector 1 Position(ft)		0	0	0	0	0	0		0	0	0	0
Detector 1 Size(ft)		20	6	20	20	6	20		20	6	20	20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94				94		
Detector 2 Size(ft)			6			6				6		
Detector 2 Type			Cl+Ex			Cl+Ex				Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0				0.0		

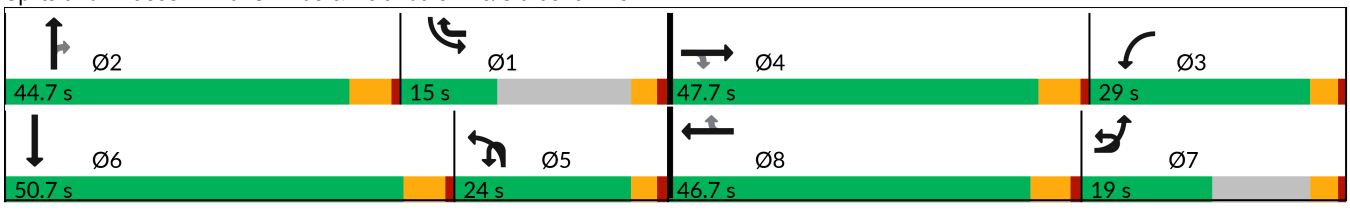


Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	556	90
Future Volume (vph)	556	90
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	0.95	0.95
Ped Bike Factor	1.00	
Frt	0.979	
Flt Protected		
Satd. Flow (prot)	3422	0
Flt Permitted		
Satd. Flow (perm)	3422	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	12	
Link Speed (mph)	35	
Link Distance (ft)	2570	
Travel Time (s)	50.1	
Confl. Peds. (#/hr)		3
Peak Hour Factor	0.91	0.91
Heavy Vehicles (%)	3%	3%
Adj. Flow (vph)	611	99
Shared Lane Traffic (%)		
Lane Group Flow (vph)	710	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	24	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	
Detector Template	Thru	
Leading Detector (ft)	100	
Trailing Detector (ft)	0	
Detector 1 Position(ft)	0	
Detector 1 Size(ft)	6	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Turn Type	Prot	Prot	NA	Perm	Prot	NA	pm+ov	Prot	Prot	NA	Perm	Prot
Protected Phases	7	7	4		3	8	1	5	5	2		1
Permitted Phases				4			8				2	
Detector Phase	7	7	4	4	3	8	1	5	5	2	2	1
Switch Phase												
Minimum Initial (s)	10.0	10.0	15.0	15.0	25.0	10.0	10.0	10.0	10.0	25.0	25.0	10.0
Minimum Split (s)	14.0	14.0	47.7	47.7	29.0	46.7	14.0	14.0	14.0	44.7	44.7	14.0
Total Split (s)	19.0	19.0	47.7	47.7	29.0	46.7	15.0	24.0	24.0	44.7	44.7	15.0
Total Split (%)	12.5%	12.5%	31.5%	31.5%	19.2%	30.8%	9.9%	15.9%	15.9%	29.5%	29.5%	9.9%
Maximum Green (s)	15.0	15.0	42.0	42.0	25.0	41.0	11.0	20.0	20.0	39.0	39.0	11.0
Yellow Time (s)	3.0	3.0	4.7	4.7	3.0	4.7	3.0	3.0	3.0	4.7	4.7	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		4.0	5.7	5.7	4.0	5.7	4.0		4.0	5.7	5.7	4.0
Lead/Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.5	2.5	2.0	2.5	2.3	2.2	2.2	3.0	3.0	2.3
Recall Mode	None	None	None	None	Min	None	Min	None	None	Min	Min	Min
Walk Time (s)			10.0	10.0		10.0				5.0	5.0	
Flash Don't Walk (s)			32.0	32.0		31.0				34.0	34.0	
Pedestrian Calls (#/hr)			0	0		1				0	0	
Act Effct Green (s)		28.1	23.2	23.2	25.3	20.4	35.4		12.1	28.1	28.1	13.2
Actuated g/C Ratio		0.26	0.21	0.21	0.23	0.19	0.32		0.11	0.26	0.26	0.12
v/c Ratio		0.26	0.72	0.44	0.07	0.59	0.45		0.39	0.68	0.06	0.21
Control Delay (s/veh)		37.4	46.7	7.8	37.7	42.9	16.5		51.6	42.0	0.2	46.8
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)		37.4	46.7	7.8	37.7	42.9	16.5		51.6	42.0	0.2	46.8
LOS		D	D	A	D	D	B		D	D	A	D
Approach Delay (s/veh)			35.9			34.6				42.3		
Approach LOS			D			C				D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 151.4			
Actuated Cycle Length: 109.5			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay (s/veh): 38.7		Intersection LOS: D	
Intersection Capacity Utilization 70.8%		ICU Level of Service C	
Analysis Period (min) 15			

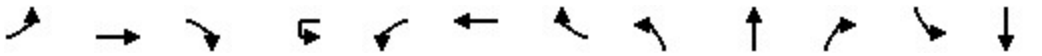
Splits and Phases: 26: SR 108 & Pelandale Ave/Claratina Ave





Lane Group	SBT	SBR
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Detector Phase	6	
Switch Phase		
Minimum Initial (s)	20.0	
Minimum Split (s)	50.7	
Total Split (s)	50.7	
Total Split (%)	33.5%	
Maximum Green (s)	45.0	
Yellow Time (s)	4.7	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	5.7	
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	
Recall Mode	Min	
Walk Time (s)	10.0	
Flash Don't Walk (s)	10.0	
Pedestrian Calls (#/hr)	3	
Act Effct Green (s)	29.2	
Actuated g/C Ratio	0.27	
v/c Ratio	0.77	
Control Delay (s/veh)	42.8	
Queue Delay	0.0	
Total Delay (s/veh)	42.8	
LOS	D	
Approach Delay (s/veh)	43.2	
Approach LOS	D	

Intersection Summary



Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	0	716	250	3	512	524	0	0	0	0	881	3
Future Volume (vph)	0	716	250	3	512	524	0	0	0	0	881	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		0		0		0	0		0	450	
Storage Lanes	2		1		2		0	0		0	1	
Taper Length (ft)	25				25			25			105	
Lane Util. Factor	1.00	0.81	0.81	0.95	0.97	0.95	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.985	0.850									
Flt Protected					0.950						0.950	0.953
Satd. Flow (prot)	0	5775	1246	0	3335	3438	0	0	0	0	1633	1638
Flt Permitted					0.950						0.950	0.953
Satd. Flow (perm)	0	5775	1246	0	3335	3438	0	0	0	0	1633	1638
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)		24	179									
Link Speed (mph)		25				40			35			35
Link Distance (ft)		417				419			778			1218
Travel Time (s)		11.4				7.1			15.2			23.7
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	746	260	3	533	546	0	0	0	0	918	3
Shared Lane Traffic (%)			31%								50%	
Lane Group Flow (vph)	0	827	179	0	536	546	0	0	0	0	459	462
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Right	Left
Median Width(ft)		24				24			12			12
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		50				16			16			30
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Number of Detectors		2	1		1	2			2		1	2
Detector Template		Thru	Right		Left	Thru			Thru		Left	Thru
Leading Detector (ft)		100	20		20	100			100		20	100
Trailing Detector (ft)		0	0		0	0			0		0	0
Detector 1 Position(ft)		0	0		0	0					0	0
Detector 1 Size(ft)		6	20		20	6					20	6
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0		0.0	0.0					0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0					0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0					0.0	0.0
Detector 2 Position(ft)		94				94						94
Detector 2 Size(ft)		6				6						6
Detector 2 Type		Cl+Ex				Cl+Ex						Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0				0.0						0.0
Turn Type		NA	Perm	Prot	Prot	NA					Split	NA
Protected Phases		2		1	1	6					4	4
Permitted Phases			2									

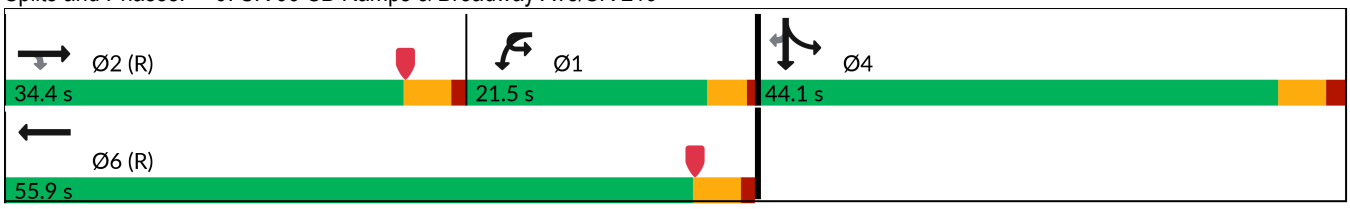


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	71
Future Volume (vph)	71
Ideal Flow (vphpl)	1900
Storage Length (ft)	450
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1538
Flt Permitted	
Satd. Flow (perm)	1538
Right Turn on Red	Yes
Satd. Flow (RTOR)	74
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.96
Adj. Flow (vph)	74
Shared Lane Traffic (%)	
Lane Group Flow (vph)	74
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	Perm
Protected Phases	
Permitted Phases	4

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Detector Phase		2	2	1	1	6					4	4
Switch Phase												
Minimum Initial (s)		8.0	8.0	8.0	8.0	8.0					5.0	5.0
Minimum Split (s)		25.6	25.6	11.5	11.5	25.6					30.1	30.1
Total Split (s)		34.4	34.4	21.5	21.5	55.9					44.1	44.1
Total Split (%)		34.4%	34.4%	21.5%	21.5%	55.9%					44.1%	44.1%
Maximum Green (s)		29.8	29.8	18.0	18.0	51.3					39.0	39.0
Yellow Time (s)		3.6	3.6	3.0	3.0	3.6					3.6	3.6
All-Red Time (s)		1.0	1.0	0.5	0.5	1.0					1.5	1.5
Lost Time Adjust (s)		0.0	0.0		0.0	0.0					0.0	0.0
Total Lost Time (s)		4.6	4.6		3.5	4.6					5.1	5.1
Lead/Lag		Lead	Lead	Lag	Lag							
Lead-Lag Optimize?		Yes	Yes	Yes	Yes							
Vehicle Extension (s)		2.4	2.4	2.0	2.0	3.0					3.0	3.0
Recall Mode		C-Max	C-Max	Max	Max	C-Max					None	None
Walk Time (s)		7.0	7.0			7.0					5.0	5.0
Flash Don't Walk (s)		14.0	14.0			14.0					20.0	20.0
Pedestrian Calls (#/hr)		0	0			0					0	0
Act Effct Green (s)		34.8	34.8		18.0	56.3					34.0	34.0
Actuated g/C Ratio		0.35	0.35		0.18	0.56					0.34	0.34
v/c Ratio		0.41	0.33		0.89	0.28					0.83	0.83
Control Delay (s/veh)		25.7	5.9		35.5	4.5					43.2	43.4
Queue Delay		0.0	0.0		0.0	0.0					0.0	0.0
Total Delay (s/veh)		25.7	5.9		35.5	4.5					43.2	43.4
LOS		C	A		D	A					D	D
Approach Delay (s/veh)		22.2				19.9						40.5
Approach LOS		C				B						D

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 12 (12%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay (s/veh): 27.3		Intersection LOS: C	
Intersection Capacity Utilization 65.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 9: SR 99 SB Ramps & Broadway Ave/SR 219





Lane Group	SBR
Detector Phase	4
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	30.1
Total Split (s)	44.1
Total Split (%)	44.1%
Maximum Green (s)	39.0
Yellow Time (s)	3.6
All-Red Time (s)	1.5
Lost Time Adjust (s)	0.0
Total Lost Time (s)	5.1
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Don't Walk (s)	20.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	34.0
Actuated g/C Ratio	0.34
v/c Ratio	0.13
Control Delay (s/veh)	5.3
Queue Delay	0.0
Total Delay (s/veh)	5.3
LOS	A
Approach Delay (s/veh)	
Approach LOS	

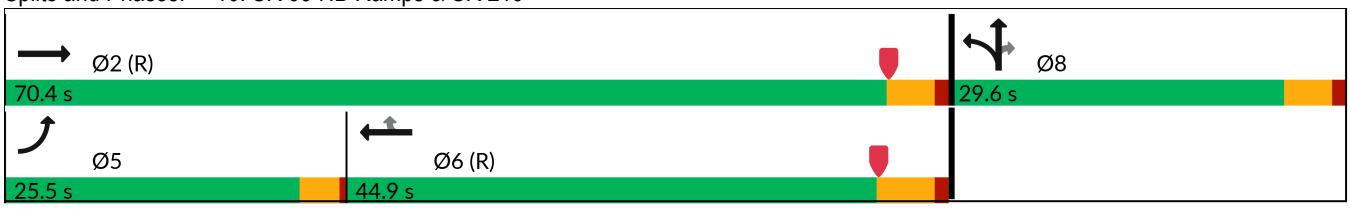
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	1482	0	0	979	662	60	20	224	0	0	0
Future Volume (vph)	118	1482	0	0	979	662	60	20	224	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	360		0	0		565	0		0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (ft)	25			140			25			25		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	0.88	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.964				
Satd. Flow (prot)	1719	4940	0	0	4940	1538	0	1744	2707	0	0	0
Flt Permitted	0.950							0.964				
Satd. Flow (perm)	1719	4940	0	0	4940	1538	0	1744	2707	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						690			82			
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		419			622			1358			1317	
Travel Time (s)		7.1			10.6			26.5			25.7	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	123	1544	0	0	1020	690	63	21	233	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	123	1544	0	0	1020	690	0	84	233	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			25			25			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1		2	1		2	
Detector Template	Left	Thru			Thru	Right		Thru	Right		Thru	
Leading Detector (ft)	20	100			100	20		100	20		100	
Trailing Detector (ft)	0	0			0	0		0	0		0	
Detector 1 Position(ft)	0	0			0	0		0	0			
Detector 1 Size(ft)	20	6			6	20		6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2			6	6	8	8	8			
Switch Phase												
Minimum Initial (s)	10.0	5.0			12.0	12.0	5.0	5.0	5.0			
Minimum Split (s)	13.5	24.6			27.3	27.3	29.6	29.6	29.6			
Total Split (s)	25.5	70.4			44.9	44.9	29.6	29.6	29.6			
Total Split (%)	25.5%	70.4%			44.9%	44.9%	29.6%	29.6%	29.6%			
Maximum Green (s)	22.0	65.8			39.6	39.6	25.0	25.0	25.0			
Yellow Time (s)	3.0	3.6			4.3	4.3	3.6	3.6	3.6			
All-Red Time (s)	0.5	1.0			1.0	1.0	1.0	1.0	1.0			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Total Lost Time (s)	3.5	4.6			5.3	5.3		4.6	4.6			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	2.0	3.0			2.0	2.0	2.0	2.0	2.0			
Recall Mode	Max	C-Max			C-Max	C-Max	Max	Max	Max			
Walk Time (s)		7.0			7.0	7.0	5.0	5.0	5.0			
Flash Don't Walk (s)		13.0			15.0	15.0	20.0	20.0	20.0			
Pedestrian Calls (#/hr)		0			0	0	0	0	0			
Act Effct Green (s)	22.0	65.8			39.6	39.6		25.0	25.0			
Actuated g/C Ratio	0.22	0.66			0.40	0.40		0.25	0.25			
v/c Ratio	0.33	0.48			0.52	0.67		0.19	0.32			
Control Delay (s/veh)	65.7	7.4			24.2	5.4		31.0	20.8			
Queue Delay	0.0	0.2			0.0	0.0		0.0	0.0			
Total Delay (s/veh)	65.7	7.6			24.2	5.4		31.0	20.8			
LOS	E	A			C	A		C	C			
Approach Delay (s/veh)		11.9			16.6			23.5				
Approach LOS		B			B			C				

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 27 (27%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay (s/veh): 15.1		Intersection LOS: B	
Intersection Capacity Utilization 65.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 10: SR 99 NB Ramps & SR 219



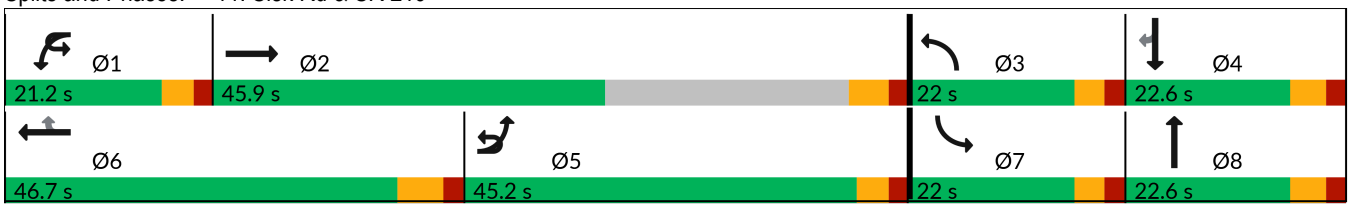
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	24	186	1391	80	4	60	1199	365	130	364	93	332
Future Volume (vph)	24	186	1391	80	4	60	1199	365	130	364	93	332
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		250		0		735		525	555		230	505
Storage Lanes		1		1		1		1	1		1	2
Taper Length (ft)		75				140			100			100
Lane Util. Factor	0.91	0.94	0.91	1.00	0.91	1.00	0.91	1.00	1.00	0.95	0.95	0.97
Ped Bike Factor				0.99				0.99		1.00		
Frt				0.850				0.850		0.969		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	4848	4940	1538	0	1719	4940	1538	1719	3315	0	3335
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	4848	4940	1519	0	1719	4940	1518	1719	3315	0	3335
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				203				380		19		
Link Speed (mph)			40				55			35		
Link Distance (ft)			434				926			2020		
Travel Time (s)			7.4				11.5			39.4		
Confl. Peds. (#/hr)				1				1			5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	25	194	1449	83	4	63	1249	380	135	379	97	346
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	219	1449	83	0	67	1249	380	135	476	0	346
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			48				36			24		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			25				25			25		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2		1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)		20	100	20		20	100	20	20	100		20
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0		0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Free	Prot	Prot	NA	Perm	Prot	NA		Prot

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	171	298
Future Volume (vph)	171	298
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		150
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	1.00	0.88
Ped Bike Factor		
Frt		0.850
Flt Protected		
Satd. Flow (prot)	1810	2707
Flt Permitted		
Satd. Flow (perm)	1810	2707
Right Turn on Red		Yes
Satd. Flow (RTOR)		310
Link Speed (mph)	35	
Link Distance (ft)	1227	
Travel Time (s)	23.9	
Confl. Peds. (#/hr)		
Peak Hour Factor	0.96	0.96
Adj. Flow (vph)	178	310
Shared Lane Traffic (%)		
Lane Group Flow (vph)	178	310
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	24	
Link Offset(ft)	0	
Crosswalk Width(ft)	35	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	1
Detector Template	Thru	Right
Leading Detector (ft)	100	20
Trailing Detector (ft)	0	0
Detector 1 Position(ft)	0	0
Detector 1 Size(ft)	6	20
Detector 1 Type	Cl+Ex	Cl+Ex
Detector 1 Channel		
Detector 1 Extend (s)	0.0	0.0
Detector 1 Queue (s)	0.0	0.0
Detector 1 Delay (s)	0.0	0.0
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	Perm

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Protected Phases	5	5	2		1	1	6		3	8		7
Permitted Phases				Free				6				
Detector Phase	5	5	2		1	1	6	6	3	8		7
Switch Phase												
Minimum Initial (s)	5.0	5.0	10.0		6.0	6.0	10.0	10.0	5.0	5.0		5.0
Minimum Split (s)	10.2	10.2	32.9		11.2	11.2	41.7	41.7	10.0	22.6		10.0
Total Split (s)	45.2	45.2	45.9		21.2	21.2	46.7	46.7	22.0	22.6		22.0
Total Split (%)	33.1%	33.1%	33.6%		15.5%	15.5%	34.2%	34.2%	16.1%	16.6%		16.1%
Maximum Green (s)	40.0	40.0	40.0		16.0	16.0	40.0	40.0	17.0	17.0		17.0
Yellow Time (s)	3.2	3.2	3.9		3.2	3.2	4.7	4.7	3.0	3.6		3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0		2.0
Lost Time Adjust (s)		0.0	0.0			0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		5.2	5.9			5.2	6.7	6.7	5.0	5.6		5.0
Lead/Lag	Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lead	Lag		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	4.6		3.0	3.0	4.6	4.6	3.0	3.2		3.0
Recall Mode	None	None	Min		None	None	Min	Min	None	None		None
Walk Time (s)			7.0				7.0	7.0		5.0		
Flash Don't Walk (s)			20.0				28.0	28.0		12.0		
Pedestrian Calls (#/hr)			1				1	1		5		
Act Effct Green (s)		10.1	42.8	104.1		9.4	38.8	38.8	13.1	17.1		15.6
Actuated g/C Ratio		0.10	0.41	1.00		0.09	0.37	0.37	0.13	0.16		0.15
v/c Ratio		0.47	0.71	0.05		0.43	0.68	0.47	0.63	0.85		0.69
Control Delay (s/veh)		48.4	29.2	0.1		54.2	29.9	4.6	56.5	57.0		50.4
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		48.4	29.2	0.1		54.2	29.9	4.6	56.5	57.0		50.4
LOS		D	C	A		D	C	A	E	E		D
Approach Delay (s/veh)			30.2				25.2			56.9		
Approach LOS			C				C			E		

Intersection Summary			
Area Type:	Other		
Cycle Length: 136.5			
Actuated Cycle Length: 104.1			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay (s/veh): 32.3		Intersection LOS: C	
Intersection Capacity Utilization 72.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 11: Sisk Rd & SR 219





Lane Group	SBT	SBR
Protected Phases	4	
Permitted Phases		4
Detector Phase	4	4
Switch Phase		
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	22.6	22.6
Total Split (s)	22.6	22.6
Total Split (%)	16.6%	16.6%
Maximum Green (s)	17.0	17.0
Yellow Time (s)	3.6	3.6
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	5.6	5.6
Lead/Lag	Lag	Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	None
Walk Time (s)	5.0	5.0
Flash Don't Walk (s)	12.0	12.0
Pedestrian Calls (#/hr)	0	0
Act Effct Green (s)	19.5	19.5
Actuated g/C Ratio	0.19	0.19
v/c Ratio	0.53	0.41
Control Delay (s/veh)	46.3	6.4
Queue Delay	0.0	0.0
Total Delay (s/veh)	46.3	6.4
LOS	D	A
Approach Delay (s/veh)	33.2	
Approach LOS	C	

Intersection Summary

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	8	589	1139	43	103	1120	48	24	212	49	68	116
Future Volume (vph)	8	589	1139	43	103	1120	48	24	212	49	68	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		1000		620	495		640	70		0	155	
Storage Lanes		2		1	1		1	1		0	1	
Taper Length (ft)		210			140			55			160	
Lane Util. Factor	0.95	0.97	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850			0.850		0.972			
Flt Protected		0.950			0.950			0.950			0.950	
Satd. Flow (prot)	0	3335	3438	1538	1719	3438	1538	1719	1759	0	1719	1810
Flt Permitted		0.950			0.950			0.950			0.950	
Satd. Flow (perm)	0	3335	3438	1538	1719	3438	1538	1719	1759	0	1719	1810
Right Turn on Red				Yes			Yes			Yes		
Satd. Flow (RTOR)				93			81		6			
Link Speed (mph)			55			55			35			35
Link Distance (ft)			1694			1350			735			1875
Travel Time (s)			21.0			16.7			14.3			36.5
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	8	614	1186	45	107	1167	50	25	221	51	71	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	622	1186	45	107	1167	50	25	272	0	71	121
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			48			48			12			12
Link Offset(ft)			0			0			0			0
Crosswalk Width(ft)			25			25			16			25
Two way Left Turn Lane												Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors		1	2	1	1	2	1	1	2		1	2
Detector Template		Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru
Leading Detector (ft)		20	100	20	20	100	20	20	100		20	100
Trailing Detector (ft)		0	0	0	0	0	0	0	0		0	0
Detector 1 Position(ft)		0	0	0	0	0	0	0	0		0	0
Detector 1 Size(ft)		20	6	20	20	6	20	20	6		20	6
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94			94			94
Detector 2 Size(ft)			6			6			6			6
Detector 2 Type			Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0			0.0			0.0
Turn Type	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA
Protected Phases	5	5	2		1	6		3	8		7	4
Permitted Phases				2			6					

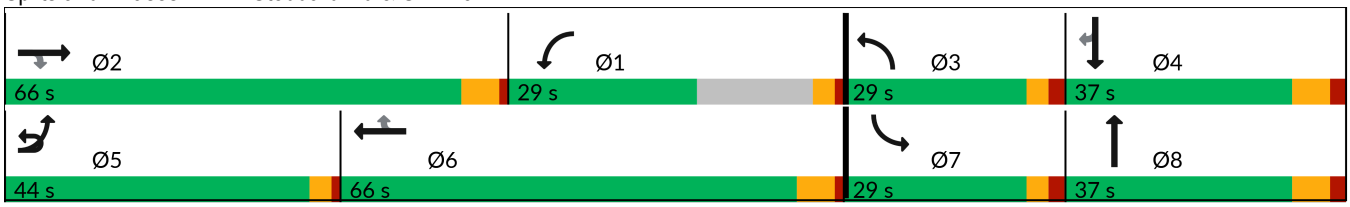


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	476
Future Volume (vph)	476
Ideal Flow (vphpl)	1900
Storage Length (ft)	155
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1538
Flt Permitted	
Satd. Flow (perm)	1538
Right Turn on Red	Yes
Satd. Flow (RTOR)	496
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.96
Adj. Flow (vph)	496
Shared Lane Traffic (%)	
Lane Group Flow (vph)	496
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	Perm
Protected Phases	
Permitted Phases	4

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Detector Phase	5	5	2	2	1	6	6	3	8		7	4
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.0	10.0		9.0	10.0
Minimum Split (s)	14.0	14.0	16.0	16.0	14.0	16.0	16.0	14.0	17.0		14.0	17.0
Total Split (s)	44.0	44.0	66.0	66.0	29.0	66.0	66.0	29.0	37.0		29.0	37.0
Total Split (%)	25.0%	25.0%	37.5%	37.5%	16.5%	37.5%	37.5%	16.5%	21.0%		16.5%	21.0%
Maximum Green (s)	40.0	40.0	60.0	60.0	25.0	60.0	60.0	24.0	30.0		24.0	30.0
Yellow Time (s)	3.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0		3.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)		4.0	6.0	6.0	4.0	6.0	6.0	5.0	7.0		5.0	7.0
Lead/Lag	Lead	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lag		Lead	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	4.5	4.5	3.0	4.5	4.5	3.0	3.5		3.0	3.5
Recall Mode	None	None	Min	Min	None	Min	Min	None	None		None	None
Act Effct Green (s)		33.7	60.3	60.3	33.4	60.0	60.0	9.4	27.8		12.3	36.8
Actuated g/C Ratio		0.22	0.39	0.39	0.21	0.38	0.38	0.06	0.18		0.08	0.24
v/c Ratio		0.87	0.89	0.07	0.29	0.88	0.08	0.24	0.86		0.53	0.28
Control Delay (s/veh)		72.6	55.3	0.2	54.2	54.6	1.8	79.9	85.6		85.1	53.8
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay (s/veh)		72.6	55.3	0.2	54.2	54.6	1.8	79.9	85.6		85.1	53.8
LOS		E	E	A	D	D	A	E	F		F	D
Approach Delay (s/veh)			59.8			52.6			85.2			24.8
Approach LOS			E			D			F			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 176			
Actuated Cycle Length: 155.9			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay (s/veh): 53.5		Intersection LOS: D	
Intersection Capacity Utilization 103.3%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 12: Stoddard Rd & SR 219





Lane Group	SBR
Detector Phase	4
Switch Phase	
Minimum Initial (s)	10.0
Minimum Split (s)	17.0
Total Split (s)	37.0
Total Split (%)	21.0%
Maximum Green (s)	30.0
Yellow Time (s)	5.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	7.0
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.5
Recall Mode	None
Act Effct Green (s)	36.8
Actuated g/C Ratio	0.24
v/c Ratio	0.67
Control Delay (s/veh)	9.1
Queue Delay	0.0
Total Delay (s/veh)	9.1
LOS	A
Approach Delay (s/veh)	
Approach LOS	

Intersection Summary

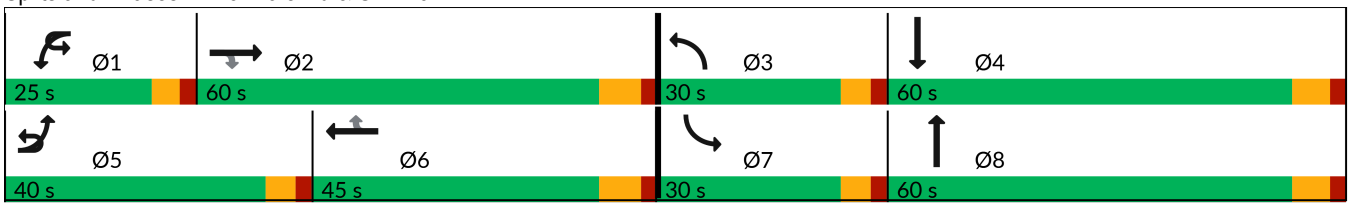
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	93	99	634	346	5	181	940	413	303	481	101	246
Future Volume (vph)	93	99	634	346	5	181	940	413	303	481	101	246
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		555		700		450		500	320		0	300
Storage Lanes		2		2		2		2	2		0	2
Taper Length (ft)		140				205			140			150
Lane Util. Factor	0.91	0.97	0.91	1.00	0.91	0.97	0.91	1.00	0.97	0.95	0.95	0.97
Ped Bike Factor				0.99				0.99		1.00		
Frt				0.850				0.850		0.974		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	3398	4940	1538	0	3338	4940	1538	3335	3341	0	3335
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	3398	4940	1517	0	3338	4940	1517	3335	3341	0	3335
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				360				430		14		
Link Speed (mph)			55				55			40		
Link Distance (ft)			943				2640			1013		
Travel Time (s)			11.7				32.7			17.3		
Confl. Peds. (#/hr)				1				1			1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	5%	5%	5%	1%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	97	103	660	360	5	189	979	430	316	501	105	256
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	200	660	360	0	194	979	430	316	606	0	256
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	L NA	Left	R NA	R NA	Left	Left	R NA	L NA	Left	R NA	L NA
Median Width(ft)			48				48			24		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			50				70			50		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2		1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)		20	100	20		20	100	20	20	100		20
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0		0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	402	151
Future Volume (vph)	402	151
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		300
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	0.95	0.95
Ped Bike Factor		
Frt	0.959	
Flt Protected		
Satd. Flow (prot)	3297	0
Flt Permitted		
Satd. Flow (perm)	3297	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	32	
Link Speed (mph)	45	
Link Distance (ft)	631	
Travel Time (s)	9.6	
Confl. Peds. (#/hr)		
Peak Hour Factor	0.96	0.96
Heavy Vehicles (%)	5%	5%
Adj. Flow (vph)	419	157
Shared Lane Traffic (%)		
Lane Group Flow (vph)	576	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	R NA
Median Width(ft)	24	
Link Offset(ft)	0	
Crosswalk Width(ft)	50	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	
Detector Template	Thru	
Leading Detector (ft)	100	
Trailing Detector (ft)	0	
Detector 1 Position(ft)	0	
Detector 1 Size(ft)	6	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA		Prot
Protected Phases	5	5	2		1	1	6		3	8		7
Permitted Phases				2				6				
Detector Phase	5	5	2	2	1	1	6	6	3	8		7
Switch Phase												
Minimum Initial (s)	6.0	6.0	11.0	11.0	6.0	6.0	11.0	11.0	8.0	8.0		8.0
Minimum Split (s)	11.8	11.8	41.5	41.5	11.8	11.8	37.5	37.5	15.0	60.0		15.0
Total Split (s)	40.0	40.0	60.0	60.0	25.0	25.0	45.0	45.0	30.0	60.0		30.0
Total Split (%)	22.9%	22.9%	34.3%	34.3%	14.3%	14.3%	25.7%	25.7%	17.1%	34.3%		17.1%
Maximum Green (s)	34.2	34.2	52.5	52.5	19.2	19.2	37.5	37.5	24.0	53.0		24.0
Yellow Time (s)	3.8	3.8	5.5	5.5	3.8	3.8	5.5	5.5	4.0	5.0		4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		5.8	7.5	7.5		5.8	7.5	7.5	6.0	7.0		6.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	3.0	3.0	4.5	4.5	3.0	3.0	4.5	4.5	3.0	3.0		3.0
Recall Mode	None	None	Min	Min	None	None	Min	Min	None	None		None
Walk Time (s)			5.0	5.0			5.0	5.0		5.0		
Flash Don't Walk (s)			29.0	29.0			25.0	25.0		48.0		
Pedestrian Calls (#/hr)			1	1			1	1		1		
Act Effct Green (s)		13.2	37.5	37.5		13.1	37.4	37.4	17.4	31.3		15.4
Actuated g/C Ratio		0.11	0.30	0.30		0.11	0.30	0.30	0.14	0.25		0.12
v/c Ratio		0.56	0.44	0.51		0.55	0.66	0.57	0.68	0.71		0.62
Control Delay (s/veh)		62.0	38.4	6.9		62.2	42.7	7.1	60.9	46.5		61.1
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		62.0	38.4	6.9		62.2	42.7	7.1	60.9	46.5		61.1
LOS		E	D	A		E	D	A	E	D		E
Approach Delay (s/veh)			33.0				35.5			51.4		
Approach LOS			C				D			D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 175			
Actuated Cycle Length: 124.4			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay (s/veh): 40.9		Intersection LOS: D	
Intersection Capacity Utilization 70.4%		ICU Level of Service C	
Analysis Period (min) 15			

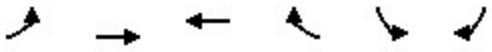
Splits and Phases: 13: Dale Rd & SR 219





Lane Group	SBT	SBR
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Detector Phase	4	
Switch Phase		
Minimum Initial (s)	8.0	
Minimum Split (s)	60.0	
Total Split (s)	60.0	
Total Split (%)	34.3%	
Maximum Green (s)	53.0	
Yellow Time (s)	5.0	
All-Red Time (s)	2.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	7.0	
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	
Recall Mode	None	
Walk Time (s)	5.0	
Flash Don't Walk (s)	48.0	
Pedestrian Calls (#/hr)	1	
Act Effct Green (s)	29.3	
Actuated g/C Ratio	0.24	
v/c Ratio	0.72	
Control Delay (s/veh)	46.8	
Queue Delay	0.0	
Total Delay (s/veh)	46.8	
LOS	D	
Approach Delay (s/veh)	51.2	
Approach LOS	D	

Intersection Summary

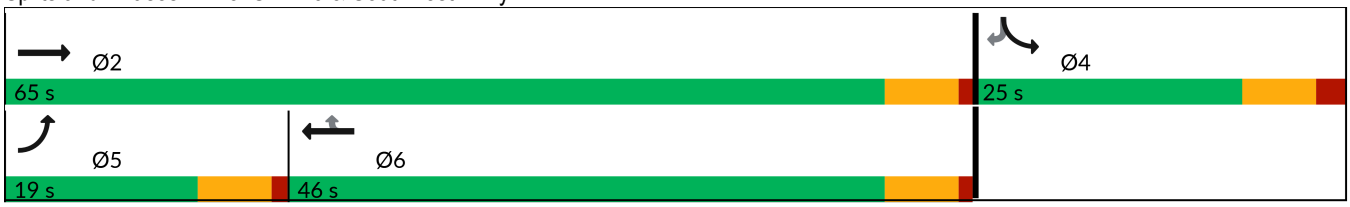


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	172	1084	1221	78	88	50
Future Volume (vph)	172	1084	1221	78	88	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300			500	100	0
Storage Lanes	1			1	1	1
Taper Length (ft)	150				100	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1719	3438	3438	1538	1719	1538
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1719	3438	3438	1538	1719	1538
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				81		52
Link Speed (mph)		55	55		25	
Link Distance (ft)		2134	847		750	
Travel Time (s)		26.5	10.5		20.5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	179	1129	1272	81	92	52
Shared Lane Traffic (%)						
Lane Group Flow (vph)	179	1129	1272	81	92	52
Enter Blocked Intersection	No	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	L NA	R NA
Median Width(ft)		48	48		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.0	24.0	24.0	24.0	25.0	25.0
Total Split (s)	19.0	65.0	46.0	46.0	25.0	25.0
Total Split (%)	21.1%	72.2%	51.1%	51.1%	27.8%	27.8%
Maximum Green (s)	13.0	59.0	40.0	40.0	18.0	18.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	7.0	7.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	4.5	4.5	4.5	3.5	3.5
Recall Mode	None	Min	Min	Min	None	None
Act Effct Green (s)	12.3	58.9	38.8	38.8	11.3	11.3
Actuated g/C Ratio	0.16	0.76	0.50	0.50	0.15	0.15
v/c Ratio	0.65	0.43	0.74	0.10	0.37	0.19
Control Delay (s/veh)	45.8	5.5	20.0	3.6	37.1	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	45.8	5.5	20.0	3.6	37.1	11.6
LOS	D	A	C	A	D	B
Approach Delay (s/veh)		11.0	19.1		27.9	
Approach LOS		B	B		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 77.2			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay (s/veh): 15.7		Intersection LOS: B	
Intersection Capacity Utilization 67.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 28: SR 219 & Southwest Drwy

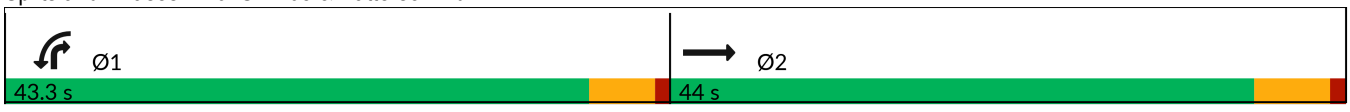


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	650	4	147	374	0	283
Future Volume (vph)	650	4	147	374	0	283
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	525		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			125		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999					0.865
Flt Protected			0.950			
Satd. Flow (prot)	1843	0	1752	1845	0	1596
Flt Permitted			0.950			
Satd. Flow (perm)	1843	0	1752	1845	0	1596
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						137
Link Speed (mph)	35			55	45	
Link Distance (ft)	574			1403	796	
Travel Time (s)	11.2			17.4	12.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	684	4	155	394	0	298
Shared Lane Traffic (%)						
Lane Group Flow (vph)	688	0	155	394	0	298
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (ft)	100		20	100	20	20
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0		0
Detector 1 Size(ft)	6		20	6		20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0		0.0	0.0		0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA		Over
Protected Phases	2		1	Free		1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases						
Detector Phase	2		1			1
Switch Phase						
Minimum Initial (s)	8.0		8.0			8.0
Minimum Split (s)	14.0		13.3			13.3
Total Split (s)	44.0		43.3			43.3
Total Split (%)	50.4%		49.6%			49.6%
Maximum Green (s)	38.0		38.0			38.0
Yellow Time (s)	5.0		4.3			4.3
All-Red Time (s)	1.0		1.0			1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	6.0		5.3			5.3
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.2		3.2			3.2
Recall Mode	None		None			None
Act Effct Green (s)	25.1		12.5	49.6		12.5
Actuated g/C Ratio	0.51		0.25	1.00		0.25
v/c Ratio	0.74		0.35	0.21		0.59
Control Delay (s/veh)	15.4		19.8	0.3		15.6
Queue Delay	0.0		0.0	0.0		0.0
Total Delay (s/veh)	15.4		19.8	0.3		15.6
LOS	B		B	A		B
Approach Delay (s/veh)	15.4			5.8	15.6	
Approach LOS	B			A	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 87.3			
Actuated Cycle Length: 49.6			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay (s/veh): 12.0		Intersection LOS: B	
Intersection Capacity Utilization 61.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: SR 108 & Patterson Rd



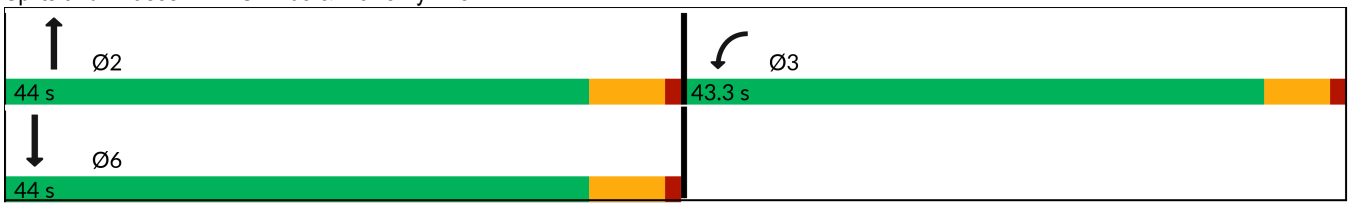


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	149	2	433	283	0	723
Future Volume (vph)	149	2	433	283	0	723
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		475	0	
Storage Lanes	1	0		1	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Frt	0.998			0.850		
Flt Protected	0.953					
Satd. Flow (prot)	1754	0	1845	1568	0	3505
Flt Permitted	0.953					
Satd. Flow (perm)	1754	0	1845	1568	0	3505
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	1			298		
Link Speed (mph)	45		55			55
Link Distance (ft)	796		700			570
Travel Time (s)	12.1		8.7			7.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	157	2	456	298	0	761
Shared Lane Traffic (%)						
Lane Group Flow (vph)	159	0	456	298	0	761
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1		2	1		2
Detector Template	Left		Thru	Right		Thru
Leading Detector (ft)	20		100	20		100
Trailing Detector (ft)	0		0	0		0
Detector 1 Position(ft)	0		0	0		0
Detector 1 Size(ft)	20		6	20		6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0		0.0	0.0		0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot		NA	Free		NA
Protected Phases	3		2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases				Free		
Detector Phase	3		2			6
Switch Phase						
Minimum Initial (s)	8.0		8.0			8.0
Minimum Split (s)	13.3		14.0			14.0
Total Split (s)	43.3		44.0			44.0
Total Split (%)	49.6%		50.4%			50.4%
Maximum Green (s)	38.0		38.0			38.0
Yellow Time (s)	4.3		5.0			5.0
All-Red Time (s)	1.0		1.0			1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.3		6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.2		3.2			3.2
Recall Mode	None		None			None
Act Effct Green (s)	10.8		17.8	33.3		17.8
Actuated g/C Ratio	0.32		0.53	1.00		0.53
v/c Ratio	0.28		0.46	0.19		0.41
Control Delay (s/veh)	12.8		10.0	0.3		8.3
Queue Delay	0.0		0.0	0.0		0.0
Total Delay (s/veh)	12.8		10.0	0.3		8.3
LOS	B		B	A		A
Approach Delay (s/veh)	12.8		6.2			8.3
Approach LOS	B		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 87.3			
Actuated Cycle Length: 33.3			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay (s/veh): 7.8		Intersection LOS: A	
Intersection Capacity Utilization 40.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 7: SR 108 & McHenry Ave



Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	1	33	1200	134	2	62	900	17	82	83	77	13
Future Volume (vph)	1	33	1200	134	2	62	900	17	82	83	77	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		430		580		595		540	260		0	95
Storage Lanes		1		2		1		1	1		0	1
Taper Length (ft)		110				90			115			115
Lane Util. Factor	0.91	1.00	0.91	1.00	0.91	1.00	0.91	1.00	1.00	1.00	1.00	1.00
Frt				0.850				0.850		0.928		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	1752	5036	1568	0	1752	5036	1568	1752	1712	0	1752
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	1752	5036	1568	0	1752	5036	1568	1752	1712	0	1752
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				134				41		17		
Link Speed (mph)			55				55			35		
Link Distance (ft)			1479				1299			1261		
Travel Time (s)			18.3				16.1			24.6		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	1	35	1263	141	2	65	947	18	86	87	81	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	1263	141	0	67	947	18	86	168	0	14
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			12				12			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			16				16			16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2		1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)		20	100	20		20	100	20	20	100		20
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0		0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA		Prot
Protected Phases	5	5	2		1	1	6		3	8		7

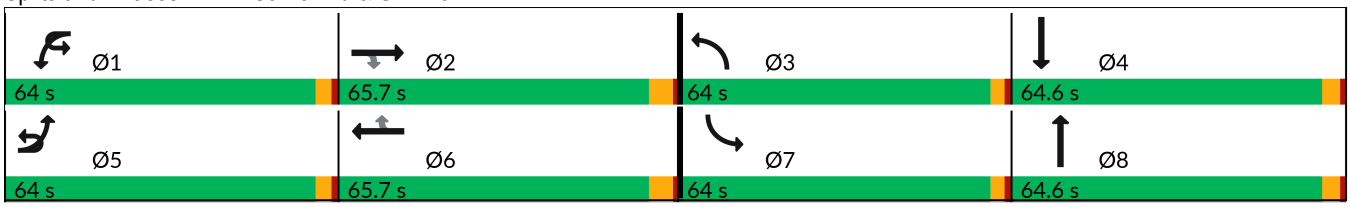


Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	102	19
Future Volume (vph)	102	19
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	1.00	1.00
Frt	0.976	
Flt Protected		
Satd. Flow (prot)	1800	0
Flt Permitted		
Satd. Flow (perm)	1800	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	3	
Link Speed (mph)	35	
Link Distance (ft)	1396	
Travel Time (s)	27.2	
Peak Hour Factor	0.95	0.95
Heavy Vehicles (%)	3%	3%
Adj. Flow (vph)	107	20
Shared Lane Traffic (%)		
Lane Group Flow (vph)	127	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane	Yes	
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	
Detector Template	Thru	
Leading Detector (ft)	100	
Trailing Detector (ft)	0	
Detector 1 Position(ft)	0	
Detector 1 Size(ft)	6	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	
Protected Phases	4	

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Permitted Phases				2				6				
Detector Phase	5	5	2	2	1	1	6	6	3	8		7
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	14.0	14.0	15.7	15.7	14.0	14.0	15.7	15.7	14.0	14.5		14.0
Total Split (s)	64.0	64.0	65.7	65.7	64.0	64.0	65.7	65.7	64.0	64.6		64.0
Total Split (%)	24.8%	24.8%	25.4%	25.4%	24.8%	24.8%	25.4%	25.4%	24.8%	25.0%		24.8%
Maximum Green (s)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.1		60.0
Yellow Time (s)	3.0	3.0	4.7	4.7	3.0	3.0	4.7	4.7	3.0	3.5		3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		4.0	5.7	5.7		4.0	5.7	5.7	4.0	4.5		4.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	2.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0		1.0
Recall Mode	None	None	Min	Min	None	None	Min	Min	None	None		None
Act Effct Green (s)		10.0	43.5	43.5		10.3	46.4	46.4	10.8	22.6		10.0
Actuated g/C Ratio		0.10	0.45	0.45		0.11	0.48	0.48	0.11	0.23		0.10
v/c Ratio		0.20	0.55	0.18		0.36	0.39	0.02	0.44	0.40		0.08
Control Delay (s/veh)		42.4	21.1	4.4		45.3	17.8	1.5	46.7	32.2		40.5
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		42.4	21.1	4.4		45.3	17.8	1.5	46.7	32.2		40.5
LOS		D	C	A		D	B	A	D	C		D
Approach Delay (s/veh)			20.0				19.3			37.1		
Approach LOS			C				B			D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 258.3			
Actuated Cycle Length: 96.3			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay (s/veh): 22.5		Intersection LOS: C	
Intersection Capacity Utilization 64.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 14: Carver Rd & SR 219





Lane Group	SBT	SBR
Permitted Phases		
Detector Phase	4	
Switch Phase		
Minimum Initial (s)	10.0	
Minimum Split (s)	14.6	
Total Split (s)	64.6	
Total Split (%)	25.0%	
Maximum Green (s)	60.0	
Yellow Time (s)	3.6	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	4.6	
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	2.0	
Recall Mode	None	
Act Effct Green (s)	13.2	
Actuated g/C Ratio	0.14	
v/c Ratio	0.51	
Control Delay (s/veh)	44.3	
Queue Delay	0.0	
Total Delay (s/veh)	44.3	
LOS	D	
Approach Delay (s/veh)	43.9	
Approach LOS	D	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	26	1058	116	16	174	952	15	149	161	129	13	139
Future Volume (vph)	26	1058	116	16	174	952	15	149	161	129	13	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	715		355		665		415	275		395	300	
Storage Lanes	1		1		2		1	1		1	1	
Taper Length (ft)	95				190			120			100	
Lane Util. Factor	1.00	0.91	1.00	0.91	0.97	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850				0.850			0.850		0.987
Flt Protected	0.950				0.950			0.950			0.950	
Satd. Flow (prot)	1770	5085	1583	0	3433	5085	1583	1770	1863	1583	1770	1839
Flt Permitted	0.950				0.950			0.950			0.950	
Satd. Flow (perm)	1770	5085	1583	0	3433	5085	1583	1770	1863	1583	1770	1839
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)			82				82			136		2
Link Speed (mph)		55				55			35			35
Link Distance (ft)		1306				1950			1372			1326
Travel Time (s)		16.2				24.2			26.7			25.8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	27	1114	122	17	183	1002	16	157	169	136	14	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	1114	122	0	200	1002	16	157	169	136	14	160
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)		24				24			12			12
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		16				16			16			16
Two way Left Turn Lane									Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Number of Detectors	1	2	1		1	2	1	1	2	1	1	2
Detector Template	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left	Thru
Leading Detector (ft)	20	100	20		20	100	20	20	100	20	20	100
Trailing Detector (ft)	0	0	0		0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0		0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20		20	6	20	20	6	20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94				94			94			94
Detector 2 Size(ft)		6				6			6			6
Detector 2 Type		Cl+Ex				Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0				0.0			0.0			0.0
Turn Type	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	5	2		1	1	6		3	8		7	4

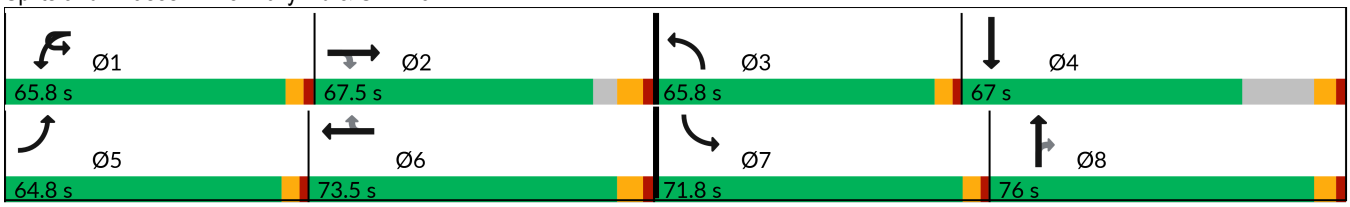


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	13
Future Volume (vph)	13
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.95
Heavy Vehicles (%)	2%
Adj. Flow (vph)	14
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Permitted Phases			2				6			8		
Detector Phase	5	2	2	1	1	6	6	3	8	8	7	4
Switch Phase												
Minimum Initial (s)	9.0	10.0	10.0	10.0	10.0	16.0	16.0	10.0	19.0	19.0	16.0	10.0
Minimum Split (s)	14.8	17.5	17.5	15.8	15.8	23.5	23.5	15.8	26.0	26.0	21.8	17.0
Total Split (s)	64.8	67.5	67.5	65.8	65.8	73.5	73.5	65.8	76.0	76.0	71.8	67.0
Total Split (%)	22.6%	23.6%	23.6%	23.0%	23.0%	25.7%	25.7%	23.0%	26.6%	26.6%	25.1%	23.4%
Maximum Green (s)	59.0	60.0	60.0	60.0	60.0	66.0	66.0	60.0	69.0	69.0	66.0	60.0
Yellow Time (s)	3.8	5.5	5.5	3.8	3.8	5.5	5.5	3.8	5.0	5.0	3.8	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	7.5	7.5		5.8	7.5	7.5	5.8	7.0	7.0	5.8	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	1.0	2.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0
Recall Mode	None	Min	Min	None	None	Min	Min	None	None	None	None	None
Act Effct Green (s)	9.3	36.7	36.7		12.6	47.2	47.2	16.4	31.8	31.8	16.4	17.0
Actuated g/C Ratio	0.08	0.34	0.34		0.12	0.43	0.43	0.15	0.29	0.29	0.15	0.16
v/c Ratio	0.18	0.65	0.21		0.51	0.46	0.02	0.59	0.31	0.24	0.05	0.56
Control Delay (s/veh)	57.2	33.7	12.1		53.3	25.0	0.1	55.9	37.3	8.1	49.1	52.8
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	57.2	33.7	12.1		53.3	25.0	0.1	55.9	37.3	8.1	49.1	52.8
LOS	E	C	B		D	C	A	E	D	A	D	D
Approach Delay (s/veh)		32.2				29.3			35.0			52.5
Approach LOS		C				C			D			D

Intersection Summary			
Area Type:	Other		
Cycle Length: 286.1			
Actuated Cycle Length: 109.5			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay (s/veh): 32.6		Intersection LOS: C	
Intersection Capacity Utilization 75.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 15: Tully Rd & SR 219





Lane Group	SBR
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	

Intersection Summary

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Lane Configurations												
Traffic Volume (vph)	27	159	898	160	4	134	629	111	248	432	364	1
Future Volume (vph)	27	159	898	160	4	134	629	111	248	432	364	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		765		650		960		75	300		210	
Storage Lanes		2		1		2		1	1		1	
Taper Length (ft)		255				255			80			
Lane Util. Factor	0.91	0.97	0.91	1.00	0.95	0.97	0.95	1.00	1.00	0.95	1.00	0.95
Frt				0.850				0.850			0.850	
Flt Protected		0.950				0.950			0.950			
Satd. Flow (prot)	0	3433	5085	1583	0	3433	3539	1583	1770	3539	1583	0
Flt Permitted		0.950				0.950			0.950			
Satd. Flow (perm)	0	3433	5085	1583	0	3433	3539	1583	1770	3539	1583	0
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				168				90			235	
Link Speed (mph)			55				55			35		
Link Distance (ft)			1341				1655			1509		
Travel Time (s)			16.6				20.5			29.4		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	28	167	945	168	4	141	662	117	261	455	383	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	195	945	168	0	145	662	117	261	455	383	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	R NA
Median Width(ft)			24				24			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			16				16			16		
Two way Left Turn Lane										Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	9
Number of Detectors		1	2	1		1	2	1	1	2	1	
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	
Leading Detector (ft)		20	100	20		20	100	20	20	100	20	
Trailing Detector (ft)		0	0	0		0	0	0	0	0	0	
Detector 1 Position(ft)		0	0	0		0	0	0	0	0	0	
Detector 1 Size(ft)		20	6	20		20	6	20	20	6	20	
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot
Protected Phases	5	5	2		1	1	6		3	8		7

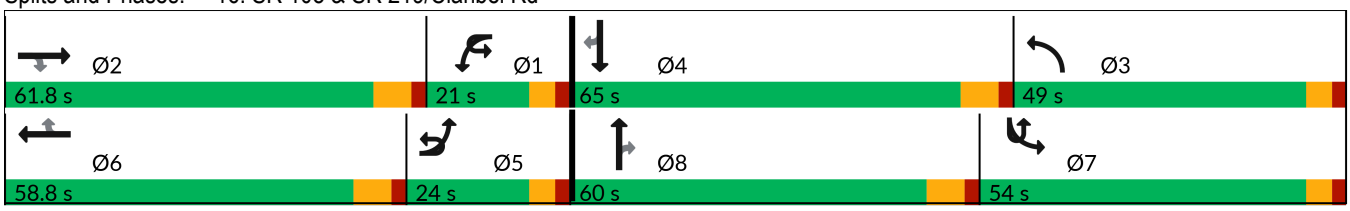


Lane Group	SBL	SBT	SBR
Lane Configurations			
Traffic Volume (vph)	280	521	144
Future Volume (vph)	280	521	144
Ideal Flow (vphpl)	1900	1900	1900
Storage Length (ft)	420		535
Storage Lanes	1		1
Taper Length (ft)	115		
Lane Util. Factor	1.00	0.95	1.00
Frt			0.850
Flt Protected	0.950		
Satd. Flow (prot)	1770	3539	1583
Flt Permitted	0.950		
Satd. Flow (perm)	1770	3539	1583
Right Turn on Red			Yes
Satd. Flow (RTOR)			152
Link Speed (mph)		45	
Link Distance (ft)		1304	
Travel Time (s)		19.8	
Peak Hour Factor	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%
Adj. Flow (vph)	295	548	152
Shared Lane Traffic (%)			
Lane Group Flow (vph)	296	548	152
Enter Blocked Intersection	No	No	No
Lane Alignment	Left	Left	Right
Median Width(ft)		12	
Link Offset(ft)		0	
Crosswalk Width(ft)		16	
Two way Left Turn Lane		Yes	
Headway Factor	1.00	1.00	1.00
Turning Speed (mph)	15		9
Number of Detectors	1	2	1
Detector Template	Left	Thru	Right
Leading Detector (ft)	20	100	20
Trailing Detector (ft)	0	0	0
Detector 1 Position(ft)	0	0	0
Detector 1 Size(ft)	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel			
Detector 1 Extend (s)	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0
Detector 2 Position(ft)		94	
Detector 2 Size(ft)		6	
Detector 2 Type		Cl+Ex	
Detector 2 Channel			
Detector 2 Extend (s)		0.0	
Turn Type	Prot	NA	Perm
Protected Phases	7	4	

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Permitted Phases				2				6			8	
Detector Phase	5	5	2	2	1	1	6	6	3	8	8	7
Switch Phase												
Minimum Initial (s)	15.0	15.0	12.0	12.0	15.0	15.0	12.0	12.0	14.0	14.0	14.0	14.0
Minimum Split (s)	20.8	20.8	50.6	50.6	20.8	20.8	55.6	55.6	19.8	58.6	58.6	19.8
Total Split (s)	24.0	24.0	61.8	61.8	21.0	21.0	58.8	58.8	49.0	60.0	60.0	54.0
Total Split (%)	12.2%	12.2%	31.4%	31.4%	10.7%	10.7%	29.9%	29.9%	24.9%	30.5%	30.5%	27.4%
Maximum Green (s)	18.2	18.2	54.2	54.2	15.2	15.2	51.2	51.2	43.2	52.4	52.4	48.2
Yellow Time (s)	3.8	3.8	5.6	5.6	3.8	3.8	5.6	5.6	3.8	5.6	5.6	3.8
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		5.8	7.6	7.6		5.8	7.6	7.6	5.8	7.6	7.6	
Lead/Lag	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.5	2.5	2.1	2.1	2.5	2.5	2.0	2.0	2.5	3.6	3.6	2.5
Recall Mode	None	None	Min	Min	None	None	Min	Min	None	None	None	None
Walk Time (s)			7.0	7.0			7.0	7.0		7.0	7.0	
Flash Don't Walk (s)			35.0	35.0			41.0	41.0		44.0	44.0	
Pedestrian Calls (#/hr)			0	0			0	0		0	0	
Act Effct Green (s)		17.1	32.7	32.7		16.0	31.7	31.7	29.7	28.7	28.7	
Actuated g/C Ratio		0.13	0.24	0.24		0.12	0.24	0.24	0.22	0.21	0.21	
v/c Ratio		0.45	0.76	0.33		0.35	0.79	0.26	0.67	0.60	0.73	
Control Delay (s/veh)		63.4	53.0	8.3		63.0	57.4	15.9	58.6	52.8	28.7	
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)		63.4	53.0	8.3		63.0	57.4	15.9	58.6	52.8	28.7	
LOS		E	D	A		E	E	B	E	D	C	
Approach Delay (s/veh)			48.8				53.0			45.8		
Approach LOS			D				D			D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 196.8			
Actuated Cycle Length: 134.4			
Natural Cycle: 160			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay (s/veh): 49.9		Intersection LOS: D	
Intersection Capacity Utilization 90.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 16: SR 108 & SR 219/Claribel Rd





Lane Group	SBL	SBT	SBR
Permitted Phases			4
Detector Phase	7	4	4
Switch Phase			
Minimum Initial (s)	14.0	14.0	14.0
Minimum Split (s)	19.8	60.6	60.6
Total Split (s)	54.0	65.0	65.0
Total Split (%)	27.4%	33.0%	33.0%
Maximum Green (s)	48.2	57.4	57.4
Yellow Time (s)	3.8	5.6	5.6
All-Red Time (s)	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0
Total Lost Time (s)	5.8	7.6	7.6
Lead/Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes
Vehicle Extension (s)	2.5	2.3	2.3
Recall Mode	None	None	None
Walk Time (s)		7.0	7.0
Flash Don't Walk (s)		46.0	46.0
Pedestrian Calls (#/hr)		0	0
Act Effct Green (s)	29.0	28.0	28.0
Actuated g/C Ratio	0.22	0.21	0.21
v/c Ratio	0.77	0.74	0.34
Control Delay (s/veh)	66.0	58.2	9.5
Queue Delay	0.0	0.0	0.0
Total Delay (s/veh)	66.0	58.2	9.5
LOS	E	E	A
Approach Delay (s/veh)		53.1	
Approach LOS		D	

Intersection Summary

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	7	180	595	268	48	358	119	9	201	765	70	264
Future Volume (vph)	7	180	595	268	48	358	119	9	201	765	70	264
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		300		380	195		320		325		260	300
Storage Lanes		1		1	2		1		2		1	2
Taper Length (ft)		150			150				105			95
Lane Util. Factor	0.95	0.97	0.95	1.00	0.97	0.91	1.00	0.95	0.97	0.95	1.00	0.97
Ped Bike Factor				0.99								
Frt				0.850			0.850				0.850	
Flt Protected		0.950			0.950				0.950			0.950
Satd. Flow (prot)	0	3467	3574	1599	3467	5136	1599	0	3467	3574	1599	3467
Flt Permitted		0.950			0.950				0.950			0.950
Satd. Flow (perm)	0	3467	3574	1578	3467	5136	1599	0	3467	3574	1599	3467
Right Turn on Red				Yes			Yes				Yes	
Satd. Flow (RTOR)				282			48				118	
Link Speed (mph)			45			45				35		
Link Distance (ft)			850			720				829		
Travel Time (s)			12.9			10.9				16.1		
Confl. Peds. (#/hr)				1								
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	7	189	626	282	51	377	125	9	212	805	74	278
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	196	626	282	51	377	125	0	221	805	74	278
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	Left
Median Width(ft)			24			24				24		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	9	15		9	15
Number of Detectors		1	2	1	1	2	1		1	2	1	1
Detector Template		Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left
Leading Detector (ft)		20	100	20	20	100	20		20	100	20	20
Trailing Detector (ft)		0	0	0	0	0	0		0	0	0	0
Detector 1 Position(ft)		0	0	0	0	0	0		0	0	0	0
Detector 1 Size(ft)		20	6	20	20	6	20		20	6	20	20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94				94		
Detector 2 Size(ft)			6			6				6		
Detector 2 Type			Cl+Ex			Cl+Ex				Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0				0.0		

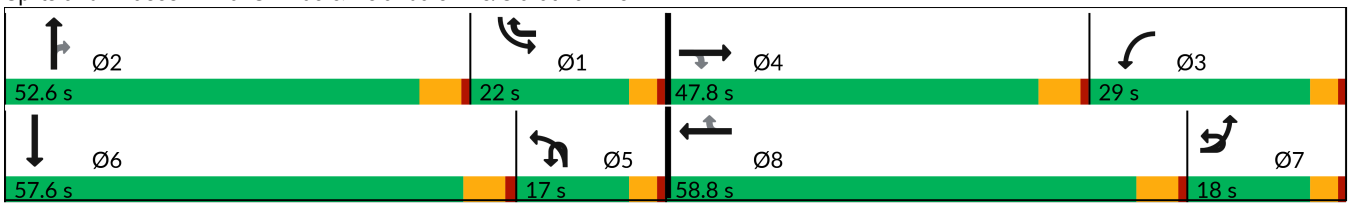


Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	818	140
Future Volume (vph)	818	140
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	0.95	0.95
Ped Bike Factor	1.00	
Frt	0.978	
Flt Protected		
Satd. Flow (prot)	3484	0
Flt Permitted		
Satd. Flow (perm)	3484	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	14	
Link Speed (mph)	35	
Link Distance (ft)	2584	
Travel Time (s)	50.3	
Confl. Peds. (#/hr)		5
Peak Hour Factor	0.95	0.95
Heavy Vehicles (%)	1%	1%
Adj. Flow (vph)	861	147
Shared Lane Traffic (%)		
Lane Group Flow (vph)	1008	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	24	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	
Detector Template	Thru	
Leading Detector (ft)	100	
Trailing Detector (ft)	0	
Detector 1 Position(ft)	0	
Detector 1 Size(ft)	6	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Turn Type	Prot	Prot	NA	Perm	Prot	NA	pm+ov	Prot	Prot	NA	Perm	Prot
Protected Phases	7	7	4		3	8	1	5	5	2		1
Permitted Phases				4			8				2	
Detector Phase	7	7	4	4	3	8	1	5	5	2	2	1
Switch Phase												
Minimum Initial (s)	10.0	10.0	15.0	15.0	25.0	10.0	10.0	10.0	10.0	25.0	25.0	10.0
Minimum Split (s)	14.0	14.0	47.7	47.7	29.0	46.7	14.0	14.0	14.0	44.7	44.7	14.0
Total Split (s)	18.0	18.0	47.8	47.8	29.0	58.8	22.0	17.0	17.0	52.6	52.6	22.0
Total Split (%)	11.9%	11.9%	31.6%	31.6%	19.2%	38.8%	14.5%	11.2%	11.2%	34.7%	34.7%	14.5%
Maximum Green (s)	14.0	14.0	42.1	42.1	25.0	53.1	18.0	13.0	13.0	46.9	46.9	18.0
Yellow Time (s)	3.0	3.0	4.7	4.7	3.0	4.7	3.0	3.0	3.0	4.7	4.7	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		4.0	5.7	5.7	4.0	5.7	4.0		4.0	5.7	5.7	4.0
Lead/Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.5	2.5	2.0	2.5	2.3	2.2	2.2	3.0	3.0	2.3
Recall Mode	None	None	None	None	Min	None	Min	None	None	Min	Min	Min
Walk Time (s)			10.0	10.0		10.0				5.0	5.0	
Flash Don't Walk (s)			32.0	32.0		31.0				34.0	34.0	
Pedestrian Calls (#/hr)			1	1		0				0	0	
Act Effct Green (s)		40.4	29.9	29.9	25.4	14.9	40.0		12.1	36.6	36.6	19.3
Actuated g/C Ratio		0.31	0.23	0.23	0.19	0.11	0.31		0.09	0.28	0.28	0.15
v/c Ratio		0.18	0.77	0.49	0.08	0.64	0.24		0.69	0.81	0.14	0.54
Control Delay (s/veh)		35.5	54.5	7.6	49.2	62.3	24.0		71.6	51.4	1.6	58.6
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)		35.5	54.5	7.6	49.2	62.3	24.0		71.6	51.4	1.6	58.6
LOS		D	D	A	D	E	C		E	D	A	E
Approach Delay (s/veh)			39.2			52.4				52.1		
Approach LOS			D			D				D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 151.4			
Actuated Cycle Length: 130.9			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay (s/veh): 48.3		Intersection LOS: D	
Intersection Capacity Utilization 78.7%		ICU Level of Service D	
Analysis Period (min) 15			

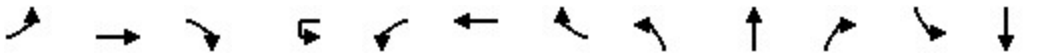
Splits and Phases: 26: SR 108 & Pelandale Ave/Claratina Ave





Lane Group	SBT	SBR
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Detector Phase	6	
Switch Phase		
Minimum Initial (s)	20.0	
Minimum Split (s)	50.7	
Total Split (s)	57.6	
Total Split (%)	38.0%	
Maximum Green (s)	51.9	
Yellow Time (s)	4.7	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	5.7	
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	
Recall Mode	Min	
Walk Time (s)	10.0	
Flash Don't Walk (s)	10.0	
Pedestrian Calls (#/hr)	5	
Act Effct Green (s)	43.7	
Actuated g/C Ratio	0.33	
v/c Ratio	0.86	
Control Delay (s/veh)	49.1	
Queue Delay	0.0	
Total Delay (s/veh)	49.1	
LOS	D	
Approach Delay (s/veh)	51.1	
Approach LOS	D	

Intersection Summary



Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	0	531	197	16	386	541	0	0	0	0	615	5
Future Volume (vph)	0	531	197	16	386	541	0	0	0	0	615	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		0		0		0	0		0	450	
Storage Lanes	2		1		2		0	0		0	1	
Taper Length (ft)	25				25			25			105	
Lane Util. Factor	1.00	0.81	0.81	0.95	0.97	0.95	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.983	0.850									
Flt Protected					0.950						0.950	0.953
Satd. Flow (prot)	0	5875	1270	0	3400	3505	0	0	0	0	1665	1670
Flt Permitted					0.950						0.950	0.953
Satd. Flow (perm)	0	5875	1270	0	3400	3505	0	0	0	0	1665	1670
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)		32	140									
Link Speed (mph)		25				40			35			35
Link Distance (ft)		417				419			778			1218
Travel Time (s)		11.4				7.1			15.2			23.7
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	571	212	17	415	582	0	0	0	0	661	5
Shared Lane Traffic (%)			34%								50%	
Lane Group Flow (vph)	0	643	140	0	432	582	0	0	0	0	330	336
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Right	Left
Median Width(ft)		24				24			12			12
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		50				16			16			30
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Number of Detectors		2	1		1	2			2		1	2
Detector Template		Thru	Right		Left	Thru			Thru		Left	Thru
Leading Detector (ft)		100	20		20	100			100		20	100
Trailing Detector (ft)		0	0		0	0			0		0	0
Detector 1 Position(ft)		0	0		0	0					0	0
Detector 1 Size(ft)		6	20		20	6					20	6
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0		0.0	0.0					0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0					0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0					0.0	0.0
Detector 2 Position(ft)		94				94						94
Detector 2 Size(ft)		6				6						6
Detector 2 Type		Cl+Ex				Cl+Ex						Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0				0.0						0.0
Turn Type		NA	Perm	Prot	Prot	NA					Split	NA
Protected Phases		2		1	1	6					4	4
Permitted Phases			2									

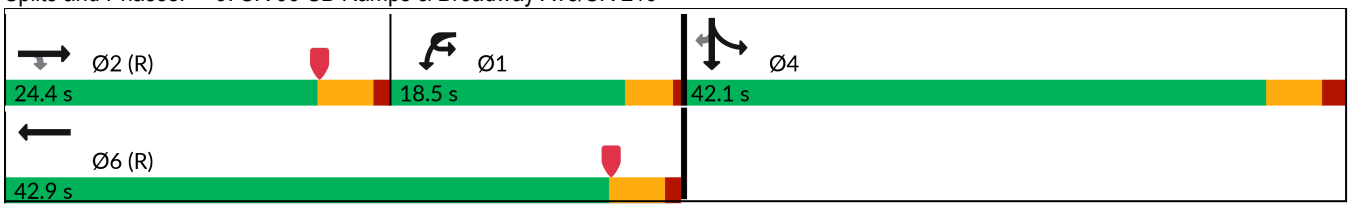


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	128
Future Volume (vph)	128
Ideal Flow (vphpl)	1900
Storage Length (ft)	450
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1568
Flt Permitted	
Satd. Flow (perm)	1568
Right Turn on Red	Yes
Satd. Flow (RTOR)	138
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.93
Adj. Flow (vph)	138
Shared Lane Traffic (%)	
Lane Group Flow (vph)	138
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	Perm
Protected Phases	
Permitted Phases	4

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Detector Phase		2	2	1	1	6					4	4
Switch Phase												
Minimum Initial (s)		8.0	8.0	8.0	8.0	8.0					5.0	5.0
Minimum Split (s)		24.4	24.4	11.5	11.5	25.6					30.1	30.1
Total Split (s)		24.4	24.4	18.5	18.5	42.9					42.1	42.1
Total Split (%)		28.7%	28.7%	21.8%	21.8%	50.5%					49.5%	49.5%
Maximum Green (s)		19.8	19.8	15.0	15.0	38.3					37.0	37.0
Yellow Time (s)		3.6	3.6	3.0	3.0	3.6					3.6	3.6
All-Red Time (s)		1.0	1.0	0.5	0.5	1.0					1.5	1.5
Lost Time Adjust (s)		0.0	0.0		0.0	0.0					0.0	0.0
Total Lost Time (s)		4.6	4.6		3.5	4.6					5.1	5.1
Lead/Lag		Lead	Lead	Lag	Lag							
Lead-Lag Optimize?		Yes	Yes	Yes	Yes							
Vehicle Extension (s)		2.4	2.4	2.0	2.0	3.0					3.0	3.0
Recall Mode		C-Max	C-Max	Max	Max	C-Max					None	None
Walk Time (s)		7.0	7.0			7.0					5.0	5.0
Flash Don't Walk (s)		12.8	12.8			14.0					20.0	20.0
Pedestrian Calls (#/hr)		2	2			3					0	0
Act Effct Green (s)		32.4	32.4		15.0	50.9					24.4	24.4
Actuated g/C Ratio		0.38	0.38		0.18	0.60					0.29	0.29
v/c Ratio		0.29	0.25		0.72	0.28					0.69	0.70
Control Delay (s/veh)		19.2	5.7		26.7	8.8					33.7	34.1
Queue Delay		0.0	0.0		0.0	0.0					0.0	0.0
Total Delay (s/veh)		19.2	5.7		26.7	8.8					33.7	34.1
LOS		B	A		C	A					C	C
Approach Delay (s/veh)		16.8				16.5						28.8
Approach LOS		B				B						C

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 55 (65%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay (s/veh): 20.4		Intersection LOS: C	
Intersection Capacity Utilization 73.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 9: SR 99 SB Ramps & Broadway Ave/SR 219





Lane Group	SBR
Detector Phase	4
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	30.1
Total Split (s)	42.1
Total Split (%)	49.5%
Maximum Green (s)	37.0
Yellow Time (s)	3.6
All-Red Time (s)	1.5
Lost Time Adjust (s)	0.0
Total Lost Time (s)	5.1
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Don't Walk (s)	20.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	24.4
Actuated g/C Ratio	0.29
v/c Ratio	0.25
Control Delay (s/veh)	4.5
Queue Delay	0.0
Total Delay (s/veh)	4.5
LOS	A
Approach Delay (s/veh)	
Approach LOS	

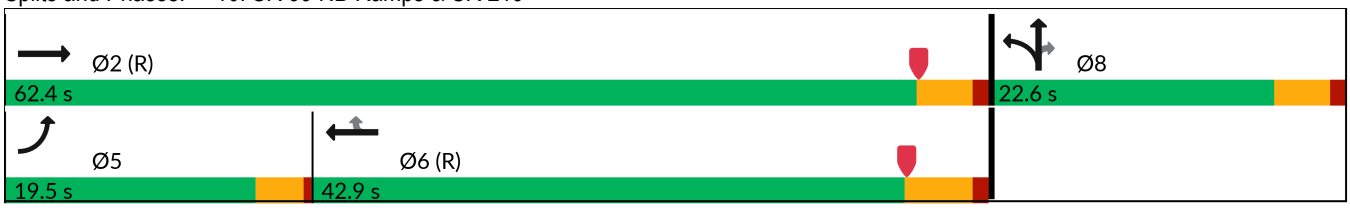
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	1057	0	0	790	728	153	1	365	0	0	0
Future Volume (vph)	105	1057	0	0	790	728	153	1	365	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	360		0	0		565	0		0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (ft)	25			140			25			25		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	0.88	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.953				
Satd. Flow (prot)	1752	5036	0	0	5036	1568	0	1758	2760	0	0	0
Flt Permitted	0.950							0.953				
Satd. Flow (perm)	1752	5036	0	0	5036	1568	0	1758	2760	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						783			211			
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		419			622			1358			1317	
Travel Time (s)		7.1			10.6			26.5			25.7	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	113	1137	0	0	849	783	165	1	392	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	113	1137	0	0	849	783	0	166	392	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			25			25			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1		2	1		2	
Detector Template	Left	Thru			Thru	Right		Thru	Right		Thru	
Leading Detector (ft)	20	100			100	20		100	20		100	
Trailing Detector (ft)	0	0			0	0		0	0		0	
Detector 1 Position(ft)	0	0			0	0		0	0			
Detector 1 Size(ft)	20	6			6	20		6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2			6	6	8	8	8			
Switch Phase												
Minimum Initial (s)	10.0	5.0			12.0	12.0	5.0	5.0	5.0			
Minimum Split (s)	13.5	24.6			27.3	27.3	29.6	29.6	29.6			
Total Split (s)	19.5	62.4			42.9	42.9	22.6	22.6	22.6			
Total Split (%)	22.9%	73.4%			50.5%	50.5%	26.6%	26.6%	26.6%			
Maximum Green (s)	16.0	57.8			37.6	37.6	18.0	18.0	18.0			
Yellow Time (s)	3.0	3.6			4.3	4.3	3.6	3.6	3.6			
All-Red Time (s)	0.5	1.0			1.0	1.0	1.0	1.0	1.0			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Total Lost Time (s)	3.5	4.6			5.3	5.3		4.6	4.6			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	2.0	3.0			2.0	2.0	2.0	2.0	2.0			
Recall Mode	Max	C-Max			C-Max	C-Max	None	None	None			
Walk Time (s)		7.0			7.0	7.0	5.0	5.0	5.0			
Flash Don't Walk (s)		13.0			15.0	15.0	13.0	13.0	13.0			
Pedestrian Calls (#/hr)		2			3	3	0	0	0			
Act Effct Green (s)	21.4	63.2			37.6	37.6		12.6	12.6			
Actuated g/C Ratio	0.25	0.74			0.44	0.44		0.15	0.15			
v/c Ratio	0.26	0.30			0.38	0.69		0.64	0.67			
Control Delay (s/veh)	50.1	1.2			16.5	5.0		44.4	20.6			
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0			
Total Delay (s/veh)	50.1	1.2			16.5	5.0		44.4	20.6			
LOS	D	A			B	A		D	C			
Approach Delay (s/veh)		5.6			11.0			27.7				
Approach LOS		A			B			C				

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 65 (76%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay (s/veh): 11.8		Intersection LOS: B	
Intersection Capacity Utilization 73.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 10: SR 99 NB Ramps & SR 219



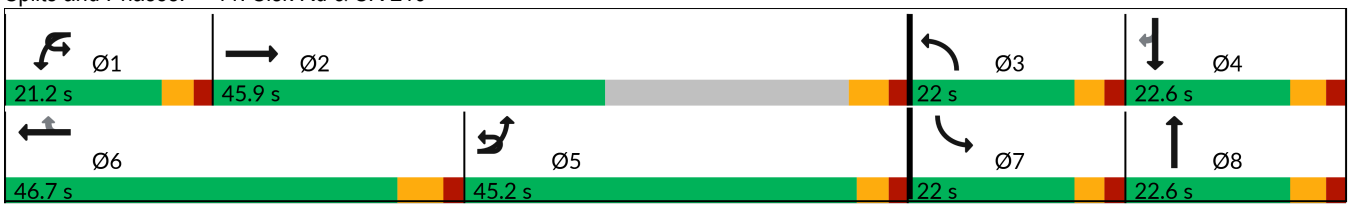
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	17	193	1089	64	3	64	1182	259	114	162	66	216
Future Volume (vph)	17	193	1089	64	3	64	1182	259	114	162	66	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		250		0		735		525	555		230	505
Storage Lanes		1		1		1		1	1		1	2
Taper Length (ft)		75				140			100			100
Lane Util. Factor	0.91	0.94	0.91	1.00	0.91	1.00	0.91	1.00	1.00	0.95	0.95	0.97
Ped Bike Factor				0.99				0.99		0.99		
Frt				0.850				0.850		0.957		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	4942	5036	1568	0	1752	5036	1568	1752	3331	0	3400
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	4942	5036	1549	0	1752	5036	1547	1752	3331	0	3400
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				203				278		37		
Link Speed (mph)			40				55			35		
Link Distance (ft)			434				926			2020		
Travel Time (s)			7.4				11.5			39.4		
Confl. Peds. (#/hr)				1				1			5	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	18	208	1171	69	3	69	1271	278	123	174	71	232
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	226	1171	69	0	72	1271	278	123	245	0	232
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			48				36			24		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			25				25			25		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2		1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)		20	100	20		20	100	20	20	100		20
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0		0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Free	Prot	Prot	NA	Perm	Prot	NA		Prot

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	161	133
Future Volume (vph)	161	133
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		150
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	1.00	0.88
Ped Bike Factor		
Frt		0.850
Flt Protected		
Satd. Flow (prot)	1845	2760
Flt Permitted		
Satd. Flow (perm)	1845	2760
Right Turn on Red		Yes
Satd. Flow (RTOR)		158
Link Speed (mph)	35	
Link Distance (ft)	1227	
Travel Time (s)	23.9	
Confl. Peds. (#/hr)		
Peak Hour Factor	0.93	0.93
Adj. Flow (vph)	173	143
Shared Lane Traffic (%)		
Lane Group Flow (vph)	173	143
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	24	
Link Offset(ft)	0	
Crosswalk Width(ft)	35	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	1
Detector Template	Thru	Right
Leading Detector (ft)	100	20
Trailing Detector (ft)	0	0
Detector 1 Position(ft)	0	0
Detector 1 Size(ft)	6	20
Detector 1 Type	Cl+Ex	Cl+Ex
Detector 1 Channel		
Detector 1 Extend (s)	0.0	0.0
Detector 1 Queue (s)	0.0	0.0
Detector 1 Delay (s)	0.0	0.0
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	Perm

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Protected Phases	5	5	2		1	1	6		3	8		7
Permitted Phases				Free				6				
Detector Phase	5	5	2		1	1	6	6	3	8		7
Switch Phase												
Minimum Initial (s)	5.0	5.0	10.0		6.0	6.0	10.0	10.0	5.0	5.0		5.0
Minimum Split (s)	10.2	10.2	32.9		11.2	11.2	41.7	41.7	10.0	22.6		10.0
Total Split (s)	45.2	45.2	45.9		21.2	21.2	46.7	46.7	22.0	22.6		22.0
Total Split (%)	33.1%	33.1%	33.6%		15.5%	15.5%	34.2%	34.2%	16.1%	16.6%		16.1%
Maximum Green (s)	40.0	40.0	40.0		16.0	16.0	40.0	40.0	17.0	17.0		17.0
Yellow Time (s)	3.2	3.2	3.9		3.2	3.2	4.7	4.7	3.0	3.6		3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0		2.0
Lost Time Adjust (s)		0.0	0.0			0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		5.2	5.9			5.2	6.7	6.7	5.0	5.6		5.0
Lead/Lag	Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lead	Lag		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	4.6		3.0	3.0	4.6	4.6	3.0	3.2		3.0
Recall Mode	None	None	Min		None	None	Min	Min	None	None		None
Walk Time (s)			7.0				7.0	7.0		5.0		
Flash Don't Walk (s)			20.0				28.0	28.0		12.0		
Pedestrian Calls (#/hr)			1				0	0		1		
Act Effct Green (s)		10.0	42.2	97.5		9.5	38.0	38.0	12.3	14.5		12.2
Actuated g/C Ratio		0.10	0.43	1.00		0.10	0.39	0.39	0.13	0.15		0.13
v/c Ratio		0.44	0.54	0.04		0.42	0.65	0.36	0.56	0.46		0.55
Control Delay (s/veh)		45.5	23.6	0.0		51.5	26.9	4.3	51.8	35.9		46.5
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		45.5	23.6	0.0		51.5	26.9	4.3	51.8	35.9		46.5
LOS		D	C	A		D	C	A	D	D		D
Approach Delay (s/veh)			25.9				24.1			41.2		
Approach LOS			C				C			D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 136.5			
Actuated Cycle Length: 97.5			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay (s/veh): 28.2		Intersection LOS: C	
Intersection Capacity Utilization 60.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 11: Sisk Rd & SR 219





Lane Group	SBT	SBR
Protected Phases	4	
Permitted Phases		4
Detector Phase	4	4
Switch Phase		
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	22.6	22.6
Total Split (s)	22.6	22.6
Total Split (%)	16.6%	16.6%
Maximum Green (s)	17.0	17.0
Yellow Time (s)	3.6	3.6
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	5.6	5.6
Lead/Lag	Lag	Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	None
Walk Time (s)	5.0	5.0
Flash Don't Walk (s)	12.0	12.0
Pedestrian Calls (#/hr)	1	1
Act Effct Green (s)	14.4	14.4
Actuated g/C Ratio	0.15	0.15
v/c Ratio	0.64	0.26
Control Delay (s/veh)	51.9	6.5
Queue Delay	0.0	0.0
Total Delay (s/veh)	51.9	6.5
LOS	D	A
Approach Delay (s/veh)	37.8	
Approach LOS	D	

Intersection Summary

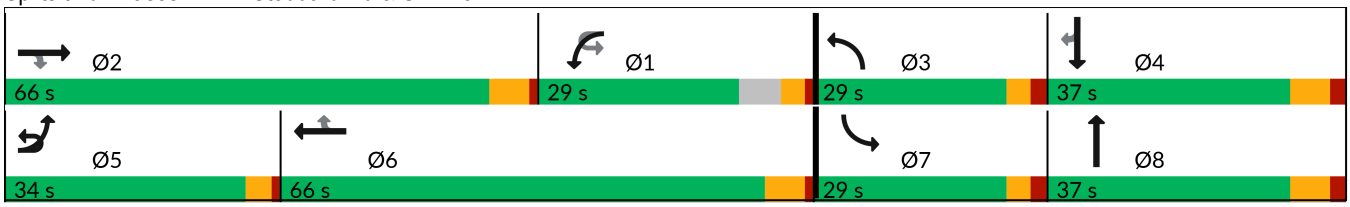
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	10	137	1191	33	5	40	1212	36	48	68	140	27
Future Volume (vph)	10	137	1191	33	5	40	1212	36	48	68	140	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		1000		620		495		640	70		0	155
Storage Lanes		2		1		1		1	1		0	1
Taper Length (ft)		210				140			55			160
Lane Util. Factor	0.95	0.97	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Frt				0.850				0.850		0.899		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	3400	3505	1568	0	1752	3505	1568	1752	1658	0	1752
Flt Permitted		0.950				0.238			0.950			0.950
Satd. Flow (perm)	0	3400	3505	1568	0	439	3505	1568	1752	1658	0	1752
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				99				85		55		
Link Speed (mph)			55				55			35		
Link Distance (ft)			1694				1350			735		
Travel Time (s)			21.0				16.7			14.3		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	147	1281	35	5	43	1303	39	52	73	151	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	158	1281	35	0	48	1303	39	52	224	0	29
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			48				48			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			25				25			16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2		1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)		20	100	20		20	100	20	20	100		20
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0		0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Perm	custom	Prot	NA	Perm	Prot	NA		Prot
Protected Phases	5	5	2			1	6		3	8		7
Permitted Phases				2	1			6				

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	21	238
Future Volume (vph)	21	238
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		155
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	1.00	1.00
Frt		0.850
Flt Protected		
Satd. Flow (prot)	1845	1568
Flt Permitted		
Satd. Flow (perm)	1845	1568
Right Turn on Red		Yes
Satd. Flow (RTOR)		256
Link Speed (mph)	35	
Link Distance (ft)	1875	
Travel Time (s)	36.5	
Peak Hour Factor	0.93	0.93
Adj. Flow (vph)	23	256
Shared Lane Traffic (%)		
Lane Group Flow (vph)	23	256
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	25	
Two way Left Turn Lane	Yes	
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	1
Detector Template	Thru	Right
Leading Detector (ft)	100	20
Trailing Detector (ft)	0	0
Detector 1 Position(ft)	0	0
Detector 1 Size(ft)	6	20
Detector 1 Type	Cl+Ex	Cl+Ex
Detector 1 Channel		
Detector 1 Extend (s)	0.0	0.0
Detector 1 Queue (s)	0.0	0.0
Detector 1 Delay (s)	0.0	0.0
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	Perm
Protected Phases	4	
Permitted Phases		4

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Detector Phase	5	5	2	2	1	1	6	6	3	8		7
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.0	10.0		9.0
Minimum Split (s)	14.0	14.0	16.0	16.0	14.0	14.0	16.0	16.0	14.0	17.0		14.0
Total Split (s)	34.0	34.0	66.0	66.0	29.0	29.0	66.0	66.0	29.0	37.0		29.0
Total Split (%)	20.5%	20.5%	39.8%	39.8%	17.5%	17.5%	39.8%	39.8%	17.5%	22.3%		17.5%
Maximum Green (s)	30.0	30.0	60.0	60.0	25.0	25.0	60.0	60.0	24.0	30.0		24.0
Yellow Time (s)	3.0	3.0	5.0	5.0	3.0	3.0	5.0	5.0	3.0	5.0		3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0		2.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		4.0	6.0	6.0		4.0	6.0	6.0	5.0	7.0		5.0
Lead/Lag	Lead	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	4.5	4.5	3.0	3.0	4.5	4.5	3.0	3.5		3.0
Recall Mode	None	None	Min	Min	None	None	Min	Min	None	None		None
Act Effct Green (s)		12.1	64.6	64.6		19.4	68.3	68.3	10.4	21.0		9.5
Actuated g/C Ratio		0.10	0.51	0.51		0.15	0.54	0.54	0.08	0.17		0.07
v/c Ratio		0.49	0.72	0.04		0.72	0.69	0.04	0.36	0.70		0.22
Control Delay (s/veh)		62.9	32.1	0.1		105.4	26.0	0.1	67.8	51.0		66.0
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		62.9	32.1	0.1		105.4	26.0	0.1	67.8	51.0		66.0
LOS		E	C	A		F	C	A	E	D		E
Approach Delay (s/veh)			34.7				28.0			54.1		
Approach LOS			C				C			D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 166			
Actuated Cycle Length: 126.7			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay (s/veh): 32.2		Intersection LOS: C	
Intersection Capacity Utilization 82.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 12: Stoddard Rd & SR 219





Lane Group	SBT	SBR
Detector Phase	4	4
Switch Phase		
Minimum Initial (s)	10.0	10.0
Minimum Split (s)	17.0	17.0
Total Split (s)	37.0	37.0
Total Split (%)	22.3%	22.3%
Maximum Green (s)	30.0	30.0
Yellow Time (s)	5.0	5.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	7.0	7.0
Lead/Lag	Lag	Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	3.5	3.5
Recall Mode	None	None
Act Effct Green (s)	17.1	17.1
Actuated g/C Ratio	0.13	0.13
v/c Ratio	0.09	0.59
Control Delay (s/veh)	51.3	12.0
Queue Delay	0.0	0.0
Total Delay (s/veh)	51.3	12.0
LOS	D	B
Approach Delay (s/veh)	20.0	
Approach LOS	C	

Intersection Summary

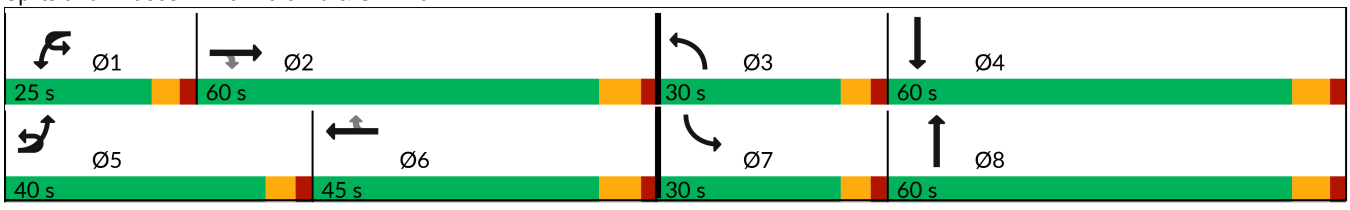
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	79	98	923	262	11	163	809	97	370	276	196	218
Future Volume (vph)	79	98	923	262	11	163	809	97	370	276	196	218
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		555		700		450		500	320		0	300
Storage Lanes		2		2		2		2	2		0	2
Taper Length (ft)		140				205			140			150
Lane Util. Factor	0.91	0.97	0.91	1.00	0.91	0.97	0.91	1.00	0.97	0.95	0.95	0.97
Ped Bike Factor				0.99				0.99		0.99		
Frt				0.850				0.850		0.938		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	3429	5036	1568	0	3404	5036	1568	3400	3270	0	3400
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	3429	5036	1547	0	3404	5036	1546	3400	3270	0	3400
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				282				135		106		
Link Speed (mph)			55				55			40		
Link Distance (ft)			943				2640			1013		
Travel Time (s)			11.7				32.7			17.3		
Confl. Peds. (#/hr)				1				1			1	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	1%	3%	3%	3%	1%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	85	105	992	282	12	175	870	104	398	297	211	234
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	190	992	282	0	187	870	104	398	508	0	234
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	L NA	Left	R NA	R NA	Left	Left	R NA	L NA	Left	R NA	L NA
Median Width(ft)			48				48			24		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			50				70			50		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2		1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)		20	100	20		20	100	20	20	100		20
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0		0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	335	148
Future Volume (vph)	335	148
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		300
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	0.95	0.95
Ped Bike Factor		
Frt	0.954	
Flt Protected		
Satd. Flow (prot)	3344	0
Flt Permitted		
Satd. Flow (perm)	3344	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	41	
Link Speed (mph)	45	
Link Distance (ft)	631	
Travel Time (s)	9.6	
Confl. Peds. (#/hr)		
Peak Hour Factor	0.93	0.93
Heavy Vehicles (%)	3%	3%
Adj. Flow (vph)	360	159
Shared Lane Traffic (%)		
Lane Group Flow (vph)	519	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	R NA
Median Width(ft)	24	
Link Offset(ft)	0	
Crosswalk Width(ft)	50	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	
Detector Template	Thru	
Leading Detector (ft)	100	
Trailing Detector (ft)	0	
Detector 1 Position(ft)	0	
Detector 1 Size(ft)	6	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA		Prot
Protected Phases	5	5	2		1	1	6		3	8		7
Permitted Phases				2				6				
Detector Phase	5	5	2	2	1	1	6	6	3	8		7
Switch Phase												
Minimum Initial (s)	6.0	6.0	11.0	11.0	6.0	6.0	11.0	11.0	8.0	8.0		8.0
Minimum Split (s)	11.8	11.8	41.5	41.5	11.8	11.8	37.5	37.5	15.0	60.0		15.0
Total Split (s)	40.0	40.0	60.0	60.0	25.0	25.0	45.0	45.0	30.0	60.0		30.0
Total Split (%)	22.9%	22.9%	34.3%	34.3%	14.3%	14.3%	25.7%	25.7%	17.1%	34.3%		17.1%
Maximum Green (s)	34.2	34.2	52.5	52.5	19.2	19.2	37.5	37.5	24.0	53.0		24.0
Yellow Time (s)	3.8	3.8	5.5	5.5	3.8	3.8	5.5	5.5	4.0	5.0		4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		5.8	7.5	7.5		5.8	7.5	7.5	6.0	7.0		6.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	3.0	3.0	4.5	4.5	3.0	3.0	4.5	4.5	3.0	3.0		3.0
Recall Mode	None	None	Min	Min	None	None	Min	Min	None	None		None
Walk Time (s)			5.0	5.0			5.0	5.0		5.0		
Flash Don't Walk (s)			29.0	29.0			25.0	25.0		48.0		
Pedestrian Calls (#/hr)			1	1			1	1		1		
Act Effct Green (s)		13.3	40.0	40.0		13.2	39.8	39.8	20.8	33.7		15.1
Actuated g/C Ratio		0.10	0.31	0.31		0.10	0.31	0.31	0.16	0.26		0.12
v/c Ratio		0.54	0.64	0.42		0.54	0.56	0.18	0.73	0.55		0.59
Control Delay (s/veh)		65.2	41.9	6.3		65.4	40.4	3.2	62.8	35.2		64.2
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		65.2	41.9	6.3		65.4	40.4	3.2	62.8	35.2		64.2
LOS		E	D	A		E	D	A	E	D		E
Approach Delay (s/veh)			38.1				41.1			47.3		
Approach LOS			D				D			D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 175			
Actuated Cycle Length: 129.4			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay (s/veh): 43.5		Intersection LOS: D	
Intersection Capacity Utilization 69.6%		ICU Level of Service C	
Analysis Period (min) 15			

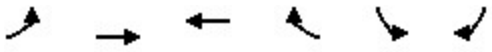
Splits and Phases: 13: Dale Rd & SR 219





Lane Group	SBT	SBR
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Detector Phase	4	
Switch Phase		
Minimum Initial (s)	8.0	
Minimum Split (s)	60.0	
Total Split (s)	60.0	
Total Split (%)	34.3%	
Maximum Green (s)	53.0	
Yellow Time (s)	5.0	
All-Red Time (s)	2.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	7.0	
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	
Recall Mode	None	
Walk Time (s)	5.0	
Flash Don't Walk (s)	48.0	
Pedestrian Calls (#/hr)	1	
Act Effct Green (s)	28.0	
Actuated g/C Ratio	0.22	
v/c Ratio	0.69	
Control Delay (s/veh)	48.4	
Queue Delay	0.0	
Total Delay (s/veh)	48.4	
LOS	D	
Approach Delay (s/veh)	53.3	
Approach LOS	D	

Intersection Summary

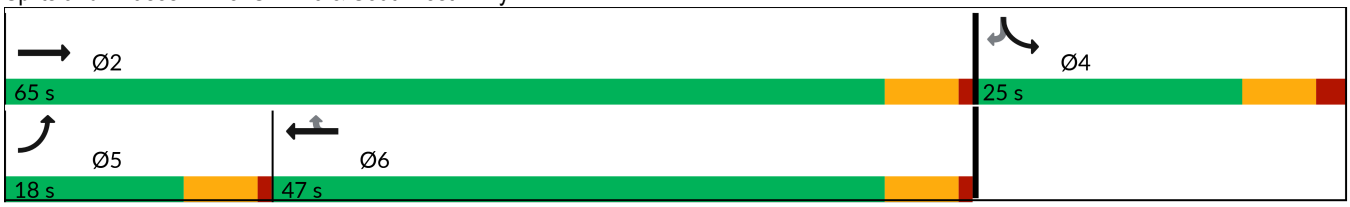


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	134	1229	1222	59	133	66
Future Volume (vph)	134	1229	1222	59	133	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300			500	100	0
Storage Lanes	1			1	1	1
Taper Length (ft)	150				100	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1752	3505	3505	1568	1752	1568
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1752	3505	3505	1568	1752	1568
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				63		71
Link Speed (mph)		55	55		25	
Link Distance (ft)		2134	847		750	
Travel Time (s)		26.5	10.5		20.5	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	144	1322	1314	63	143	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	144	1322	1314	63	143	71
Enter Blocked Intersection	No	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	L NA	R NA
Median Width(ft)		48	48		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.0	24.0	24.0	24.0	25.0	25.0
Total Split (s)	18.0	65.0	47.0	47.0	25.0	25.0
Total Split (%)	20.0%	72.2%	52.2%	52.2%	27.8%	27.8%
Maximum Green (s)	12.0	59.0	41.0	41.0	18.0	18.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	7.0	7.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	4.5	4.5	4.5	3.5	3.5
Recall Mode	None	Min	Min	Min	None	None
Act Effct Green (s)	11.2	55.6	38.3	38.3	13.0	13.0
Actuated g/C Ratio	0.14	0.68	0.47	0.47	0.16	0.16
v/c Ratio	0.60	0.55	0.80	0.08	0.51	0.23
Control Delay (s/veh)	46.1	8.0	23.4	4.1	39.4	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	46.1	8.0	23.4	4.1	39.4	10.1
LOS	D	A	C	A	D	B
Approach Delay (s/veh)		11.8	22.5		29.7	
Approach LOS		B	C		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 81.7			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay (s/veh): 17.8		Intersection LOS: B	
Intersection Capacity Utilization 66.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 28: SR 219 & Southwest Drwy



95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
6. Patterson Rd/SR 108	EBTR	477	151	343
	WBL	525	127	115
	WBT	1,387	66	5
	NBR	683	72	163
7. McHenry Ave/SR 108	WBLR	683	172	124
	NBT	693	174	230
	SBT	493	235	285
	SBT	493	216	273
14. Carver Rd/SR 219	EBUL	430	69	67
	EBTR	1,445	238	285
	EBTR	1,445	194	231
	EBTR	580	137	143
	EBR	580	76	59
	WBUL	595	93	102
	WBT	1,236	260	149
	WBT	1,236	287	163
	WBT	1,236	313	174
	WBR	540	13	24
	NBL	260	244	101
	NBTR	1,190	134	128
	SBL	95	44	33
	SBTR	1,325	159	128
15. Tully Rd/SR 219	EBL	715	56	49
	EBTR	1,232	217	281
	EBTR	1,232	218	272
	EBTR	1,232	206	242
	EBR	355	93	78
	WBUL	665	131	120
	WBL	665	142	133
	WBT	1,874	278	197
	WBT	1,874	314	236
	WBT	1,874	340	262
	WBR	415	37	20
	NBL	275	219	169
	NBT	1,296	111	146

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
	NBR	395	61	75
	SBL	300	41	36
	SBTR	1,249	249	157
16. SR 108/SR 219/Claribel Rd	EBUL	765	108	142
	EBL	765	125	154
	EBT	1,219	161	317
	EBT	1,219	169	340
	EBT	1,219	178	352
	EBR	650	110	95
	WBL	960	157	99
	WBL	960	187	142
	WBT	1,594	653	407
	WBT	1,594	608	366
	WBR	75	251	184
	NBL	300	232	331
	NBT	1,418	305	360
	NBT	1,418	308	376
	NBR	210	71	300
	SBL	420	167	382
	SBT	1,240	300	343
	SBT	1,240	264	312
	SBR	535	112	93
26. Pelandale Ave/SR 108	EBUL	300	113	120
	EBL	793	158	168
	EBT	793	300	360
	EBT	793	262	315
	EBR	380	86	172
	WBL	195	46	53
	WBL	195	63	67
	WBT	640	206	188
	WBT	640	195	173
	WBT	640	173	150
	WBR	320	73	19
	NBUL	325	91	196
	NBL	325	157	286

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
	NBT	776	320	422
	NBT	776	282	388
	NBR	260		111
	SBL	300	81	184
	SBL	300	89	377
	SBT	2,472	328	558
	SBTR	2,472	358	584

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
9. SR 99 SB Ramps/SR 219	EBT	350	164	109
	EBT	350	214	144
	EBT	248	214	149
	EBTR	248	181	124
	EBR	248	109	79
	WBUL	361	270	187
	WBL	361	278	204
	WBT	361	116	189
	WBT	361	93	172
	SBL	450	429	269
	SBLT	1,118	393	228
	SBR	450	68	80
10. SR 99 NB Ramps/SR 219	EBL	361	166	138
	EBT	361	95	30
	EBT	361	87	24
	EBT	361	59	15
	WBT	360	201	137
	WBT	861	255	198
	WBT	861	394	334
	WBR	1,013	396	401
	NBLT	1,264	116	166
	NBR	1,264	119	136
	NBR	565	71	101
11. Sisk Rd/SR 219	EBUL	250	68	56
	EBL	320	106	105
	EBL	320	128	127
	EBT	861	700	294
	EBT	861	678	309
	EBT	861	602	292
	EBR			
	WBUL	735	114	112
	WBT	2,424	395	319
	WBT	2,424	390	334
	WBT	813	359	341
	WBR	525	181	116

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
	NBL	555	184	152
	NBT	1,925	307	126
	NBTR	230	270	114
	SBL	505	208	127
	SBL	505	223	173
	SBT	1,125	195	178
	SBR	1,125	121	70
	SBR	150	93	56
12. Stoddard Rd/SR 219	EBUL	1,000	395	97
	EBL	1,000	424	117
	EBT	1,611	745	482
	EBT	1,611	775	513
	EBR	620	237	99
	WBL	495	459	76
	WBT	1,265	842	461
	WBT	1,265	902	499
	WBR	640	348	38
	NBL	70	99	109
	NBTR	658	508	231
	SBL	155	147	61
	SBT	1,772	445	47
	SBR	155	486	194
13. Dale Rd/SR 219	EBUL	555	180	190
	EBL	555	140	136
	EBT	828	270	335
	EBT	828	265	329
	EBT	700	246	307
	EBR	700	278	177
	WBUL	450	165	139
	WBL	450	229	169
	WBT	2,534	428	325
	WBT	2,534	432	309
	WBT	500	395	279
	WBR	500	370	73
	NBL	320	294	374

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
	NBL	320	330	425
	NBT	890	352	385
	NBTR	890	401	365
	SBL	300	188	154
	SBL	300	210	175
	SBT	482	279	234
	SBTR	482	328	286
28. Southwest Drwy/SR 219	EBL	300	232	178
	EBT	2,074	155	194
	EBT	2,074	211	232
	WBT	783	315	311
	WBT	783	326	333
	WBR	500	52	45
	SBL	100	104	137
	SBR	672	54	66

Appendix F.
Queuing Analysis Worksheets – Cumulative Plus Project Conditions with Improvements

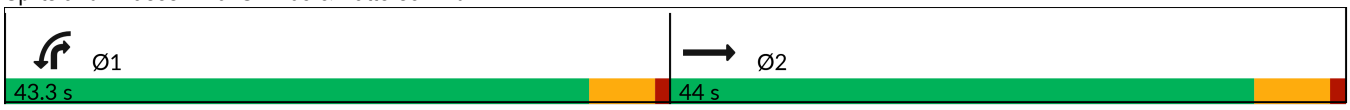
SR 99/Beckwith Road/ Standiford Avenue Interchange Improvement TEPA Report

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	453	10	236	957	0	101
Future Volume (vph)	453	10	236	957	0	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	525		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			125		25	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.997					0.865
Flt Protected			0.950			
Satd. Flow (prot)	3395	0	1703	1792	0	1550
Flt Permitted			0.950			
Satd. Flow (perm)	3395	0	1703	1792	0	1550
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	3					258
Link Speed (mph)	35			55	45	
Link Distance (ft)	574			1403	796	
Travel Time (s)	11.2			17.4	12.1	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	482	11	251	1018	0	107
Shared Lane Traffic (%)						
Lane Group Flow (vph)	493	0	251	1018	0	107
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (ft)	100		20	100	20	20
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0		0
Detector 1 Size(ft)	6		20	6		20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0		0.0	0.0		0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA		Over
Protected Phases	2		1	Free		1
Permitted Phases						

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	2		1			1
Switch Phase						
Minimum Initial (s)	8.0		8.0			8.0
Minimum Split (s)	14.0		13.3			13.3
Total Split (s)	44.0		43.3			43.3
Total Split (%)	50.4%		49.6%			49.6%
Maximum Green (s)	38.0		38.0			38.0
Yellow Time (s)	5.0		4.3			4.3
All-Red Time (s)	1.0		1.0			1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	6.0		5.3			5.3
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.2		3.2			3.2
Recall Mode	None		None			None
Act Effct Green (s)	11.4		11.0	34.0		11.0
Actuated g/C Ratio	0.34		0.32	1.00		0.32
v/c Ratio	0.43		0.46	0.57		0.16
Control Delay (s/veh)	10.3		12.7	1.3		0.5
Queue Delay	0.0		0.0	0.0		0.0
Total Delay (s/veh)	10.3		12.7	1.3		0.5
LOS	B		B	A		A
Approach Delay (s/veh)	10.3			3.6	0.5	
Approach LOS	B			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 87.3			
Actuated Cycle Length: 34			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay (s/veh): 5.2		Intersection LOS: A	
Intersection Capacity Utilization 53.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: SR 108 & Patterson Rd



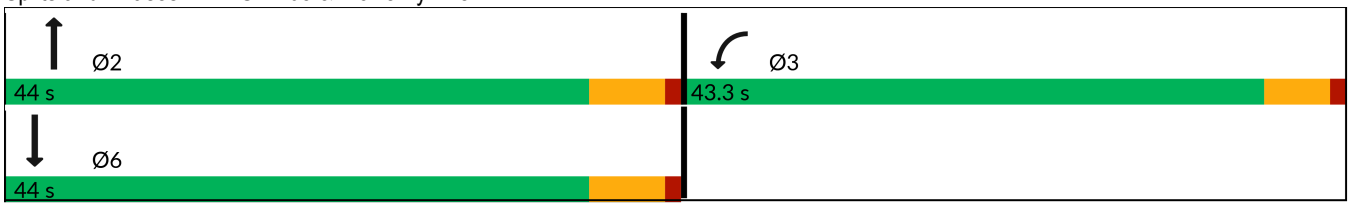


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	236	10	390	101	0	690
Future Volume (vph)	236	10	390	101	0	690
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		475	0	
Storage Lanes	1	0		1	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Frt	0.994			0.850		
Flt Protected	0.954					
Satd. Flow (prot)	1700	0	1792	1524	0	3406
Flt Permitted	0.954					
Satd. Flow (perm)	1700	0	1792	1524	0	3406
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	3			107		
Link Speed (mph)	45		55			55
Link Distance (ft)	796		700			570
Travel Time (s)	12.1		8.7			7.1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	251	11	415	107	0	734
Shared Lane Traffic (%)						
Lane Group Flow (vph)	262	0	415	107	0	734
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		24			24
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1		2	1		2
Detector Template	Left		Thru	Right		Thru
Leading Detector (ft)	20		100	20		100
Trailing Detector (ft)	0		0	0		0
Detector 1 Position(ft)	0		0	0		0
Detector 1 Size(ft)	20		6	20		6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0		0.0	0.0		0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot		NA	Free		NA
Protected Phases	3		2			6
Permitted Phases				Free		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	3		2			6
Switch Phase						
Minimum Initial (s)	8.0		8.0			8.0
Minimum Split (s)	13.3		14.0			14.0
Total Split (s)	43.3		44.0			44.0
Total Split (%)	49.6%		50.4%			50.4%
Maximum Green (s)	38.0		38.0			38.0
Yellow Time (s)	4.3		5.0			5.0
All-Red Time (s)	1.0		1.0			1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.3		6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.2		3.2			3.2
Recall Mode	None		None			None
Act Effct Green (s)	12.5		15.4	39.7		15.4
Actuated g/C Ratio	0.31		0.39	1.00		0.39
v/c Ratio	0.49		0.60	0.07		0.56
Control Delay (s/veh)	15.1		14.3	0.1		11.6
Queue Delay	0.0		0.0	0.0		0.0
Total Delay (s/veh)	15.1		14.3	0.1		11.6
LOS	B		B	A		B
Approach Delay (s/veh)	15.1		11.4			11.6
Approach LOS	B		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 87.3			
Actuated Cycle Length: 39.7			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay (s/veh): 12.1		Intersection LOS: B	
Intersection Capacity Utilization 43.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 7: SR 108 & McHenry Ave



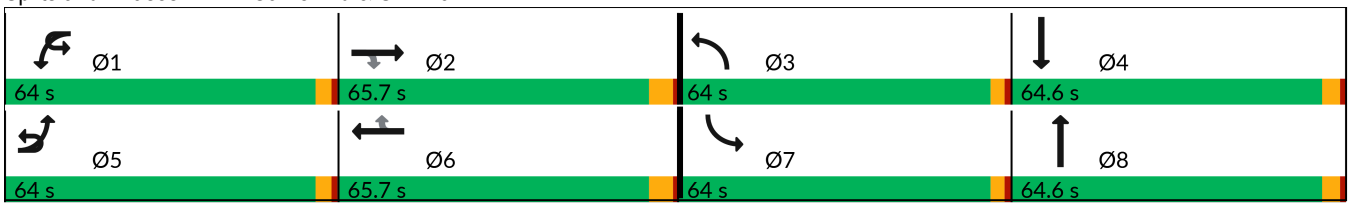
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	10	60	855	169	10	65	1378	10	286	120	70	10
Future Volume (vph)	10	60	855	169	10	65	1378	10	286	120	70	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		430		580		595		540	260		0	95
Storage Lanes		1		2		1		1	1		0	1
Taper Length (ft)		110				90			115			115
Lane Util. Factor	0.91	1.00	0.91	1.00	0.91	1.00	0.91	1.00	1.00	1.00	1.00	1.00
Frt				0.850				0.850		0.945		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	1719	4940	1538	0	1719	4940	1538	1719	1710	0	1719
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	1719	4940	1538	0	1719	4940	1538	1719	1710	0	1719
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				186				41		11		
Link Speed (mph)			55				55			35		
Link Distance (ft)			1479				1299			1261		
Travel Time (s)			18.3				16.1			24.6		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	11	66	940	186	11	71	1514	11	314	132	77	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	77	940	186	0	82	1514	11	314	209	0	11
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			12				12			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			16				16			16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2		1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)		20	100	20		20	100	20	20	100		20
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0		0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA		Prot
Protected Phases	5	5	2		1	1	6		3	8		7

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	130	45
Future Volume (vph)	130	45
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	1.00	1.00
Frt	0.962	
Flt Protected		
Satd. Flow (prot)	1741	0
Flt Permitted		
Satd. Flow (perm)	1741	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	6	
Link Speed (mph)	35	
Link Distance (ft)	1396	
Travel Time (s)	27.2	
Peak Hour Factor	0.91	0.91
Heavy Vehicles (%)	5%	5%
Adj. Flow (vph)	143	49
Shared Lane Traffic (%)		
Lane Group Flow (vph)	192	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane	Yes	
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	
Detector Template	Thru	
Leading Detector (ft)	100	
Trailing Detector (ft)	0	
Detector 1 Position(ft)	0	
Detector 1 Size(ft)	6	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	
Protected Phases	4	

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Permitted Phases				2				6				
Detector Phase	5	5	2	2	1	1	6	6	3	8		7
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	14.0	14.0	15.7	15.7	14.0	14.0	15.7	15.7	14.0	14.5		14.0
Total Split (s)	64.0	64.0	65.7	65.7	64.0	64.0	65.7	65.7	64.0	64.6		64.0
Total Split (%)	24.8%	24.8%	25.4%	25.4%	24.8%	24.8%	25.4%	25.4%	24.8%	25.0%		24.8%
Maximum Green (s)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.1		60.0
Yellow Time (s)	3.0	3.0	4.7	4.7	3.0	3.0	4.7	4.7	3.0	3.5		3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		4.0	5.7	5.7		4.0	5.7	5.7	4.0	4.5		4.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	2.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0		1.0
Recall Mode	None	None	Min	Min	None	None	Min	Min	None	None		None
Act Effct Green (s)		12.1	60.5	60.5		12.4	60.8	60.8	31.2	52.0		10.1
Actuated g/C Ratio		0.08	0.42	0.42		0.09	0.42	0.42	0.22	0.36		0.07
v/c Ratio		0.54	0.45	0.25		0.56	0.73	0.02	0.85	0.34		0.09
Control Delay (s/veh)		81.2	33.3	5.3		81.6	39.7	0.0	75.6	34.0		72.6
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		81.2	33.3	5.3		81.6	39.7	0.0	75.6	34.0		72.6
LOS		F	C	A		F	D	A	E	C		E
Approach Delay (s/veh)			32.0				41.6			59.0		
Approach LOS			C				D			E		

Intersection Summary			
Area Type:	Other		
Cycle Length: 258.3			
Actuated Cycle Length: 144.3			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay (s/veh): 42.8		Intersection LOS: D	
Intersection Capacity Utilization 75.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 14: Carver Rd & SR 219





Lane Group	SBT	SBR
Permitted Phases		
Detector Phase	4	
Switch Phase		
Minimum Initial (s)	10.0	
Minimum Split (s)	14.6	
Total Split (s)	64.6	
Total Split (%)	25.0%	
Maximum Green (s)	60.0	
Yellow Time (s)	3.6	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	4.6	
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	2.0	
Recall Mode	None	
Act Effct Green (s)	21.6	
Actuated g/C Ratio	0.15	
v/c Ratio	0.72	
Control Delay (s/veh)	73.7	
Queue Delay	0.0	
Total Delay (s/veh)	73.7	
LOS	E	
Approach Delay (s/veh)	73.7	
Approach LOS	E	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	25	752	153	10	230	1179	10	219	120	110	15	200
Future Volume (vph)	25	752	153	10	230	1179	10	219	120	110	15	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	715		355		665		415	275		395	300	
Storage Lanes	1		1		2		1	1		1	1	
Taper Length (ft)	95				190			120			100	
Lane Util. Factor	1.00	0.91	1.00	0.91	0.97	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor										0.99		
Frt			0.850				0.850			0.850		0.959
Flt Protected	0.950				0.950			0.950			0.950	
Satd. Flow (prot)	1736	4988	1553	0	3367	4988	1553	1736	1827	1553	1736	1752
Flt Permitted	0.950				0.950			0.950			0.950	
Satd. Flow (perm)	1736	4988	1553	0	3367	4988	1553	1736	1827	1532	1736	1752
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)			137				82			121		6
Link Speed (mph)		55				55			35			35
Link Distance (ft)		1306				1950			1372			1326
Travel Time (s)		16.2				24.2			26.7			25.8
Confl. Peds. (#/hr)										1		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	27	826	168	11	253	1296	11	241	132	121	16	220
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	826	168	0	264	1296	11	241	132	121	16	302
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)		24				24			12			12
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		16				16			16			16
Two way Left Turn Lane									Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Number of Detectors	1	2	1		1	2	1	1	2	1	1	2
Detector Template	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left	Thru
Leading Detector (ft)	20	100	20		20	100	20	20	100	20	20	100
Trailing Detector (ft)	0	0	0		0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0		0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20		20	6	20	20	6	20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94				94			94			94
Detector 2 Size(ft)		6				6			6			6
Detector 2 Type		Cl+Ex				Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0				0.0			0.0			0.0

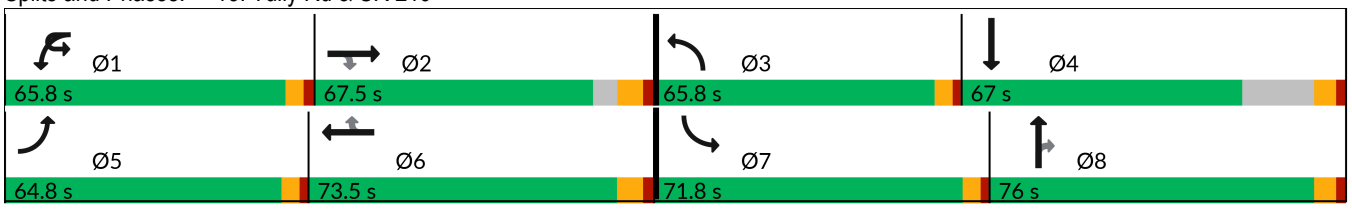


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	75
Future Volume (vph)	75
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	
Lane Util. Factor	1.00
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	0.91
Heavy Vehicles (%)	4%
Adj. Flow (vph)	82
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Turn Type	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	5	2		1	1	6		3	8		7	4
Permitted Phases			2				6			8		
Detector Phase	5	2	2	1	1	6	6	3	8	8	7	4
Switch Phase												
Minimum Initial (s)	9.0	10.0	10.0	10.0	10.0	16.0	16.0	10.0	19.0	19.0	16.0	10.0
Minimum Split (s)	14.8	17.5	17.5	15.8	15.8	23.5	23.5	15.8	26.0	26.0	21.8	17.0
Total Split (s)	64.8	67.5	67.5	65.8	65.8	73.5	73.5	65.8	76.0	76.0	71.8	67.0
Total Split (%)	22.6%	23.6%	23.6%	23.0%	23.0%	25.7%	25.7%	23.0%	26.6%	26.6%	25.1%	23.4%
Maximum Green (s)	59.0	60.0	60.0	60.0	60.0	66.0	66.0	60.0	69.0	69.0	66.0	60.0
Yellow Time (s)	3.8	5.5	5.5	3.8	3.8	5.5	5.5	3.8	5.0	5.0	3.8	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	7.5	7.5		5.8	7.5	7.5	5.8	7.0	7.0	5.8	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	1.0	2.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0
Recall Mode	None	Min	Min	None	None	Min	Min	None	None	None	None	None
Act Effct Green (s)	9.4	54.7	54.7		18.2	67.3	67.3	28.5	56.8	56.8	16.4	34.3
Actuated g/C Ratio	0.06	0.34	0.34		0.11	0.41	0.41	0.18	0.35	0.35	0.10	0.21
v/c Ratio	0.27	0.49	0.27		0.70	0.63	0.02	0.79	0.21	0.20	0.09	0.81
Control Delay (s/veh)	88.8	47.4	13.0		82.1	42.9	0.0	84.5	39.9	6.3	77.2	77.6
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	88.8	47.4	13.0		82.1	42.9	0.0	84.5	39.9	6.3	77.2	77.6
LOS	F	D	B		F	D	A	F	D	A	E	E
Approach Delay (s/veh)		42.8				49.2			53.4			77.6
Approach LOS		D				D			D			E

Intersection Summary			
Area Type:	Other		
Cycle Length: 286.1			
Actuated Cycle Length: 162.4			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay (s/veh): 50.5		Intersection LOS: D	
Intersection Capacity Utilization 81.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 15: Tully Rd & SR 219





Lane Group	SBR
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	

Intersection Summary

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	10	81	567	229	290	1127	160	166	360	140	150	650
Future Volume (vph)	10	81	567	229	290	1127	160	166	360	140	150	650
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		765		650	960		75	500		210	420	
Storage Lanes		2		1	2		1	1		1	1	
Taper Length (ft)		255			255			80			115	
Lane Util. Factor	0.91	0.97	0.91	1.00	0.97	0.91	1.00	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor				0.98								
Frt				0.850			0.850			0.850		
Flt Protected		0.950			0.950			0.950			0.950	
Satd. Flow (prot)	0	3335	4940	1538	3335	4940	1538	1719	3438	1538	1719	3438
Flt Permitted		0.950			0.950			0.950			0.950	
Satd. Flow (perm)	0	3335	4940	1503	3335	4940	1538	1719	3438	1538	1719	3438
Right Turn on Red				Yes			Yes			Yes		
Satd. Flow (RTOR)				252			90			154		
Link Speed (mph)			55			55			35			45
Link Distance (ft)			1337			1655			1505			1304
Travel Time (s)			16.6			20.5			29.3			19.8
Confl. Peds. (#/hr)				8								
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	11	89	623	252	319	1238	176	182	396	154	165	714
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	100	623	252	319	1238	176	182	396	154	165	714
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			24			24			12			12
Link Offset(ft)			0			0			0			0
Crosswalk Width(ft)			16			16			16			16
Two way Left Turn Lane									Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors		1	2	1	1	2	1	1	2	1	1	2
Detector Template		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru
Leading Detector (ft)		20	100	20	20	100	20	20	100	20	20	100
Trailing Detector (ft)		0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)		0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)		20	6	20	20	6	20	20	6	20	20	6
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94			94			94
Detector 2 Size(ft)			6			6			6			6
Detector 2 Type			Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0			0.0			0.0

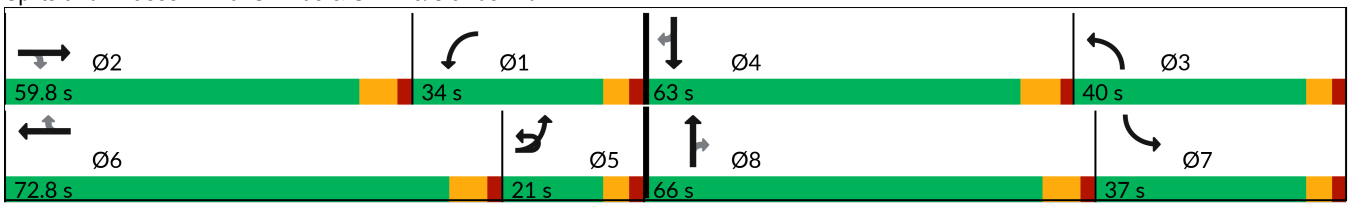


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	116
Future Volume (vph)	116
Ideal Flow (vphpl)	1900
Storage Length (ft)	535
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Ped Bike Factor	
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1538
Flt Permitted	
Satd. Flow (perm)	1538
Right Turn on Red	Yes
Satd. Flow (RTOR)	132
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	0.91
Heavy Vehicles (%)	5%
Adj. Flow (vph)	127
Shared Lane Traffic (%)	
Lane Group Flow (vph)	127
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Turn Type	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	5	5	2		1	6		3	8		7	4
Permitted Phases				2			6			8		
Detector Phase	5	5	2	2	1	6	6	3	8	8	7	4
Switch Phase												
Minimum Initial (s)	15.0	15.0	12.0	12.0	15.0	12.0	12.0	14.0	14.0	14.0	14.0	14.0
Minimum Split (s)	20.8	20.8	50.6	50.6	20.8	55.6	55.6	19.8	58.6	58.6	19.8	60.6
Total Split (s)	21.0	21.0	59.8	59.8	34.0	72.8	72.8	40.0	66.0	66.0	37.0	63.0
Total Split (%)	10.7%	10.7%	30.4%	30.4%	17.3%	37.0%	37.0%	20.3%	33.5%	33.5%	18.8%	32.0%
Maximum Green (s)	15.2	15.2	52.2	52.2	28.2	65.2	65.2	34.2	58.4	58.4	31.2	55.4
Yellow Time (s)	3.8	3.8	5.6	5.6	3.8	5.6	5.6	3.8	5.6	5.6	3.8	5.6
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.8	7.6	7.6	5.8	7.6	7.6	5.8	7.6	7.6	5.8	7.6
Lead/Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.5	2.5	2.1	2.1	2.5	2.0	2.0	2.5	3.6	3.6	2.5	2.3
Recall Mode	None	None	Min	Min	None	Min	Min	None	None	None	None	None
Walk Time (s)			7.0	7.0		7.0	7.0		7.0	7.0		7.0
Flash Don't Walk (s)			35.0	35.0		41.0	41.0		44.0	44.0		46.0
Pedestrian Calls (#/hr)			8	8		0	0		0	0		0
Act Effct Green (s)		15.5	28.9	28.9	32.0	45.4	45.4	22.0	25.6	25.6	34.5	38.0
Actuated g/C Ratio		0.10	0.19	0.19	0.22	0.31	0.31	0.15	0.17	0.17	0.23	0.26
v/c Ratio		0.29	0.65	0.51	0.44	0.82	0.33	0.72	0.67	0.39	0.41	0.81
Control Delay (s/veh)		70.8	59.3	9.7	57.4	53.8	22.3	79.6	65.6	11.4	54.0	61.2
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		70.8	59.3	9.7	57.4	53.8	22.3	79.6	65.6	11.4	54.0	61.2
LOS		E	E	A	E	D	C	E	E	B	D	E
Approach Delay (s/veh)			47.7			51.3			57.7			53.3
Approach LOS			D			D			E			D

Intersection Summary			
Area Type:	Other		
Cycle Length: 196.8			
Actuated Cycle Length: 148.7			
Natural Cycle: 160			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay (s/veh): 52.0		Intersection LOS: D	
Intersection Capacity Utilization 86.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 16: SR 108 & SR 219/Claribel Rd





Lane Group	SBR
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Detector Phase	4
Switch Phase	
Minimum Initial (s)	14.0
Minimum Split (s)	60.6
Total Split (s)	63.0
Total Split (%)	32.0%
Maximum Green (s)	55.4
Yellow Time (s)	5.6
All-Red Time (s)	2.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	7.6
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	2.3
Recall Mode	None
Walk Time (s)	7.0
Flash Don't Walk (s)	46.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	38.0
Actuated g/C Ratio	0.26
v/c Ratio	0.26
Control Delay (s/veh)	7.8
Queue Delay	0.0
Total Delay (s/veh)	7.8
LOS	A
Approach Delay (s/veh)	
Approach LOS	

Intersection Summary

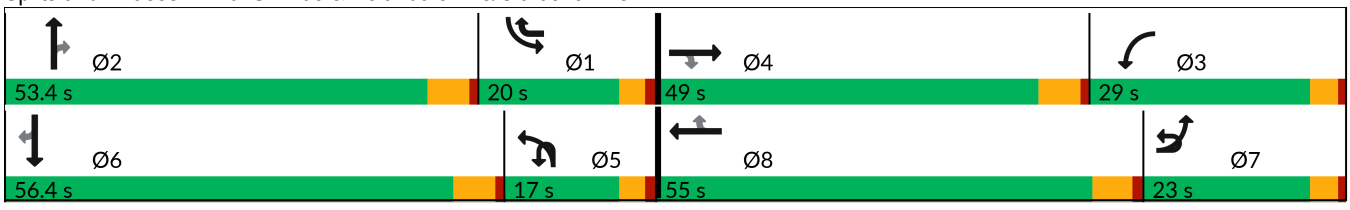
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	20	240	615	226	65	650	300	5	160	656	35	103
Future Volume (vph)	20	240	615	226	65	650	300	5	160	656	35	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		300		380	195		320		325		260	300
Storage Lanes		1		1	2		1		2		1	2
Taper Length (ft)		150			150				105			95
Lane Util. Factor	0.95	0.97	0.95	1.00	0.97	0.91	1.00	0.95	0.97	0.95	1.00	0.97
Ped Bike Factor							0.99					
Frt				0.850			0.850				0.850	
Flt Protected		0.950			0.950				0.950			0.950
Satd. Flow (prot)	0	3400	3505	1568	3400	5036	1568	0	3400	3505	1568	3400
Flt Permitted		0.950			0.950				0.950			0.950
Satd. Flow (perm)	0	3400	3505	1568	3400	5036	1547	0	3400	3505	1568	3400
Right Turn on Red				Yes			Yes				Yes	
Satd. Flow (RTOR)				248			55				118	
Link Speed (mph)			45			45				35		
Link Distance (ft)			850			721				829		
Travel Time (s)			12.9			10.9				16.1		
Confl. Peds. (#/hr)							1					
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	22	264	676	248	71	714	330	5	176	721	38	113
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	286	676	248	71	714	330	0	181	721	38	113
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	Left
Median Width(ft)			24			24				24		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	9	15		9	15
Number of Detectors		1	2	1	1	2	1		1	2	1	1
Detector Template		Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left
Leading Detector (ft)		20	100	20	20	100	20		20	100	20	20
Trailing Detector (ft)		0	0	0	0	0	0		0	0	0	0
Detector 1 Position(ft)		0	0	0	0	0	0		0	0	0	0
Detector 1 Size(ft)		20	6	20	20	6	20		20	6	20	20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94				94		
Detector 2 Size(ft)			6			6				6		
Detector 2 Type			Cl+Ex			Cl+Ex				Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0				0.0		

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	696	110
Future Volume (vph)	696	110
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		200
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Ped Bike Factor		0.98
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3505	1568
Flt Permitted		
Satd. Flow (perm)	3505	1539
Right Turn on Red		Yes
Satd. Flow (RTOR)		118
Link Speed (mph)	35	
Link Distance (ft)	2588	
Travel Time (s)	50.4	
Confl. Peds. (#/hr)		3
Peak Hour Factor	0.91	0.91
Heavy Vehicles (%)	3%	3%
Adj. Flow (vph)	765	121
Shared Lane Traffic (%)		
Lane Group Flow (vph)	765	121
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	24	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	1
Detector Template	Thru	Right
Leading Detector (ft)	100	20
Trailing Detector (ft)	0	0
Detector 1 Position(ft)	0	0
Detector 1 Size(ft)	6	20
Detector 1 Type	Cl+Ex	Cl+Ex
Detector 1 Channel		
Detector 1 Extend (s)	0.0	0.0
Detector 1 Queue (s)	0.0	0.0
Detector 1 Delay (s)	0.0	0.0
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Turn Type	Prot	Prot	NA	Perm	Prot	NA	pm+ov	Prot	Prot	NA	Perm	Prot
Protected Phases	7	7	4		3	8	1	5	5	2		1
Permitted Phases				4			8				2	
Detector Phase	7	7	4	4	3	8	1	5	5	2	2	1
Switch Phase												
Minimum Initial (s)	10.0	10.0	15.0	15.0	25.0	10.0	10.0	10.0	10.0	25.0	25.0	10.0
Minimum Split (s)	14.0	14.0	47.7	47.7	29.0	46.7	14.0	14.0	14.0	44.7	44.7	14.0
Total Split (s)	23.0	23.0	49.0	49.0	29.0	55.0	20.0	17.0	17.0	53.4	53.4	20.0
Total Split (%)	15.2%	15.2%	32.4%	32.4%	19.2%	36.3%	13.2%	11.2%	11.2%	35.3%	35.3%	13.2%
Maximum Green (s)	19.0	19.0	43.3	43.3	25.0	49.3	16.0	13.0	13.0	47.7	47.7	16.0
Yellow Time (s)	3.0	3.0	4.7	4.7	3.0	4.7	3.0	3.0	3.0	4.7	4.7	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		4.0	5.7	5.7	4.0	5.7	4.0		4.0	5.7	5.7	4.0
Lead/Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.5	2.5	2.0	2.5	2.3	2.2	2.2	3.0	3.0	2.3
Recall Mode	None	None	None	None	Min	None	Min	None	None	Min	Min	Min
Walk Time (s)			10.0	10.0		10.0				5.0	5.0	
Flash Don't Walk (s)			32.0	32.0		31.0				34.0	34.0	
Pedestrian Calls (#/hr)			0	0		1				0	0	
Act Effct Green (s)		30.3	30.1	30.1	25.4	25.2	42.5		14.1	33.0	33.0	15.6
Actuated g/C Ratio		0.24	0.24	0.24	0.21	0.20	0.34		0.11	0.27	0.27	0.13
v/c Ratio		0.34	0.79	0.44	0.10	0.70	0.58		0.47	0.77	0.08	0.26
Control Delay (s/veh)		43.0	51.8	7.1	45.3	49.8	30.1		59.2	48.7	0.3	54.1
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)		43.0	51.8	7.1	45.3	49.8	30.1		59.2	48.7	0.3	54.1
LOS		D	D	A	D	D	C		E	D	A	D
Approach Delay (s/veh)			40.6			43.7				48.8		
Approach LOS			D			D				D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 151.4			
Actuated Cycle Length: 123.9			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay (s/veh): 43.9		Intersection LOS: D	
Intersection Capacity Utilization 77.0%		ICU Level of Service D	
Analysis Period (min) 15			

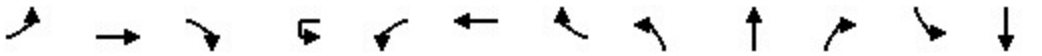
Splits and Phases: 26: SR 108 & Pelandale Ave/Claratina Ave





Lane Group	SBT	SBR
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Detector Phase	6	6
Switch Phase		
Minimum Initial (s)	20.0	20.0
Minimum Split (s)	50.7	50.7
Total Split (s)	56.4	56.4
Total Split (%)	37.3%	37.3%
Maximum Green (s)	50.7	50.7
Yellow Time (s)	4.7	4.7
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	5.7	5.7
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	Min	Min
Walk Time (s)	10.0	10.0
Flash Don't Walk (s)	10.0	10.0
Pedestrian Calls (#/hr)	3	3
Act Effct Green (s)	34.6	34.6
Actuated g/C Ratio	0.28	0.28
v/c Ratio	0.78	0.24
Control Delay (s/veh)	47.6	7.5
Queue Delay	0.0	0.0
Total Delay (s/veh)	47.6	7.5
LOS	D	A
Approach Delay (s/veh)	43.5	
Approach LOS	D	

Intersection Summary



Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	0	878	310	10	623	634	0	0	0	0	786	10
Future Volume (vph)	0	878	310	10	623	634	0	0	0	0	786	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		0		0		0	0		0	450	
Storage Lanes	2		1		2		0	0		0	1	
Taper Length (ft)	25				25			25			105	
Lane Util. Factor	1.00	0.81	0.81	0.95	0.97	0.95	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.985	0.850									
Flt Protected					0.950						0.950	0.953
Satd. Flow (prot)	0	5775	1246	0	3335	3438	0	0	0	0	1633	1638
Flt Permitted					0.950						0.950	0.953
Satd. Flow (perm)	0	5775	1246	0	3335	3438	0	0	0	0	1633	1638
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)		25	220									
Link Speed (mph)		25				40			35			35
Link Distance (ft)		417				419			778			1218
Travel Time (s)		11.4				7.1			15.2			23.7
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	915	323	10	649	660	0	0	0	0	819	10
Shared Lane Traffic (%)			32%								49%	
Lane Group Flow (vph)	0	1018	220	0	659	660	0	0	0	0	418	411
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Right	Left
Median Width(ft)		24				24			12			12
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		50				16			16			30
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Number of Detectors		2	1		1	2			2		1	2
Detector Template		Thru	Right		Left	Thru			Thru		Left	Thru
Leading Detector (ft)		100	20		20	100			100		20	100
Trailing Detector (ft)		0	0		0	0			0		0	0
Detector 1 Position(ft)		0	0		0	0					0	0
Detector 1 Size(ft)		6	20		20	6					20	6
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0		0.0	0.0					0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0					0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0					0.0	0.0
Detector 2 Position(ft)		94				94						94
Detector 2 Size(ft)		6				6						6
Detector 2 Type		Cl+Ex				Cl+Ex						Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0				0.0						0.0
Turn Type		NA	Perm	Prot	Prot	NA					Split	NA
Protected Phases		2		1	1	6					4	4
Permitted Phases			2									

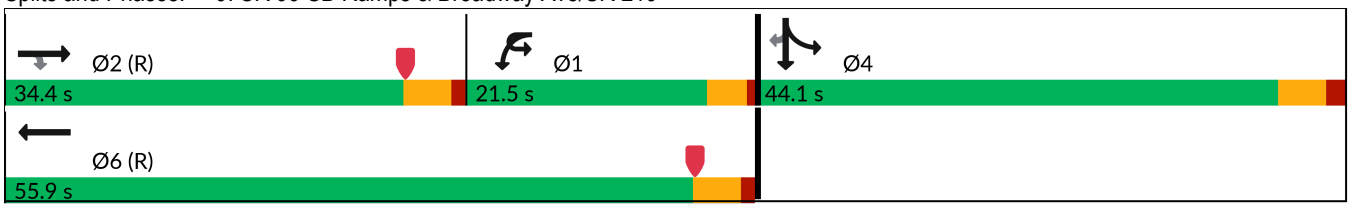


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	90
Future Volume (vph)	90
Ideal Flow (vphpl)	1900
Storage Length (ft)	450
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1538
Flt Permitted	
Satd. Flow (perm)	1538
Right Turn on Red	Yes
Satd. Flow (RTOR)	94
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.96
Adj. Flow (vph)	94
Shared Lane Traffic (%)	
Lane Group Flow (vph)	94
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	Perm
Protected Phases	
Permitted Phases	4

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Detector Phase		2	2	1	1	6					4	4
Switch Phase												
Minimum Initial (s)		8.0	8.0	8.0	8.0	8.0					5.0	5.0
Minimum Split (s)		25.6	25.6	11.5	11.5	25.6					30.1	30.1
Total Split (s)		34.4	34.4	21.5	21.5	55.9					44.1	44.1
Total Split (%)		34.4%	34.4%	21.5%	21.5%	55.9%					44.1%	44.1%
Maximum Green (s)		29.8	29.8	18.0	18.0	51.3					39.0	39.0
Yellow Time (s)		3.6	3.6	3.0	3.0	3.6					3.6	3.6
All-Red Time (s)		1.0	1.0	0.5	0.5	1.0					1.5	1.5
Lost Time Adjust (s)		0.0	0.0		0.0	0.0					0.0	0.0
Total Lost Time (s)		4.6	4.6		3.5	4.6					5.1	5.1
Lead/Lag		Lead	Lead	Lag	Lag							
Lead-Lag Optimize?		Yes	Yes	Yes	Yes							
Vehicle Extension (s)		2.4	2.4	2.0	2.0	3.0					3.0	3.0
Recall Mode		C-Max	C-Max	Max	Max	C-Max					None	None
Walk Time (s)		7.0	7.0			7.0					5.0	5.0
Flash Don't Walk (s)		14.0	14.0			14.0					20.0	20.0
Pedestrian Calls (#/hr)		0	0			0					0	0
Act Effct Green (s)		36.6	36.6		18.0	58.1					32.2	32.2
Actuated g/C Ratio		0.37	0.37		0.18	0.58					0.32	0.32
v/c Ratio		0.48	0.37		1.10	0.33					0.80	0.78
Control Delay (s/veh)		25.7	5.7		83.1	4.5					42.1	41.0
Queue Delay		0.0	0.0		0.0	0.0					0.0	0.0
Total Delay (s/veh)		25.7	5.7		83.1	4.5					42.1	41.0
LOS		C	A		F	A					D	D
Approach Delay (s/veh)		22.1				43.8						37.8
Approach LOS		C				D						D

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 12 (12%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.10			
Intersection Signal Delay (s/veh): 34.5		Intersection LOS: C	
Intersection Capacity Utilization 66.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 9: SR 99 SB Ramps & Broadway Ave/SR 219





Lane Group	SBR
Detector Phase	4
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	30.1
Total Split (s)	44.1
Total Split (%)	44.1%
Maximum Green (s)	39.0
Yellow Time (s)	3.6
All-Red Time (s)	1.5
Lost Time Adjust (s)	0.0
Total Lost Time (s)	5.1
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Don't Walk (s)	20.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	32.2
Actuated g/C Ratio	0.32
v/c Ratio	0.17
Control Delay (s/veh)	5.1
Queue Delay	0.0
Total Delay (s/veh)	5.1
LOS	A
Approach Delay (s/veh)	
Approach LOS	

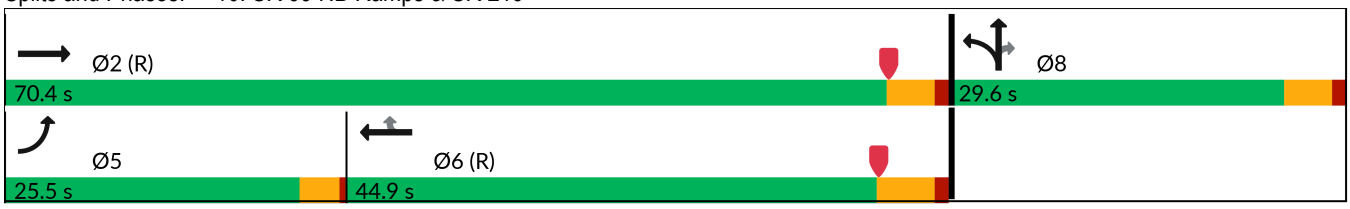
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	1524	0	0	1192	461	75	10	262	0	0	0
Future Volume (vph)	150	1524	0	0	1192	461	75	10	262	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	360		0	0		565	0		0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (ft)	25			140			25			25		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	0.88	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.958				
Satd. Flow (prot)	1719	4940	0	0	4940	1538	0	1734	2707	0	0	0
Flt Permitted	0.950							0.958				
Satd. Flow (perm)	1719	4940	0	0	4940	1538	0	1734	2707	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						480			75			
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		419			622			1358			1317	
Travel Time (s)		7.1			10.6			26.5			25.7	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	156	1588	0	0	1242	480	78	10	273	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	156	1588	0	0	1242	480	0	88	273	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			25			25			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1		2	1		2	
Detector Template	Left	Thru			Thru	Right		Thru	Right		Thru	
Leading Detector (ft)	20	100			100	20		100	20		100	
Trailing Detector (ft)	0	0			0	0		0	0		0	
Detector 1 Position(ft)	0	0			0	0		0	0			
Detector 1 Size(ft)	20	6			6	20		6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2			6	6	8	8	8			
Switch Phase												
Minimum Initial (s)	10.0	5.0			12.0	12.0	5.0	5.0	5.0			
Minimum Split (s)	13.5	24.6			27.3	27.3	29.6	29.6	29.6			
Total Split (s)	25.5	70.4			44.9	44.9	29.6	29.6	29.6			
Total Split (%)	25.5%	70.4%			44.9%	44.9%	29.6%	29.6%	29.6%			
Maximum Green (s)	22.0	65.8			39.6	39.6	25.0	25.0	25.0			
Yellow Time (s)	3.0	3.6			4.3	4.3	3.6	3.6	3.6			
All-Red Time (s)	0.5	1.0			1.0	1.0	1.0	1.0	1.0			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Total Lost Time (s)	3.5	4.6			5.3	5.3		4.6	4.6			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	2.0	3.0			2.0	2.0	2.0	2.0	2.0			
Recall Mode	Max	C-Max			C-Max	C-Max	Max	Max	Max			
Walk Time (s)		7.0			7.0	7.0	5.0	5.0	5.0			
Flash Don't Walk (s)		13.0			15.0	15.0	20.0	20.0	20.0			
Pedestrian Calls (#/hr)		0			0	0	0	0	0			
Act Effct Green (s)	22.0	65.8			39.6	39.6		25.0	25.0			
Actuated g/C Ratio	0.22	0.66			0.40	0.40		0.25	0.25			
v/c Ratio	0.41	0.49			0.63	0.53		0.20	0.37			
Control Delay (s/veh)	64.8	6.8			26.2	4.4		31.2	23.9			
Queue Delay	0.0	0.2			0.0	0.0		0.0	0.0			
Total Delay (s/veh)	64.8	7.0			26.2	4.4		31.2	23.9			
LOS	E	A			C	A		C	C			
Approach Delay (s/veh)		12.2			20.1			25.7				
Approach LOS		B			C			C				

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 27 (27%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay (s/veh): 17.0		Intersection LOS: B	
Intersection Capacity Utilization 66.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 10: SR 99 NB Ramps & SR 219



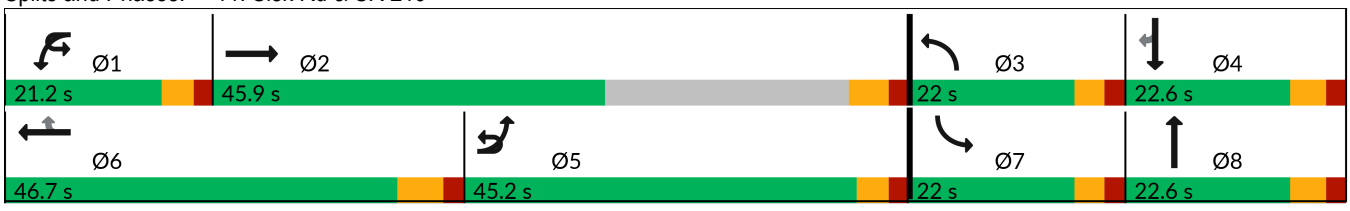
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	10	280	1376	100	10	57	1003	230	160	470	100	25
Future Volume (vph)	10	280	1376	100	10	57	1003	230	160	470	100	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		250		0		735		525	555		230	505
Storage Lanes		1		1		1		1	1		1	1
Taper Length (ft)		75				140			100			100
Lane Util. Factor	0.91	0.94	0.91	1.00	0.91	1.00	0.91	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor				0.99				0.99		1.00		
Frt				0.850				0.850		0.974		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	4848	4940	1538	0	1719	4940	1538	1719	3335	0	1719
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	4848	4940	1519	0	1719	4940	1518	1719	3335	0	1719
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				203				240		15		
Link Speed (mph)			40				55			35		
Link Distance (ft)			434				926			2020		
Travel Time (s)			7.4				11.5			39.4		
Confl. Peds. (#/hr)				1				1			5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	10	292	1433	104	10	59	1045	240	167	490	104	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	302	1433	104	0	69	1045	240	167	594	0	26
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			48				36			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			25				25			25		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2		1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)		20	100	20		20	100	20	20	100		20
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0		0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Free	Prot	Prot	NA	Perm	Prot	NA		Prot

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	230	460
Future Volume (vph)	230	460
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		150
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	1.00	0.88
Ped Bike Factor		
Frt		0.850
Flt Protected		
Satd. Flow (prot)	1810	2707
Flt Permitted		
Satd. Flow (perm)	1810	2707
Right Turn on Red		Yes
Satd. Flow (RTOR)		479
Link Speed (mph)	35	
Link Distance (ft)	1227	
Travel Time (s)	23.9	
Confl. Peds. (#/hr)		
Peak Hour Factor	0.96	0.96
Adj. Flow (vph)	240	479
Shared Lane Traffic (%)		
Lane Group Flow (vph)	240	479
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	35	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	1
Detector Template	Thru	Right
Leading Detector (ft)	100	20
Trailing Detector (ft)	0	0
Detector 1 Position(ft)	0	0
Detector 1 Size(ft)	6	20
Detector 1 Type	Cl+Ex	Cl+Ex
Detector 1 Channel		
Detector 1 Extend (s)	0.0	0.0
Detector 1 Queue (s)	0.0	0.0
Detector 1 Delay (s)	0.0	0.0
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	Perm

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Protected Phases	5	5	2		1	1	6		3	8		7
Permitted Phases				Free				6				
Detector Phase	5	5	2		1	1	6	6	3	8		7
Switch Phase												
Minimum Initial (s)	5.0	5.0	10.0		6.0	6.0	10.0	10.0	5.0	5.0		5.0
Minimum Split (s)	10.2	10.2	32.9		11.2	11.2	41.7	41.7	10.0	22.6		10.0
Total Split (s)	45.2	45.2	45.9		21.2	21.2	46.7	46.7	22.0	22.6		22.0
Total Split (%)	33.1%	33.1%	33.6%		15.5%	15.5%	34.2%	34.2%	16.1%	16.6%		16.1%
Maximum Green (s)	40.0	40.0	40.0		16.0	16.0	40.0	40.0	17.0	17.0		17.0
Yellow Time (s)	3.2	3.2	3.9		3.2	3.2	4.7	4.7	3.0	3.6		3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0		2.0
Lost Time Adjust (s)		0.0	0.0			0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		5.2	5.9			5.2	6.7	6.7	5.0	5.6		5.0
Lead/Lag	Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lead	Lag		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	4.6		3.0	3.0	4.6	4.6	3.0	3.2		3.0
Recall Mode	None	None	Min		None	None	Min	Min	None	None		None
Walk Time (s)			7.0				7.0	7.0		5.0		
Flash Don't Walk (s)			20.0				28.0	28.0		12.0		
Pedestrian Calls (#/hr)			1				1	1		5		
Act Effct Green (s)		13.0	41.4	102.0		9.5	34.3	34.3	14.8	29.7		7.1
Actuated g/C Ratio		0.13	0.41	1.00		0.09	0.34	0.34	0.15	0.29		0.07
v/c Ratio		0.49	0.72	0.07		0.43	0.63	0.36	0.67	0.61		0.22
Control Delay (s/veh)		45.6	29.0	0.1		54.4	30.5	4.8	56.6	36.2		51.9
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		45.6	29.0	0.1		54.4	30.5	4.8	56.6	36.2		51.9
LOS		D	C	A		D	C	A	E	D		D
Approach Delay (s/veh)			30.1				27.1			40.7		
Approach LOS			C				C			D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 136.5			
Actuated Cycle Length: 102			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay (s/veh): 30.3		Intersection LOS: C	
Intersection Capacity Utilization 70.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 11: Sisk Rd & SR 219





Lane Group	SBT	SBR
Protected Phases	4	
Permitted Phases		4
Detector Phase	4	4
Switch Phase		
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	22.6	22.6
Total Split (s)	22.6	22.6
Total Split (%)	16.6%	16.6%
Maximum Green (s)	17.0	17.0
Yellow Time (s)	3.6	3.6
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	5.6	5.6
Lead/Lag	Lag	Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	None
Walk Time (s)	5.0	5.0
Flash Don't Walk (s)	12.0	12.0
Pedestrian Calls (#/hr)	0	0
Act Effct Green (s)	17.2	17.2
Actuated g/C Ratio	0.17	0.17
v/c Ratio	0.79	0.56
Control Delay (s/veh)	62.3	6.7
Queue Delay	0.0	0.0
Total Delay (s/veh)	62.3	6.7
LOS	E	A
Approach Delay (s/veh)	26.2	
Approach LOS	C	

Intersection Summary

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	10	424	1032	50	156	1037	203	25	282	58	150	131
Future Volume (vph)	10	424	1032	50	156	1037	203	25	282	58	150	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		1000		620	495		640	70		0	155	
Storage Lanes		2		1	1		1	1		0	1	
Taper Length (ft)		210			140			55			160	
Lane Util. Factor	0.91	0.97	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850			0.850		0.975			
Flt Protected		0.950			0.950			0.950			0.950	
Satd. Flow (prot)	0	3335	4940	1538	1719	4940	1538	1719	1764	0	1719	1810
Flt Permitted		0.950			0.950			0.950			0.950	
Satd. Flow (perm)	0	3335	4940	1538	1719	4940	1538	1719	1764	0	1719	1810
Right Turn on Red				Yes			Yes			Yes		
Satd. Flow (RTOR)				93			211		5			
Link Speed (mph)			55			55			35			35
Link Distance (ft)			1694			1350			735			1875
Travel Time (s)			21.0			16.7			14.3			36.5
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	10	442	1075	52	163	1080	211	26	294	60	156	136
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	452	1075	52	163	1080	211	26	354	0	156	136
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			36			36			12			12
Link Offset(ft)			0			0			0			0
Crosswalk Width(ft)			25			25			16			25
Two way Left Turn Lane												Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors		1	2	1	1	2	1	1	2		1	2
Detector Template		Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru
Leading Detector (ft)		20	100	20	20	100	20	20	100		20	100
Trailing Detector (ft)		0	0	0	0	0	0	0	0		0	0
Detector 1 Position(ft)		0	0	0	0	0	0	0	0		0	0
Detector 1 Size(ft)		20	6	20	20	6	20	20	6		20	6
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94			94			94
Detector 2 Size(ft)			6			6			6			6
Detector 2 Type			Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0			0.0			0.0
Turn Type	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA
Protected Phases	5	5	2		1	6		3	8		7	4
Permitted Phases				2			6					

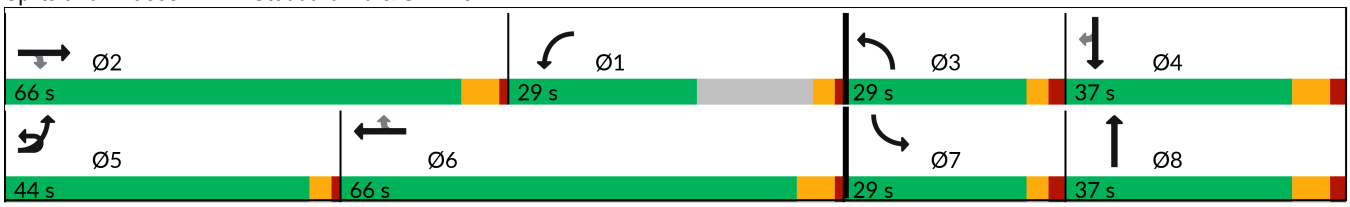


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	223
Future Volume (vph)	223
Ideal Flow (vphpl)	1900
Storage Length (ft)	155
Storage Lanes	0
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1538
Flt Permitted	
Satd. Flow (perm)	1538
Right Turn on Red	Yes
Satd. Flow (RTOR)	232
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.96
Adj. Flow (vph)	232
Shared Lane Traffic (%)	
Lane Group Flow (vph)	232
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	Perm
Protected Phases	
Permitted Phases	4

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Detector Phase	5	5	2	2	1	6	6	3	8		7	4
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.0	10.0		9.0	10.0
Minimum Split (s)	14.0	14.0	16.0	16.0	14.0	16.0	16.0	14.0	17.0		14.0	17.0
Total Split (s)	44.0	44.0	66.0	66.0	29.0	66.0	66.0	29.0	37.0		29.0	37.0
Total Split (%)	25.0%	25.0%	37.5%	37.5%	16.5%	37.5%	37.5%	16.5%	21.0%		16.5%	21.0%
Maximum Green (s)	40.0	40.0	60.0	60.0	25.0	60.0	60.0	24.0	30.0		24.0	30.0
Yellow Time (s)	3.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0		3.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)		4.0	6.0	6.0	4.0	6.0	6.0	5.0	7.0		5.0	7.0
Lead/Lag	Lead	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lag		Lead	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	4.5	4.5	3.0	4.5	4.5	3.0	3.5		3.0	3.5
Recall Mode	None	None	Min	Min	None	Min	Min	None	None		None	None
Act Effct Green (s)		25.1	43.4	43.4	27.2	45.5	45.5	9.5	30.6		18.0	45.8
Actuated g/C Ratio		0.18	0.31	0.31	0.19	0.32	0.32	0.07	0.22		0.13	0.32
v/c Ratio		0.77	0.71	0.10	0.50	0.68	0.33	0.23	0.92		0.72	0.23
Control Delay (s/veh)		66.1	46.8	0.7	58.6	44.5	5.8	75.0	84.4		80.5	42.3
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay (s/veh)		66.1	46.8	0.7	58.6	44.5	5.8	75.0	84.4		80.5	42.3
LOS		E	D	A	E	D	A	E	F		F	D
Approach Delay (s/veh)			50.8			40.5			83.8			38.0
Approach LOS			D			D			F			D

Intersection Summary			
Area Type:	Other		
Cycle Length: 176			
Actuated Cycle Length: 141.7			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay (s/veh): 48.5		Intersection LOS: D	
Intersection Capacity Utilization 77.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 12: Stoddard Rd & SR 219





Lane Group	SBR
Detector Phase	4
Switch Phase	
Minimum Initial (s)	10.0
Minimum Split (s)	17.0
Total Split (s)	37.0
Total Split (%)	21.0%
Maximum Green (s)	30.0
Yellow Time (s)	5.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	7.0
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.5
Recall Mode	None
Act Effct Green (s)	45.8
Actuated g/C Ratio	0.32
v/c Ratio	0.36
Control Delay (s/veh)	6.9
Queue Delay	0.0
Total Delay (s/veh)	6.9
LOS	A
Approach Delay (s/veh)	
Approach LOS	

Intersection Summary

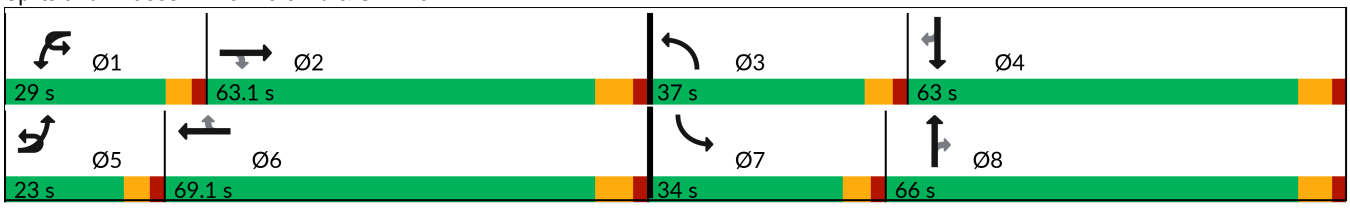
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	85	82	651	387	10	230	1077	437	342	582	138	314
Future Volume (vph)	85	82	651	387	10	230	1077	437	342	582	138	314
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		555		700		450		500	320		300	300
Storage Lanes		2		1		2		1	1		1	2
Taper Length (ft)		140				205			140			150
Lane Util. Factor	0.91	0.97	0.91	1.00	0.91	0.97	0.91	1.00	0.97	0.95	1.00	0.97
Ped Bike Factor				0.99				0.99			0.99	
Frt				0.850				0.850			0.850	
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	3401	4940	1538	0	3340	4940	1538	3335	3438	1538	3335
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	3401	4940	1517	0	3340	4940	1517	3335	3438	1518	3335
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				364				399			144	
Link Speed (mph)			55				55			40		
Link Distance (ft)			943				2640			1013		
Travel Time (s)			11.7				32.7			17.3		
Confl. Peds. (#/hr)				1				1			1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	5%	5%	5%	1%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	89	85	678	403	10	240	1122	455	356	606	144	327
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	174	678	403	0	250	1122	455	356	606	144	327
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	L NA	Left	R NA	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA
Median Width(ft)			36				36			24		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			50				70			50		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2	1	1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left
Leading Detector (ft)		20	100	20		20	100	20	20	100	20	20
Trailing Detector (ft)		0	0	0		0	0	0	0	0	0	0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0	0	0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6	20	20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	526	96
Future Volume (vph)	526	96
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		300
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Ped Bike Factor		
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3438	1538
Flt Permitted		
Satd. Flow (perm)	3438	1538
Right Turn on Red		Yes
Satd. Flow (RTOR)		126
Link Speed (mph)	45	
Link Distance (ft)	631	
Travel Time (s)	9.6	
Confl. Peds. (#/hr)		
Peak Hour Factor	0.96	0.96
Heavy Vehicles (%)	5%	5%
Adj. Flow (vph)	548	100
Shared Lane Traffic (%)		
Lane Group Flow (vph)	548	100
Enter Blocked Intersection	No	No
Lane Alignment	L NA	R NA
Median Width(ft)	24	
Link Offset(ft)	0	
Crosswalk Width(ft)	50	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	1
Detector Template	Thru	Right
Leading Detector (ft)	100	20
Trailing Detector (ft)	0	0
Detector 1 Position(ft)	0	0
Detector 1 Size(ft)	6	20
Detector 1 Type	Cl+Ex	Cl+Ex
Detector 1 Channel		
Detector 1 Extend (s)	0.0	0.0
Detector 1 Queue (s)	0.0	0.0
Detector 1 Delay (s)	0.0	0.0
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot
Protected Phases	5	5	2		1	1	6		3	8		7
Permitted Phases				2				6			8	
Detector Phase	5	5	2	2	1	1	6	6	3	8	8	7
Switch Phase												
Minimum Initial (s)	6.0	6.0	11.0	11.0	6.0	6.0	11.0	11.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.8	11.8	41.5	41.5	11.8	11.8	37.5	37.5	14.0	60.0	60.0	14.0
Total Split (s)	23.0	23.0	63.1	63.1	29.0	29.0	69.1	69.1	37.0	66.0	66.0	34.0
Total Split (%)	12.0%	12.0%	32.8%	32.8%	15.1%	15.1%	36.0%	36.0%	19.3%	34.4%	34.4%	17.7%
Maximum Green (s)	17.2	17.2	55.6	55.6	23.2	23.2	61.6	61.6	31.0	59.0	59.0	28.0
Yellow Time (s)	3.8	3.8	5.5	5.5	3.8	3.8	5.5	5.5	4.0	5.0	5.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.8	7.5	7.5		5.8	7.5	7.5	6.0	7.0	7.0	6.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	4.5	4.5	3.0	3.0	4.5	4.5	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	None	None	Min	Min	None	None	None	None
Walk Time (s)			5.0	5.0			5.0	5.0		5.0	5.0	
Flash Don't Walk (s)			29.0	29.0			25.0	25.0		48.0	48.0	
Pedestrian Calls (#/hr)			1	1			1	1		1	1	
Act Effct Green (s)		13.3	48.5	48.5		17.1	52.3	52.3	22.2	35.8	35.8	20.6
Actuated g/C Ratio		0.09	0.32	0.32		0.11	0.35	0.35	0.15	0.24	0.24	0.14
v/c Ratio		0.57	0.42	0.55		0.65	0.65	0.58	0.72	0.74	0.30	0.71
Control Delay (s/veh)		77.4	42.1	9.4		75.2	44.2	9.6	72.0	59.1	8.5	73.4
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		77.4	42.1	9.4		75.2	44.2	9.6	72.0	59.1	8.5	73.4
LOS		E	D	A		E	D	A	E	E	A	E
Approach Delay (s/veh)			36.5				39.8			56.7		
Approach LOS			D				D			E		

Intersection Summary			
Area Type:	Other		
Cycle Length: 192.1			
Actuated Cycle Length: 149.3			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay (s/veh): 46.1		Intersection LOS: D	
Intersection Capacity Utilization 73.8%		ICU Level of Service D	
Analysis Period (min) 15			

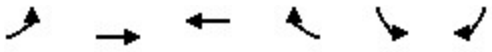
Splits and Phases: 13: Dale Rd & SR 219





Lane Group	SBT	SBR
Turn Type	NA	Perm
Protected Phases	4	
Permitted Phases		4
Detector Phase	4	4
Switch Phase		
Minimum Initial (s)	8.0	8.0
Minimum Split (s)	60.0	60.0
Total Split (s)	63.0	63.0
Total Split (%)	32.8%	32.8%
Maximum Green (s)	56.0	56.0
Yellow Time (s)	5.0	5.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	7.0	7.0
Lead/Lag	Lag	Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	None
Walk Time (s)	5.0	5.0
Flash Don't Walk (s)	48.0	48.0
Pedestrian Calls (#/hr)	1	1
Act Effct Green (s)	34.3	34.3
Actuated g/C Ratio	0.23	0.23
v/c Ratio	0.69	0.22
Control Delay (s/veh)	58.8	4.3
Queue Delay	0.0	0.0
Total Delay (s/veh)	58.8	4.3
LOS	E	A
Approach Delay (s/veh)	58.1	
Approach LOS	E	

Intersection Summary

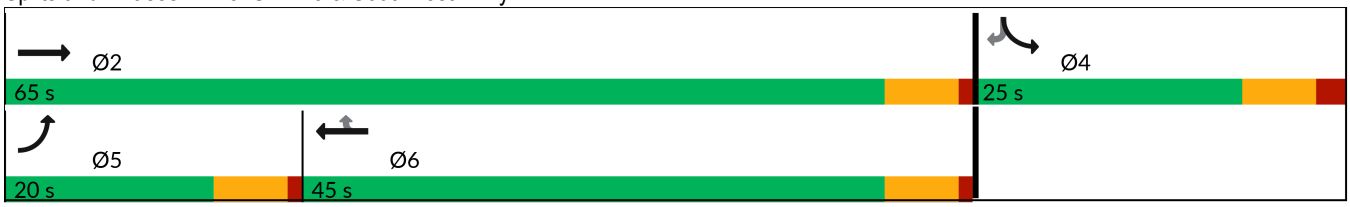


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	121	1129	1366	76	76	50
Future Volume (vph)	121	1129	1366	76	76	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300			500	100	0
Storage Lanes	1			1	1	1
Taper Length (ft)	150				100	
Lane Util. Factor	1.00	0.91	0.91	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1719	4940	4940	1538	1719	1538
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1719	4940	4940	1538	1719	1538
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				79		52
Link Speed (mph)		55	55		25	
Link Distance (ft)		2134	847		750	
Travel Time (s)		26.5	10.5		20.5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	126	1176	1423	79	79	52
Shared Lane Traffic (%)						
Lane Group Flow (vph)	126	1176	1423	79	79	52
Enter Blocked Intersection	No	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	L NA	R NA
Median Width(ft)		36	36		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.0	24.0	24.0	24.0	25.0	25.0
Total Split (s)	20.0	65.0	45.0	45.0	25.0	25.0
Total Split (%)	22.2%	72.2%	50.0%	50.0%	27.8%	27.8%
Maximum Green (s)	14.0	59.0	39.0	39.0	18.0	18.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	7.0	7.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	4.5	4.5	4.5	3.5	3.5
Recall Mode	None	Min	Min	Min	None	None
Act Effct Green (s)	12.1	54.6	41.5	41.5	11.4	11.4
Actuated g/C Ratio	0.17	0.76	0.58	0.58	0.16	0.16
v/c Ratio	0.44	0.31	0.50	0.09	0.29	0.18
Control Delay (s/veh)	36.9	4.5	14.6	3.6	34.8	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	36.9	4.5	14.6	3.6	34.8	11.5
LOS	D	A	B	A	C	B
Approach Delay (s/veh)		7.6	14.0		25.6	
Approach LOS		A	B		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 72			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay (s/veh): 11.7		Intersection LOS: B	
Intersection Capacity Utilization 58.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 28: SR 219 & Southwest Drwy

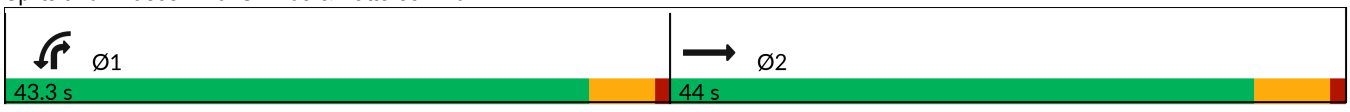


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	962	10	80	588	0	214
Future Volume (vph)	962	10	80	588	0	214
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	525		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			125		25	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.998					0.865
Flt Protected			0.950			
Satd. Flow (prot)	3498	0	1752	1845	0	1596
Flt Permitted			0.950			
Satd. Flow (perm)	3498	0	1752	1845	0	1596
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	2					48
Link Speed (mph)	35			55	45	
Link Distance (ft)	574			1403	796	
Travel Time (s)	11.2			17.4	12.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	1013	11	84	619	0	225
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1024	0	84	619	0	225
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (ft)	100		20	100	20	20
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0		0
Detector 1 Size(ft)	6		20	6		20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0		0.0	0.0		0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA		Over
Protected Phases	2		1	Free		1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases						
Detector Phase	2		1			1
Switch Phase						
Minimum Initial (s)	8.0		8.0			8.0
Minimum Split (s)	14.0		13.3			13.3
Total Split (s)	44.0		43.3			43.3
Total Split (%)	50.4%		49.6%			49.6%
Maximum Green (s)	38.0		38.0			38.0
Yellow Time (s)	5.0		4.3			4.3
All-Red Time (s)	1.0		1.0			1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	6.0		5.3			5.3
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.2		3.2			3.2
Recall Mode	None		None			None
Act Effct Green (s)	21.0		12.0	44.8		12.0
Actuated g/C Ratio	0.47		0.27	1.00		0.27
v/c Ratio	0.62		0.18	0.34		0.49
Control Delay (s/veh)	11.0		15.2	0.5		15.9
Queue Delay	0.0		0.0	0.0		0.0
Total Delay (s/veh)	11.0		15.2	0.5		15.9
LOS	B		B	A		B
Approach Delay (s/veh)	11.0			2.2	15.9	
Approach LOS	B			A	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 87.3			
Actuated Cycle Length: 44.8			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay (s/veh): 8.4		Intersection LOS: A	
Intersection Capacity Utilization 49.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: SR 108 & Patterson Rd



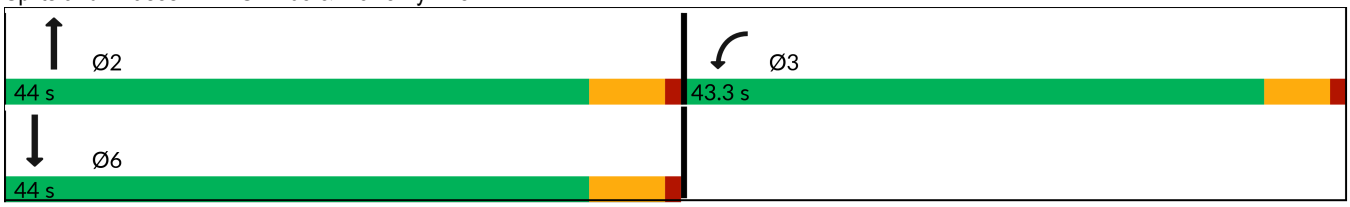


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	80	10	580	214	0	900
Future Volume (vph)	80	10	580	214	0	900
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		475	0	
Storage Lanes	1	0		1	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Frt	0.984			0.850		
Flt Protected	0.958					
Satd. Flow (prot)	1739	0	1845	1568	0	3505
Flt Permitted	0.958					
Satd. Flow (perm)	1739	0	1845	1568	0	3505
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	10			225		
Link Speed (mph)	45		55			55
Link Distance (ft)	796		700			570
Travel Time (s)	12.1		8.7			7.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	84	11	611	225	0	947
Shared Lane Traffic (%)						
Lane Group Flow (vph)	95	0	611	225	0	947
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		24			24
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1		2	1		2
Detector Template	Left		Thru	Right		Thru
Leading Detector (ft)	20		100	20		100
Trailing Detector (ft)	0		0	0		0
Detector 1 Position(ft)	0		0	0		0
Detector 1 Size(ft)	20		6	20		6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0		0.0	0.0		0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot		NA	Free		NA
Protected Phases	3		2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases				Free		
Detector Phase	3		2			6
Switch Phase						
Minimum Initial (s)	8.0		8.0			8.0
Minimum Split (s)	13.3		14.0			14.0
Total Split (s)	43.3		44.0			44.0
Total Split (%)	49.6%		50.4%			50.4%
Maximum Green (s)	38.0		38.0			38.0
Yellow Time (s)	4.3		5.0			5.0
All-Red Time (s)	1.0		1.0			1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.3		6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.2		3.2			3.2
Recall Mode	None		None			None
Act Effct Green (s)	10.4		23.2	32.8		23.2
Actuated g/C Ratio	0.32		0.71	1.00		0.71
v/c Ratio	0.17		0.47	0.14		0.38
Control Delay (s/veh)	13.4		7.6	0.2		5.8
Queue Delay	0.0		0.0	0.0		0.0
Total Delay (s/veh)	13.4		7.6	0.2		5.8
LOS	B		A	A		A
Approach Delay (s/veh)	13.4		5.6			5.8
Approach LOS	B		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 87.3			
Actuated Cycle Length: 32.8			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay (s/veh): 6.1		Intersection LOS: A	
Intersection Capacity Utilization 46.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 7: SR 108 & McHenry Ave



Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	10	25	1281	121	10	85	966	10	87	100	90	10
Future Volume (vph)	10	25	1281	121	10	85	966	10	87	100	90	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		430		580		595		540	260		0	95
Storage Lanes		1		2		1		1	1		0	1
Taper Length (ft)		110				90			115			115
Lane Util. Factor	0.91	1.00	0.91	1.00	0.91	1.00	0.91	1.00	1.00	1.00	1.00	1.00
Frt				0.850				0.850		0.929		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	1752	5036	1568	0	1752	5036	1568	1752	1714	0	1752
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	1752	5036	1568	0	1752	5036	1568	1752	1714	0	1752
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				113				41		16		
Link Speed (mph)			55				55			35		
Link Distance (ft)			1479				1299			1261		
Travel Time (s)			18.3				16.1			24.6		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	11	26	1348	127	11	89	1017	11	92	105	95	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	37	1348	127	0	100	1017	11	92	200	0	11
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			12				12			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			16				16			16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2		1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)		20	100	20		20	100	20	20	100		20
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0		0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA		Prot
Protected Phases	5	5	2		1	1	6		3	8		7

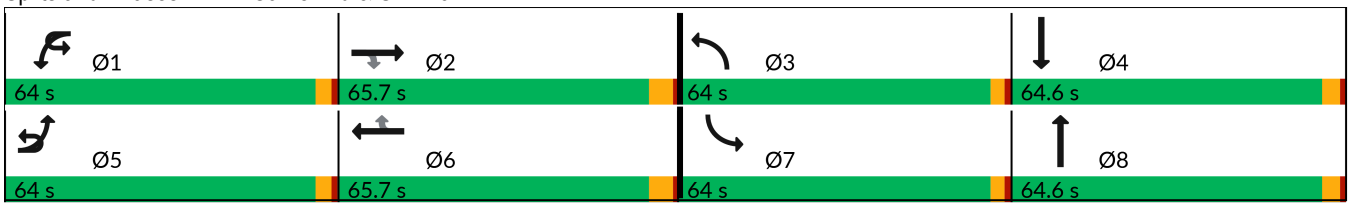


Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	130	40
Future Volume (vph)	130	40
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	1.00	1.00
Frt	0.965	
Flt Protected		
Satd. Flow (prot)	1780	0
Flt Permitted		
Satd. Flow (perm)	1780	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	6	
Link Speed (mph)	35	
Link Distance (ft)	1396	
Travel Time (s)	27.2	
Peak Hour Factor	0.95	0.95
Heavy Vehicles (%)	3%	3%
Adj. Flow (vph)	137	42
Shared Lane Traffic (%)		
Lane Group Flow (vph)	179	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane	Yes	
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	
Detector Template	Thru	
Leading Detector (ft)	100	
Trailing Detector (ft)	0	
Detector 1 Position(ft)	0	
Detector 1 Size(ft)	6	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	
Protected Phases	4	

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Permitted Phases				2				6				
Detector Phase	5	5	2	2	1	1	6	6	3	8		7
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	14.0	14.0	15.7	15.7	14.0	14.0	15.7	15.7	14.0	14.5		14.0
Total Split (s)	64.0	64.0	65.7	65.7	64.0	64.0	65.7	65.7	64.0	64.6		64.0
Total Split (%)	24.8%	24.8%	25.4%	25.4%	24.8%	24.8%	25.4%	25.4%	24.8%	25.0%		24.8%
Maximum Green (s)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.1		60.0
Yellow Time (s)	3.0	3.0	4.7	4.7	3.0	3.0	4.7	4.7	3.0	3.5		3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		4.0	5.7	5.7		4.0	5.7	5.7	4.0	4.5		4.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	2.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0		1.0
Recall Mode	None	None	Min	Min	None	None	Min	Min	None	None		None
Act Effct Green (s)		10.0	53.6	53.6		11.9	58.3	58.3	11.5	29.7		10.0
Actuated g/C Ratio		0.09	0.48	0.48		0.11	0.52	0.52	0.10	0.27		0.09
v/c Ratio		0.24	0.56	0.16		0.54	0.39	0.01	0.51	0.43		0.07
Control Delay (s/veh)		53.3	23.1	5.5		59.2	18.2	0.0	58.8	35.0		50.5
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		53.3	23.1	5.5		59.2	18.2	0.0	58.8	35.0		50.5
LOS		D	C	A		E	B	A	E	D		D
Approach Delay (s/veh)			22.4				21.6			42.5		
Approach LOS			C				C			D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 258.3			
Actuated Cycle Length: 112			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay (s/veh): 26.0		Intersection LOS: C	
Intersection Capacity Utilization 67.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 14: Carver Rd & SR 219





Lane Group	SBT	SBR
Permitted Phases		
Detector Phase	4	
Switch Phase		
Minimum Initial (s)	10.0	
Minimum Split (s)	14.6	
Total Split (s)	64.6	
Total Split (%)	25.0%	
Maximum Green (s)	60.0	
Yellow Time (s)	3.6	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	4.6	
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	2.0	
Recall Mode	None	
Act Effct Green (s)	16.7	
Actuated g/C Ratio	0.15	
v/c Ratio	0.67	
Control Delay (s/veh)	55.7	
Queue Delay	0.0	
Total Delay (s/veh)	55.7	
LOS	E	
Approach Delay (s/veh)	55.4	
Approach LOS	E	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	45	1202	119	10	210	890	20	156	200	160	15	180
Future Volume (vph)	45	1202	119	10	210	890	20	156	200	160	15	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	715		355		665		415	275		395	300	
Storage Lanes	1		1		2		1	1		1	1	
Taper Length (ft)	95				190			120			100	
Lane Util. Factor	1.00	0.91	1.00	0.91	0.97	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850				0.850			0.850		0.992
Flt Protected	0.950				0.950			0.950			0.950	
Satd. Flow (prot)	1770	5085	1583	0	3433	5085	1583	1770	1863	1583	1770	1848
Flt Permitted	0.950				0.950			0.950			0.950	
Satd. Flow (perm)	1770	5085	1583	0	3433	5085	1583	1770	1863	1583	1770	1848
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)			82				82			168		1
Link Speed (mph)		55				55			35			35
Link Distance (ft)		1306				1950			1372			1326
Travel Time (s)		16.2				24.2			26.7			25.8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	47	1265	125	11	221	937	21	164	211	168	16	189
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	1265	125	0	232	937	21	164	211	168	16	200
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)		24				24			12			12
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		16				16			16			16
Two way Left Turn Lane									Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Number of Detectors	1	2	1		1	2	1	1	2	1	1	2
Detector Template	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left	Thru
Leading Detector (ft)	20	100	20		20	100	20	20	100	20	20	100
Trailing Detector (ft)	0	0	0		0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0		0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20		20	6	20	20	6	20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94				94			94			94
Detector 2 Size(ft)		6				6			6			6
Detector 2 Type		Cl+Ex				Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0				0.0			0.0			0.0
Turn Type	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	5	2		1	1	6		3	8		7	4

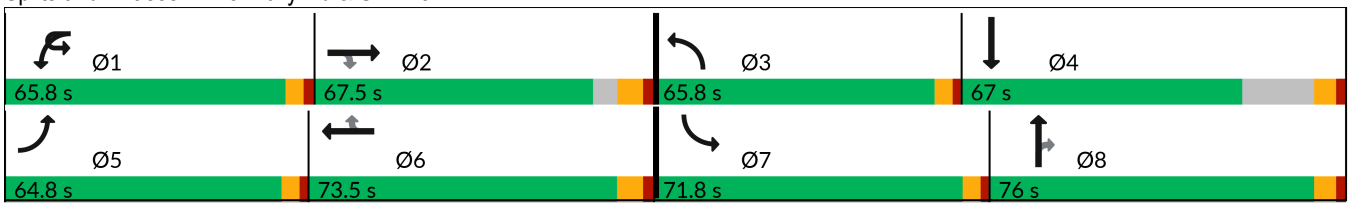


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	10
Future Volume (vph)	10
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.95
Heavy Vehicles (%)	2%
Adj. Flow (vph)	11
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Permitted Phases			2				6			8		
Detector Phase	5	2	2	1	1	6	6	3	8	8	7	4
Switch Phase												
Minimum Initial (s)	9.0	10.0	10.0	10.0	10.0	16.0	16.0	10.0	19.0	19.0	16.0	10.0
Minimum Split (s)	14.8	17.5	17.5	15.8	15.8	23.5	23.5	15.8	26.0	26.0	21.8	17.0
Total Split (s)	64.8	67.5	67.5	65.8	65.8	73.5	73.5	65.8	76.0	76.0	71.8	67.0
Total Split (%)	22.6%	23.6%	23.6%	23.0%	23.0%	25.7%	25.7%	23.0%	26.6%	26.6%	25.1%	23.4%
Maximum Green (s)	59.0	60.0	60.0	60.0	60.0	66.0	66.0	60.0	69.0	69.0	66.0	60.0
Yellow Time (s)	3.8	5.5	5.5	3.8	3.8	5.5	5.5	3.8	5.0	5.0	3.8	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	7.5	7.5		5.8	7.5	7.5	5.8	7.0	7.0	5.8	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	1.0	2.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0
Recall Mode	None	Min	Min	None	None	Min	Min	None	None	None	None	None
Act Effct Green (s)	9.6	57.6	57.6		14.3	65.6	65.6	17.9	36.8	36.8	16.2	20.9
Actuated g/C Ratio	0.07	0.42	0.42		0.10	0.48	0.48	0.13	0.27	0.27	0.12	0.15
v/c Ratio	0.38	0.59	0.18		0.65	0.38	0.03	0.71	0.42	0.31	0.08	0.71
Control Delay (s/veh)	74.2	33.8	12.1		69.3	25.6	0.1	75.4	46.9	8.0	60.6	70.0
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	74.2	33.8	12.1		69.3	25.6	0.1	75.4	46.9	8.0	60.6	70.0
LOS	E	C	B		E	C	A	E	D	A	E	E
Approach Delay (s/veh)		33.2				33.7			43.5			69.3
Approach LOS		C				C			D			E

Intersection Summary			
Area Type:	Other		
Cycle Length: 286.1			
Actuated Cycle Length: 137.1			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay (s/veh): 37.3		Intersection LOS: D	
Intersection Capacity Utilization 80.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 15: Tully Rd & SR 219





Lane Group	SBR
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	

Intersection Summary

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Lane Configurations												
Traffic Volume (vph)	10	59	1114	214	10	170	799	150	286	580	460	10
Future Volume (vph)	10	59	1114	214	10	170	799	150	286	580	460	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		765		650		960		75	500		210	
Storage Lanes		2		1		2		1	1		1	
Taper Length (ft)		255				255			80			
Lane Util. Factor	0.91	0.97	0.91	1.00	0.91	0.97	0.91	1.00	1.00	0.95	1.00	0.95
Frt				0.850				0.850			0.850	
Flt Protected		0.950				0.950			0.950			
Satd. Flow (prot)	0	3433	5085	1583	0	3433	5085	1583	1770	3539	1583	0
Flt Permitted		0.950				0.950			0.950			
Satd. Flow (perm)	0	3433	5085	1583	0	3433	5085	1583	1770	3539	1583	0
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				225				90			185	
Link Speed (mph)			55				55			35		
Link Distance (ft)			1304				1655			1497		
Travel Time (s)			16.2				20.5			29.2		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	11	62	1173	225	11	179	841	158	301	611	484	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	73	1173	225	0	190	841	158	301	611	484	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	R NA
Median Width(ft)			24				24			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			16				16			16		
Two way Left Turn Lane										Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	9
Number of Detectors		1	2	1		1	2	1	1	2	1	
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	
Leading Detector (ft)		20	100	20		20	100	20	20	100	20	
Trailing Detector (ft)		0	0	0		0	0	0	0	0	0	
Detector 1 Position(ft)		0	0	0		0	0	0	0	0	0	
Detector 1 Size(ft)		20	6	20		20	6	20	20	6	20	
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot
Protected Phases	5	5	2		1	1	6		3	8		7

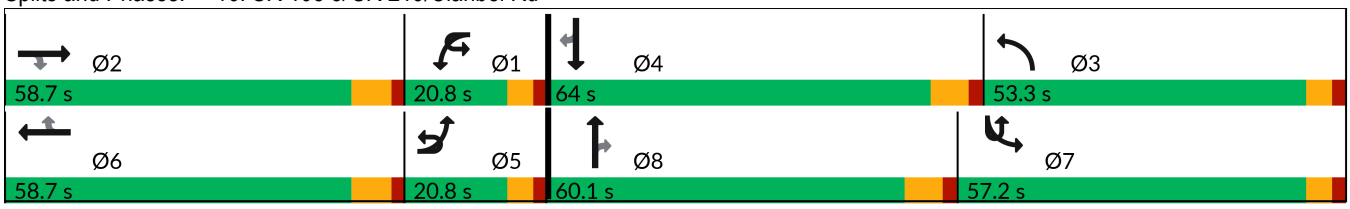


Lane Group	SBL	SBT	SBR
Lane Configurations			
Traffic Volume (vph)	370	680	30
Future Volume (vph)	370	680	30
Ideal Flow (vphpl)	1900	1900	1900
Storage Length (ft)	420		535
Storage Lanes	1		1
Taper Length (ft)	115		
Lane Util. Factor	1.00	0.95	1.00
Frt			0.850
Flt Protected	0.950		
Satd. Flow (prot)	1770	3539	1583
Flt Permitted	0.950		
Satd. Flow (perm)	1770	3539	1583
Right Turn on Red			Yes
Satd. Flow (RTOR)			90
Link Speed (mph)		45	
Link Distance (ft)		1304	
Travel Time (s)		19.8	
Peak Hour Factor	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%
Adj. Flow (vph)	389	716	32
Shared Lane Traffic (%)			
Lane Group Flow (vph)	400	716	32
Enter Blocked Intersection	No	No	No
Lane Alignment	Left	Left	Right
Median Width(ft)		12	
Link Offset(ft)		0	
Crosswalk Width(ft)		16	
Two way Left Turn Lane		Yes	
Headway Factor	1.00	1.00	1.00
Turning Speed (mph)	15		9
Number of Detectors	1	2	1
Detector Template	Left	Thru	Right
Leading Detector (ft)	20	100	20
Trailing Detector (ft)	0	0	0
Detector 1 Position(ft)	0	0	0
Detector 1 Size(ft)	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel			
Detector 1 Extend (s)	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0
Detector 2 Position(ft)		94	
Detector 2 Size(ft)		6	
Detector 2 Type		Cl+Ex	
Detector 2 Channel			
Detector 2 Extend (s)		0.0	
Turn Type	Prot	NA	Perm
Protected Phases	7	4	

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Permitted Phases				2				6			8	
Detector Phase	5	5	2	2	1	1	6	6	3	8	8	7
Switch Phase												
Minimum Initial (s)	15.0	15.0	12.0	12.0	15.0	15.0	12.0	12.0	14.0	14.0	14.0	14.0
Minimum Split (s)	20.8	20.8	50.6	50.6	20.8	20.8	55.6	55.6	19.8	58.6	58.6	19.8
Total Split (s)	20.8	20.8	58.7	58.7	20.8	20.8	58.7	58.7	53.3	60.1	60.1	57.2
Total Split (%)	10.6%	10.6%	29.8%	29.8%	10.6%	10.6%	29.8%	29.8%	27.1%	30.5%	30.5%	29.1%
Maximum Green (s)	15.0	15.0	51.1	51.1	15.0	15.0	51.1	51.1	47.5	52.5	52.5	51.4
Yellow Time (s)	3.8	3.8	5.6	5.6	3.8	3.8	5.6	5.6	3.8	5.6	5.6	3.8
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		5.8	7.6	7.6		5.8	7.6	7.6	5.8	7.6	7.6	
Lead/Lag	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.5	2.5	2.1	2.1	2.5	2.5	2.0	2.0	2.5	3.6	3.6	2.5
Recall Mode	None	None	Min	Min	None	None	Min	Min	None	None	None	None
Walk Time (s)			7.0	7.0			7.0	7.0		7.0	7.0	
Flash Don't Walk (s)			35.0	35.0			41.0	41.0		44.0	44.0	
Pedestrian Calls (#/hr)			0	0			0	0		0	0	
Act Effct Green (s)		25.7	46.1	46.1		15.3	35.7	35.7	47.2	45.3	45.3	
Actuated g/C Ratio		0.14	0.26	0.26		0.09	0.20	0.20	0.26	0.25	0.25	
v/c Ratio		0.15	0.89	0.39		0.65	0.83	0.41	0.64	0.68	0.90	
Control Delay (s/veh)		74.4	74.4	7.9		93.6	76.9	31.4	66.9	65.1	60.2	
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)		74.4	74.4	7.9		93.6	76.9	31.4	66.9	65.1	60.2	
LOS		E	E	A		F	E	C	E	E	E	
Approach Delay (s/veh)			64.2				73.5			63.8		
Approach LOS			E				E			E		

Intersection Summary			
Area Type:	Other		
Cycle Length: 196.8			
Actuated Cycle Length: 178.5			
Natural Cycle: 160			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay (s/veh): 69.6		Intersection LOS: E	
Intersection Capacity Utilization 105.9%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 16: SR 108 & SR 219/Claribel Rd





Lane Group	SBL	SBT	SBR
Permitted Phases			4
Detector Phase	7	4	4
Switch Phase			
Minimum Initial (s)	14.0	14.0	14.0
Minimum Split (s)	19.8	60.6	60.6
Total Split (s)	57.2	64.0	64.0
Total Split (%)	29.1%	32.5%	32.5%
Maximum Green (s)	51.4	56.4	56.4
Yellow Time (s)	3.8	5.6	5.6
All-Red Time (s)	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0
Total Lost Time (s)	5.8	7.6	7.6
Lead/Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes
Vehicle Extension (s)	2.5	2.3	2.3
Recall Mode	None	None	None
Walk Time (s)		7.0	7.0
Flash Don't Walk (s)		46.0	46.0
Pedestrian Calls (#/hr)		0	0
Act Effct Green (s)	44.4	42.5	42.5
Actuated g/C Ratio	0.25	0.24	0.24
v/c Ratio	0.91	0.85	0.07
Control Delay (s/veh)	91.5	76.3	0.3
Queue Delay	0.0	0.0	0.0
Total Delay (s/veh)	91.5	76.3	0.3
LOS	F	E	A
Approach Delay (s/veh)		79.5	
Approach LOS		E	

Intersection Summary

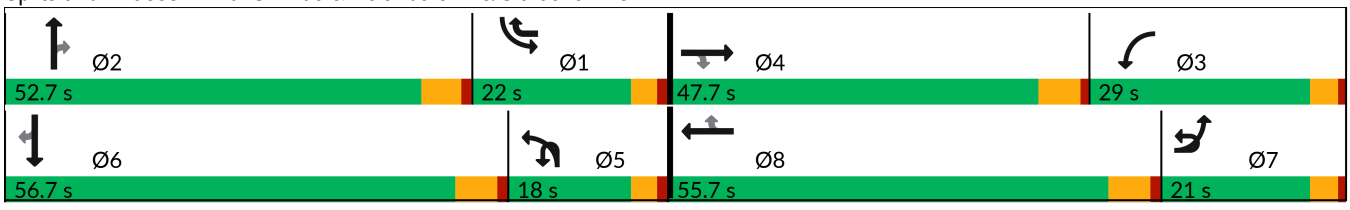
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	10	230	751	304	60	465	150	10	250	926	90	340
Future Volume (vph)	10	230	751	304	60	465	150	10	250	926	90	340
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		300		380	195		320		325		260	300
Storage Lanes		1		1	2		1		2		1	2
Taper Length (ft)		150			150				105			95
Lane Util. Factor	0.95	0.97	0.95	1.00	0.97	0.91	1.00	0.95	0.97	0.95	1.00	0.97
Ped Bike Factor				0.99								
Frt				0.850			0.850				0.850	
Flt Protected		0.950			0.950				0.950			0.950
Satd. Flow (prot)	0	3467	3574	1599	3467	5136	1599	0	3467	3574	1599	3467
Flt Permitted		0.950			0.950				0.950			0.950
Satd. Flow (perm)	0	3467	3574	1578	3467	5136	1599	0	3467	3574	1599	3467
Right Turn on Red				Yes			Yes				Yes	
Satd. Flow (RTOR)				320			48				118	
Link Speed (mph)			45			45				35		
Link Distance (ft)			850			731				829		
Travel Time (s)			12.9			11.1				16.1		
Confl. Peds. (#/hr)				1								
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	11	242	791	320	63	489	158	11	263	975	95	358
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	253	791	320	63	489	158	0	274	975	95	358
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	Left
Median Width(ft)			24			24				24		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	9	15		9	15
Number of Detectors		1	2	1	1	2	1		1	2	1	1
Detector Template		Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left
Leading Detector (ft)		20	100	20	20	100	20		20	100	20	20
Trailing Detector (ft)		0	0	0	0	0	0		0	0	0	0
Detector 1 Position(ft)		0	0	0	0	0	0		0	0	0	0
Detector 1 Size(ft)		20	6	20	20	6	20		20	6	20	20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94				94		
Detector 2 Size(ft)			6			6				6		
Detector 2 Type			Cl+Ex			Cl+Ex				Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0				0.0		

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	1004	180
Future Volume (vph)	1004	180
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		200
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Ped Bike Factor		0.98
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3574	1599
Flt Permitted		
Satd. Flow (perm)	3574	1562
Right Turn on Red		Yes
Satd. Flow (RTOR)		118
Link Speed (mph)	35	
Link Distance (ft)	2596	
Travel Time (s)	50.6	
Confl. Peds. (#/hr)		5
Peak Hour Factor	0.95	0.95
Heavy Vehicles (%)	1%	1%
Adj. Flow (vph)	1057	189
Shared Lane Traffic (%)		
Lane Group Flow (vph)	1057	189
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	24	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	1
Detector Template	Thru	Right
Leading Detector (ft)	100	20
Trailing Detector (ft)	0	0
Detector 1 Position(ft)	0	0
Detector 1 Size(ft)	6	20
Detector 1 Type	Cl+Ex	Cl+Ex
Detector 1 Channel		
Detector 1 Extend (s)	0.0	0.0
Detector 1 Queue (s)	0.0	0.0
Detector 1 Delay (s)	0.0	0.0
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Turn Type	Prot	Prot	NA	Perm	Prot	NA	pm+ov	Prot	Prot	NA	Perm	Prot
Protected Phases	7	7	4		3	8	1	5	5	2		1
Permitted Phases				4			8				2	
Detector Phase	7	7	4	4	3	8	1	5	5	2	2	1
Switch Phase												
Minimum Initial (s)	10.0	10.0	15.0	15.0	25.0	10.0	10.0	10.0	10.0	25.0	25.0	10.0
Minimum Split (s)	14.0	14.0	47.7	47.7	29.0	46.7	14.0	14.0	14.0	44.7	44.7	14.0
Total Split (s)	21.0	21.0	47.7	47.7	29.0	55.7	22.0	18.0	18.0	52.7	52.7	22.0
Total Split (%)	13.9%	13.9%	31.5%	31.5%	19.2%	36.8%	14.5%	11.9%	11.9%	34.8%	34.8%	14.5%
Maximum Green (s)	17.0	17.0	42.0	42.0	25.0	50.0	18.0	14.0	14.0	47.0	47.0	18.0
Yellow Time (s)	3.0	3.0	4.7	4.7	3.0	4.7	3.0	3.0	3.0	4.7	4.7	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		4.0	5.7	5.7	4.0	5.7	4.0		4.0	5.7	5.7	4.0
Lead/Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.5	2.5	2.0	2.5	2.3	2.2	2.2	3.0	3.0	2.3
Recall Mode	None	None	None	None	Min	None	Min	None	None	Min	Min	Min
Walk Time (s)			10.0	10.0		10.0				5.0	5.0	
Flash Don't Walk (s)			32.0	32.0		31.0				34.0	34.0	
Pedestrian Calls (#/hr)			1	1		0				0	0	
Act Effct Green (s)		43.1	36.9	36.9	25.2	18.9	42.1		13.5	43.5	43.5	17.4
Actuated g/C Ratio		0.30	0.26	0.26	0.18	0.13	0.30		0.09	0.31	0.31	0.12
v/c Ratio		0.24	0.86	0.50	0.10	0.72	0.31		0.83	0.89	0.17	0.85
Control Delay (s/veh)		39.5	60.7	7.0	53.1	66.1	29.1		85.8	59.2	3.8	80.8
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)		39.5	60.7	7.0	53.1	66.1	29.1		85.8	59.2	3.8	80.8
LOS		D	E	A	D	E	C		F	E	A	F
Approach Delay (s/veh)			44.1			56.7				60.7		
Approach LOS			D			E				E		

Intersection Summary			
Area Type:	Other		
Cycle Length: 151.4			
Actuated Cycle Length: 142.5			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay (s/veh): 54.4		Intersection LOS: D	
Intersection Capacity Utilization 83.9%		ICU Level of Service E	
Analysis Period (min) 15			

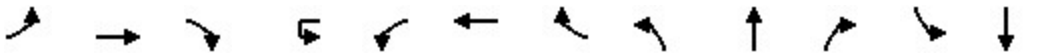
Splits and Phases: 26: SR 108 & Pelandale Ave/Claratina Ave





Lane Group	SBT	SBR
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Detector Phase	6	6
Switch Phase		
Minimum Initial (s)	20.0	20.0
Minimum Split (s)	50.7	50.7
Total Split (s)	56.7	56.7
Total Split (%)	37.5%	37.5%
Maximum Green (s)	51.0	51.0
Yellow Time (s)	4.7	4.7
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	5.7	5.7
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	Min	Min
Walk Time (s)	10.0	10.0
Flash Don't Walk (s)	10.0	10.0
Pedestrian Calls (#/hr)	5	5
Act Effct Green (s)	47.3	47.3
Actuated g/C Ratio	0.33	0.33
v/c Ratio	0.89	0.32
Control Delay (s/veh)	55.9	15.5
Queue Delay	0.0	0.0
Total Delay (s/veh)	55.9	15.5
LOS	E	B
Approach Delay (s/veh)	56.7	
Approach LOS	E	

Intersection Summary



Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	0	640	250	10	474	658	0	0	0	0	538	10
Future Volume (vph)	0	640	250	10	474	658	0	0	0	0	538	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		0		0		0	0		0	450	
Storage Lanes	2		1		2		0	0		0	1	
Taper Length (ft)	25				25			25			105	
Lane Util. Factor	1.00	0.81	0.81	0.95	0.97	0.95	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.981	0.850									
Flt Protected					0.950						0.950	0.954
Satd. Flow (prot)	0	5863	1270	0	3400	3505	0	0	0	0	1665	1672
Flt Permitted					0.950						0.950	0.954
Satd. Flow (perm)	0	5863	1270	0	3400	3505	0	0	0	0	1665	1672
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)		39	169									
Link Speed (mph)		25				40			35			35
Link Distance (ft)		417				419			778			1218
Travel Time (s)		11.4				7.1			15.2			23.7
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	688	269	11	510	708	0	0	0	0	578	11
Shared Lane Traffic (%)			37%								49%	
Lane Group Flow (vph)	0	788	169	0	521	708	0	0	0	0	295	294
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Right	Left
Median Width(ft)		24				24			12			12
Link Offset(ft)		0				0			0			0
Crosswalk Width(ft)		50				16			16			30
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15		9	15		9	15	
Number of Detectors		2	1		1	2			2		1	2
Detector Template		Thru	Right		Left	Thru			Thru		Left	Thru
Leading Detector (ft)		100	20		20	100			100		20	100
Trailing Detector (ft)		0	0		0	0			0		0	0
Detector 1 Position(ft)		0	0		0	0					0	0
Detector 1 Size(ft)		6	20		20	6					20	6
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0		0.0	0.0					0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0					0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0					0.0	0.0
Detector 2 Position(ft)		94				94						94
Detector 2 Size(ft)		6				6						6
Detector 2 Type		Cl+Ex				Cl+Ex						Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0				0.0						0.0
Turn Type		NA	Perm	Prot	Prot	NA					Split	NA
Protected Phases		2		1	1	6					4	4
Permitted Phases			2									

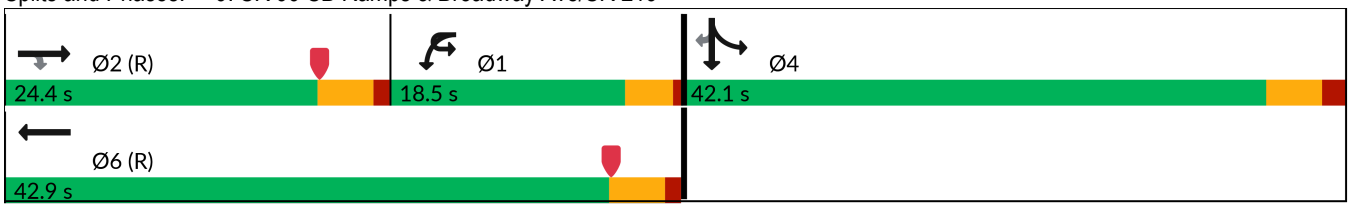


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	160
Future Volume (vph)	160
Ideal Flow (vphpl)	1900
Storage Length (ft)	450
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1568
Flt Permitted	
Satd. Flow (perm)	1568
Right Turn on Red	Yes
Satd. Flow (RTOR)	137
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.93
Adj. Flow (vph)	172
Shared Lane Traffic (%)	
Lane Group Flow (vph)	172
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	Perm
Protected Phases	
Permitted Phases	4

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Detector Phase		2	2	1	1	6					4	4
Switch Phase												
Minimum Initial (s)		8.0	8.0	8.0	8.0	8.0					5.0	5.0
Minimum Split (s)		24.4	24.4	11.5	11.5	25.6					30.1	30.1
Total Split (s)		24.4	24.4	18.5	18.5	42.9					42.1	42.1
Total Split (%)		28.7%	28.7%	21.8%	21.8%	50.5%					49.5%	49.5%
Maximum Green (s)		19.8	19.8	15.0	15.0	38.3					37.0	37.0
Yellow Time (s)		3.6	3.6	3.0	3.0	3.6					3.6	3.6
All-Red Time (s)		1.0	1.0	0.5	0.5	1.0					1.5	1.5
Lost Time Adjust (s)		0.0	0.0		0.0	0.0					0.0	0.0
Total Lost Time (s)		4.6	4.6		3.5	4.6					5.1	5.1
Lead/Lag		Lead	Lead	Lag	Lag							
Lead-Lag Optimize?		Yes	Yes	Yes	Yes							
Vehicle Extension (s)		2.4	2.4	2.0	2.0	3.0					3.0	3.0
Recall Mode		C-Max	C-Max	Max	Max	C-Max					None	None
Walk Time (s)		7.0	7.0			7.0					5.0	5.0
Flash Don't Walk (s)		12.8	12.8			14.0					20.0	20.0
Pedestrian Calls (#/hr)		2	2			3					0	0
Act Effct Green (s)		34.5	34.5		15.0	53.0					22.3	22.3
Actuated g/C Ratio		0.41	0.41		0.18	0.62					0.26	0.26
v/c Ratio		0.33	0.27		0.87	0.32					0.68	0.67
Control Delay (s/veh)		18.1	5.0		35.8	7.9					35.0	34.7
Queue Delay		0.0	0.0		0.0	0.0					0.0	0.0
Total Delay (s/veh)		18.1	5.0		35.8	7.9					35.0	34.7
LOS		B	A		D	A					C	C
Approach Delay (s/veh)		15.8				19.8						28.8
Approach LOS		B				B						C

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 55 (65%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay (s/veh): 20.8		Intersection LOS: C	
Intersection Capacity Utilization 62.1%		ICU Level of Service B	
Analysis Period (min) 15			

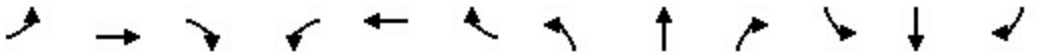
Splits and Phases: 9: SR 99 SB Ramps & Broadway Ave/SR 219





Lane Group	SBR
Detector Phase	4
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	30.1
Total Split (s)	42.1
Total Split (%)	49.5%
Maximum Green (s)	37.0
Yellow Time (s)	3.6
All-Red Time (s)	1.5
Lost Time Adjust (s)	0.0
Total Lost Time (s)	5.1
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Don't Walk (s)	20.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	22.3
Actuated g/C Ratio	0.26
v/c Ratio	0.34
Control Delay (s/veh)	7.9
Queue Delay	0.0
Total Delay (s/veh)	7.9
LOS	A
Approach Delay (s/veh)	
Approach LOS	

Intersection Summary

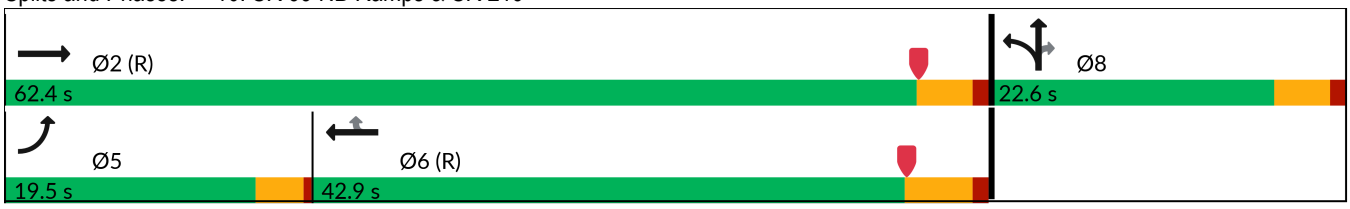


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	1058	0	0	952	502	190	10	432	0	0	0
Future Volume (vph)	130	1058	0	0	952	502	190	10	432	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	360		0	0		565	0		0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (ft)	25			140			25			25		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	0.88	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.955				
Satd. Flow (prot)	1752	5036	0	0	5036	1568	0	1762	2760	0	0	0
Flt Permitted	0.950							0.955				
Satd. Flow (perm)	1752	5036	0	0	5036	1568	0	1762	2760	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						540			210			
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		419			622			1358			1317	
Travel Time (s)		7.1			10.6			26.5			25.7	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	140	1138	0	0	1024	540	204	11	465	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	140	1138	0	0	1024	540	0	215	465	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			25			25			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1		2	1		2	
Detector Template	Left	Thru			Thru	Right		Thru	Right		Thru	
Leading Detector (ft)	20	100			100	20		100	20		100	
Trailing Detector (ft)	0	0			0	0		0	0		0	
Detector 1 Position(ft)	0	0			0	0		0	0			
Detector 1 Size(ft)	20	6			6	20		6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2			6	6	8	8	8			
Switch Phase												
Minimum Initial (s)	10.0	5.0			12.0	12.0	5.0	5.0	5.0			
Minimum Split (s)	13.5	24.6			27.3	27.3	29.6	29.6	29.6			
Total Split (s)	19.5	62.4			42.9	42.9	22.6	22.6	22.6			
Total Split (%)	22.9%	73.4%			50.5%	50.5%	26.6%	26.6%	26.6%			
Maximum Green (s)	16.0	57.8			37.6	37.6	18.0	18.0	18.0			
Yellow Time (s)	3.0	3.6			4.3	4.3	3.6	3.6	3.6			
All-Red Time (s)	0.5	1.0			1.0	1.0	1.0	1.0	1.0			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Total Lost Time (s)	3.5	4.6			5.3	5.3		4.6	4.6			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	2.0	3.0			2.0	2.0	2.0	2.0	2.0			
Recall Mode	Max	C-Max			C-Max	C-Max	None	None	None			
Walk Time (s)		7.0			7.0	7.0	5.0	5.0	5.0			
Flash Don't Walk (s)		13.0			15.0	15.0	13.0	13.0	13.0			
Pedestrian Calls (#/hr)		2			3	3	0	0	0			
Act Effct Green (s)	19.5	61.3			37.6	37.6		14.5	14.5			
Actuated g/C Ratio	0.23	0.72			0.44	0.44		0.17	0.17			
v/c Ratio	0.35	0.31			0.46	0.54		0.72	0.72			
Control Delay (s/veh)	54.3	1.5			17.4	3.7		46.5	24.3			
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0			
Total Delay (s/veh)	54.3	1.5			17.4	3.7		46.5	24.3			
LOS	D	A			B	A		D	C			
Approach Delay (s/veh)		7.3			12.7			31.3				
Approach LOS		A			B			C				

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 65 (76%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay (s/veh): 14.3		Intersection LOS: B	
Intersection Capacity Utilization 62.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 10: SR 99 NB Ramps & SR 219



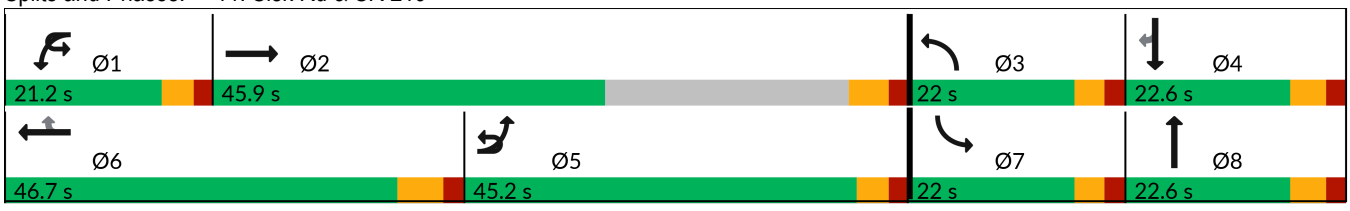
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	10	310	1060	85	10	73	1039	85	150	220	62	20
Future Volume (vph)	10	310	1060	85	10	73	1039	85	150	220	62	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		250		0		735		525	555		230	505
Storage Lanes		1		1		1		1	1		1	1
Taper Length (ft)		75				140			100			100
Lane Util. Factor	0.91	0.94	0.91	1.00	0.91	1.00	0.91	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor				0.99				0.99		0.99		
Frt				0.850				0.850		0.967		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	4942	5036	1568	0	1752	5036	1568	1752	3371	0	1752
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	4942	5036	1549	0	1752	5036	1547	1752	3371	0	1752
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				203				108		22		
Link Speed (mph)			40				55			35		
Link Distance (ft)			434				926			2020		
Travel Time (s)			7.4				11.5			39.4		
Confl. Peds. (#/hr)				1				1			5	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	333	1140	91	11	78	1117	91	161	237	67	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	344	1140	91	0	89	1117	91	161	304	0	22
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			48				36			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			25				25			25		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2		1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)		20	100	20		20	100	20	20	100		20
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0		0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Free	Prot	Prot	NA	Perm	Prot	NA		Prot

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	200	230
Future Volume (vph)	200	230
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		150
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	1.00	0.88
Ped Bike Factor		
Frt		0.850
Flt Protected		
Satd. Flow (prot)	1845	2760
Flt Permitted		
Satd. Flow (perm)	1845	2760
Right Turn on Red		Yes
Satd. Flow (RTOR)		247
Link Speed (mph)	35	
Link Distance (ft)	1227	
Travel Time (s)	23.9	
Confl. Peds. (#/hr)		
Peak Hour Factor	0.93	0.93
Adj. Flow (vph)	215	247
Shared Lane Traffic (%)		
Lane Group Flow (vph)	215	247
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	35	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	1
Detector Template	Thru	Right
Leading Detector (ft)	100	20
Trailing Detector (ft)	0	0
Detector 1 Position(ft)	0	0
Detector 1 Size(ft)	6	20
Detector 1 Type	Cl+Ex	Cl+Ex
Detector 1 Channel		
Detector 1 Extend (s)	0.0	0.0
Detector 1 Queue (s)	0.0	0.0
Detector 1 Delay (s)	0.0	0.0
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	Perm

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Protected Phases	5	5	2		1	1	6		3	8		7
Permitted Phases				Free				6				
Detector Phase	5	5	2		1	1	6	6	3	8		7
Switch Phase												
Minimum Initial (s)	5.0	5.0	10.0		6.0	6.0	10.0	10.0	5.0	5.0		5.0
Minimum Split (s)	10.2	10.2	32.9		11.2	11.2	41.7	41.7	10.0	22.6		10.0
Total Split (s)	45.2	45.2	45.9		21.2	21.2	46.7	46.7	22.0	22.6		22.0
Total Split (%)	33.1%	33.1%	33.6%		15.5%	15.5%	34.2%	34.2%	16.1%	16.6%		16.1%
Maximum Green (s)	40.0	40.0	40.0		16.0	16.0	40.0	40.0	17.0	17.0		17.0
Yellow Time (s)	3.2	3.2	3.9		3.2	3.2	4.7	4.7	3.0	3.6		3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0		2.0
Lost Time Adjust (s)		0.0	0.0			0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		5.2	5.9			5.2	6.7	6.7	5.0	5.6		5.0
Lead/Lag	Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lead	Lag		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	4.6		3.0	3.0	4.6	4.6	3.0	3.2		3.0
Recall Mode	None	None	Min		None	None	Min	Min	None	None		None
Walk Time (s)			7.0				7.0	7.0		5.0		
Flash Don't Walk (s)			20.0				28.0	28.0		12.0		
Pedestrian Calls (#/hr)			1				0	0		1		
Act Effct Green (s)		12.7	40.5	101.2		10.6	34.7	34.7	14.4	31.4		6.9
Actuated g/C Ratio		0.13	0.40	1.00		0.10	0.34	0.34	0.14	0.31		0.07
v/c Ratio		0.56	0.57	0.06		0.48	0.65	0.15	0.65	0.29		0.18
Control Delay (s/veh)		46.4	26.3	0.1		53.9	30.4	4.0	55.3	28.2		51.7
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		46.4	26.3	0.1		53.9	30.4	4.0	55.3	28.2		51.7
LOS		D	C	A		D	C	A	E	C		D
Approach Delay (s/veh)			29.2				30.1			37.6		
Approach LOS			C				C			D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 136.5			
Actuated Cycle Length: 101.2			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay (s/veh): 30.8		Intersection LOS: C	
Intersection Capacity Utilization 64.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 11: Sisk Rd & SR 219





Lane Group	SBT	SBR
Protected Phases	4	
Permitted Phases		4
Detector Phase	4	4
Switch Phase		
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	22.6	22.6
Total Split (s)	22.6	22.6
Total Split (%)	16.6%	16.6%
Maximum Green (s)	17.0	17.0
Yellow Time (s)	3.6	3.6
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	5.6	5.6
Lead/Lag	Lag	Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	None
Walk Time (s)	5.0	5.0
Flash Don't Walk (s)	12.0	12.0
Pedestrian Calls (#/hr)	1	1
Act Effct Green (s)	16.7	16.7
Actuated g/C Ratio	0.17	0.17
v/c Ratio	0.71	0.37
Control Delay (s/veh)	56.1	7.2
Queue Delay	0.0	0.0
Total Delay (s/veh)	56.1	7.2
LOS	E	A
Approach Delay (s/veh)	30.9	
Approach LOS	C	

Intersection Summary

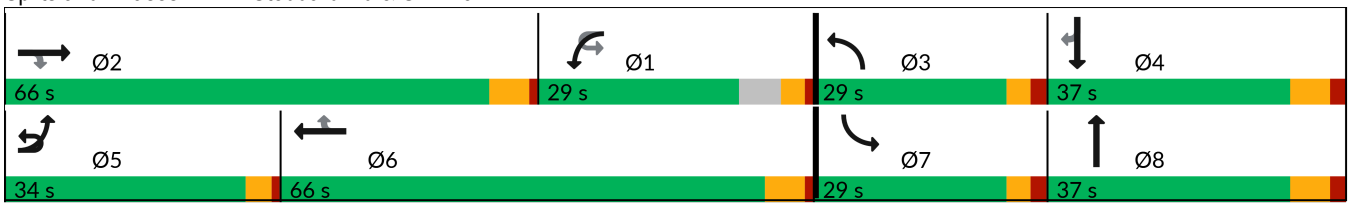
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	10	48	1019	40	10	47	1050	45	60	91	186	10
Future Volume (vph)	10	48	1019	40	10	47	1050	45	60	91	186	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		1000		620		495		640	70		0	155
Storage Lanes		2		1		1		1	1		0	1
Taper Length (ft)		210				140			55			160
Lane Util. Factor	0.91	0.97	0.91	1.00	0.91	1.00	0.91	1.00	1.00	1.00	1.00	1.00
Frt				0.850				0.850		0.899		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	3400	5036	1568	0	1752	5036	1568	1752	1658	0	1752
Flt Permitted		0.950				0.248			0.950			0.950
Satd. Flow (perm)	0	3400	5036	1568	0	457	5036	1568	1752	1658	0	1752
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				99				85		54		
Link Speed (mph)			55				55			35		
Link Distance (ft)			1694				1350			735		
Travel Time (s)			21.0				16.7			14.3		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	52	1096	43	11	51	1129	48	65	98	200	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	63	1096	43	0	62	1129	48	65	298	0	11
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			36				36			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			25				25			16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2		1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)		20	100	20		20	100	20	20	100		20
Trailing Detector (ft)		0	0	0		0	0	0	0	0		0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0		0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Perm	custom	Prot	NA	Perm	Prot	NA		Prot
Protected Phases	5	5	2			1	6		3	8		7
Permitted Phases				2	1			6				

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	26	97
Future Volume (vph)	26	97
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		155
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	1.00	1.00
Frt		0.850
Flt Protected		
Satd. Flow (prot)	1845	1568
Flt Permitted		
Satd. Flow (perm)	1845	1568
Right Turn on Red		Yes
Satd. Flow (RTOR)		118
Link Speed (mph)	35	
Link Distance (ft)	1875	
Travel Time (s)	36.5	
Peak Hour Factor	0.93	0.93
Adj. Flow (vph)	28	104
Shared Lane Traffic (%)		
Lane Group Flow (vph)	28	104
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	25	
Two way Left Turn Lane	Yes	
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	1
Detector Template	Thru	Right
Leading Detector (ft)	100	20
Trailing Detector (ft)	0	0
Detector 1 Position(ft)	0	0
Detector 1 Size(ft)	6	20
Detector 1 Type	Cl+Ex	Cl+Ex
Detector 1 Channel		
Detector 1 Extend (s)	0.0	0.0
Detector 1 Queue (s)	0.0	0.0
Detector 1 Delay (s)	0.0	0.0
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	Perm
Protected Phases	4	
Permitted Phases		4

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Detector Phase	5	5	2	2	1	1	6	6	3	8		7
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.0	10.0		9.0
Minimum Split (s)	14.0	14.0	16.0	16.0	14.0	14.0	16.0	16.0	14.0	17.0		14.0
Total Split (s)	34.0	34.0	66.0	66.0	29.0	29.0	66.0	66.0	29.0	37.0		29.0
Total Split (%)	20.5%	20.5%	39.8%	39.8%	17.5%	17.5%	39.8%	39.8%	17.5%	22.3%		17.5%
Maximum Green (s)	30.0	30.0	60.0	60.0	25.0	25.0	60.0	60.0	24.0	30.0		24.0
Yellow Time (s)	3.0	3.0	5.0	5.0	3.0	3.0	5.0	5.0	3.0	5.0		3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0		2.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		4.0	6.0	6.0		4.0	6.0	6.0	5.0	7.0		5.0
Lead/Lag	Lead	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	4.5	4.5	3.0	3.0	4.5	4.5	3.0	3.5		3.0
Recall Mode	None	None	Min	Min	None	None	Min	Min	None	None		None
Act Effct Green (s)		10.6	36.0	36.0		20.5	50.2	50.2	11.0	24.6		9.6
Actuated g/C Ratio		0.10	0.36	0.36		0.20	0.50	0.50	0.11	0.24		0.09
v/c Ratio		0.18	0.61	0.07		0.67	0.45	0.06	0.34	0.67		0.07
Control Delay (s/veh)		51.2	29.6	0.2		77.9	18.8	0.8	54.4	39.5		54.3
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay (s/veh)		51.2	29.6	0.2		77.9	18.8	0.8	54.4	39.5		54.3
LOS		D	C	A		E	B	A	D	D		D
Approach Delay (s/veh)			29.6				21.0			42.1		
Approach LOS			C				C			D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 166			
Actuated Cycle Length: 101.3			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay (s/veh): 27.1		Intersection LOS: C	
Intersection Capacity Utilization 62.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 12: Stoddard Rd & SR 219





Lane Group	SBT	SBR
Detector Phase	4	4
Switch Phase		
Minimum Initial (s)	10.0	10.0
Minimum Split (s)	17.0	17.0
Total Split (s)	37.0	37.0
Total Split (%)	22.3%	22.3%
Maximum Green (s)	30.0	30.0
Yellow Time (s)	5.0	5.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	7.0	7.0
Lead/Lag	Lag	Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	3.5	3.5
Recall Mode	None	None
Act Effct Green (s)	14.8	14.8
Actuated g/C Ratio	0.15	0.15
v/c Ratio	0.10	0.32
Control Delay (s/veh)	45.6	9.2
Queue Delay	0.0	0.0
Total Delay (s/veh)	45.6	9.2
LOS	D	A
Approach Delay (s/veh)	19.8	
Approach LOS	B	

Intersection Summary

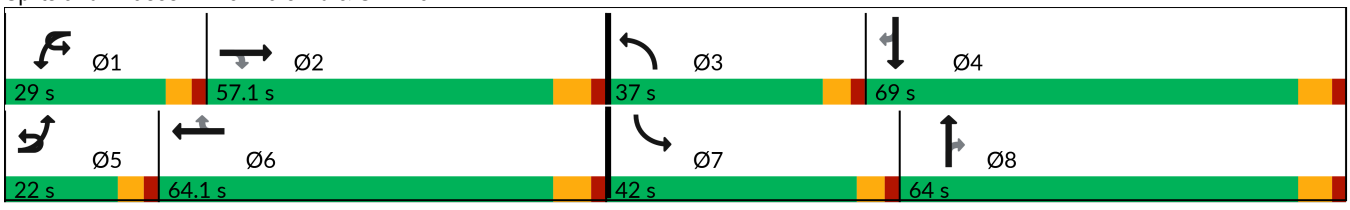
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	67	78	821	271	10	220	726	170	348	440	246	391
Future Volume (vph)	67	78	821	271	10	220	726	170	348	440	246	391
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		555		700		450		500	320		300	300
Storage Lanes		2		1		2		1	1		1	2
Taper Length (ft)		140				205			140			150
Lane Util. Factor	0.91	0.97	0.91	1.00	0.91	0.97	0.91	1.00	0.97	0.95	1.00	0.97
Ped Bike Factor				0.99				0.99			0.99	
Frt				0.850				0.850			0.850	
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	3430	5036	1568	0	3403	5036	1568	3400	3505	1568	3400
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	3430	5036	1547	0	3403	5036	1546	3400	3505	1547	3400
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				291				183			195	
Link Speed (mph)			55				55			40		
Link Distance (ft)			943				2640			1013		
Travel Time (s)			11.7				32.7			17.3		
Confl. Peds. (#/hr)				1				1			1	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	1%	3%	3%	3%	1%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	72	84	883	291	11	237	781	183	374	473	265	420
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	156	883	291	0	248	781	183	374	473	265	420
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	L NA	Left	R NA	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA
Median Width(ft)			36				36			24		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			50				70			50		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors		1	2	1		1	2	1	1	2	1	1
Detector Template		Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left
Leading Detector (ft)		20	100	20		20	100	20	20	100	20	20
Trailing Detector (ft)		0	0	0		0	0	0	0	0	0	0
Detector 1 Position(ft)		0	0	0		0	0	0	0	0	0	0
Detector 1 Size(ft)		20	6	20		20	6	20	20	6	20	20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		

Lane Group	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	413	100
Future Volume (vph)	413	100
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		300
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Ped Bike Factor		
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3505	1568
Flt Permitted		
Satd. Flow (perm)	3505	1568
Right Turn on Red		Yes
Satd. Flow (RTOR)		126
Link Speed (mph)	45	
Link Distance (ft)	631	
Travel Time (s)	9.6	
Confl. Peds. (#/hr)		
Peak Hour Factor	0.93	0.93
Heavy Vehicles (%)	3%	3%
Adj. Flow (vph)	444	108
Shared Lane Traffic (%)		
Lane Group Flow (vph)	444	108
Enter Blocked Intersection	No	No
Lane Alignment	L NA	R NA
Median Width(ft)	24	
Link Offset(ft)	0	
Crosswalk Width(ft)	50	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	1
Detector Template	Thru	Right
Leading Detector (ft)	100	20
Trailing Detector (ft)	0	0
Detector 1 Position(ft)	0	0
Detector 1 Size(ft)	6	20
Detector 1 Type	Cl+Ex	Cl+Ex
Detector 1 Channel		
Detector 1 Extend (s)	0.0	0.0
Detector 1 Queue (s)	0.0	0.0
Detector 1 Delay (s)	0.0	0.0
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot
Protected Phases	5	5	2		1	1	6		3	8		7
Permitted Phases				2				6			8	
Detector Phase	5	5	2	2	1	1	6	6	3	8	8	7
Switch Phase												
Minimum Initial (s)	6.0	6.0	11.0	11.0	6.0	6.0	11.0	11.0	8.0	8.0	8.0	8.0
Minimum Split (s)	11.8	11.8	41.5	41.5	11.8	11.8	37.5	37.5	14.0	60.0	60.0	14.0
Total Split (s)	22.0	22.0	57.1	57.1	29.0	29.0	64.1	64.1	37.0	64.0	64.0	42.0
Total Split (%)	11.5%	11.5%	29.7%	29.7%	15.1%	15.1%	33.4%	33.4%	19.3%	33.3%	33.3%	21.9%
Maximum Green (s)	16.2	16.2	49.6	49.6	23.2	23.2	56.6	56.6	31.0	57.0	57.0	36.0
Yellow Time (s)	3.8	3.8	5.5	5.5	3.8	3.8	5.5	5.5	4.0	5.0	5.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.8	7.5	7.5		5.8	7.5	7.5	6.0	7.0	7.0	6.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	4.5	4.5	3.0	3.0	4.5	4.5	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	None	None	Min	Min	None	None	None	None
Walk Time (s)			5.0	5.0			5.0	5.0		5.0	5.0	
Flash Don't Walk (s)			29.0	29.0			25.0	25.0		48.0	48.0	
Pedestrian Calls (#/hr)			1	1			1	1		1	1	
Act Effct Green (s)		12.1	37.2	37.2		16.2	41.3	41.3	21.3	28.4	28.4	23.3
Actuated g/C Ratio		0.09	0.28	0.28		0.12	0.31	0.31	0.16	0.21	0.21	0.18
v/c Ratio		0.50	0.63	0.45		0.60	0.50	0.30	0.68	0.63	0.55	0.70
Control Delay (s/veh)		68.8	45.8	7.2		65.7	40.1	6.7	62.7	52.4	18.5	61.3
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		68.8	45.8	7.2		65.7	40.1	6.7	62.7	52.4	18.5	61.3
LOS		E	D	A		E	D	A	E	D	B	E
Approach Delay (s/veh)			40.0				40.3			47.8		
Approach LOS			D				D			D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 192.1			
Actuated Cycle Length: 132.9			
Natural Cycle: 140			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay (s/veh): 44.0		Intersection LOS: D	
Intersection Capacity Utilization 72.2%		ICU Level of Service C	
Analysis Period (min) 15			

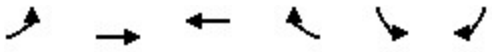
Splits and Phases: 13: Dale Rd & SR 219





Lane Group	SBT	SBR
Turn Type	NA	Perm
Protected Phases	4	
Permitted Phases		4
Detector Phase	4	4
Switch Phase		
Minimum Initial (s)	8.0	8.0
Minimum Split (s)	60.0	60.0
Total Split (s)	69.0	69.0
Total Split (%)	35.9%	35.9%
Maximum Green (s)	62.0	62.0
Yellow Time (s)	5.0	5.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	7.0	7.0
Lead/Lag	Lag	Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	None
Walk Time (s)	5.0	5.0
Flash Don't Walk (s)	48.0	48.0
Pedestrian Calls (#/hr)	1	1
Act Effct Green (s)	30.4	30.4
Actuated g/C Ratio	0.23	0.23
v/c Ratio	0.55	0.24
Control Delay (s/veh)	48.8	5.7
Queue Delay	0.0	0.0
Total Delay (s/veh)	48.8	5.7
LOS	D	A
Approach Delay (s/veh)	49.4	
Approach LOS	D	

Intersection Summary

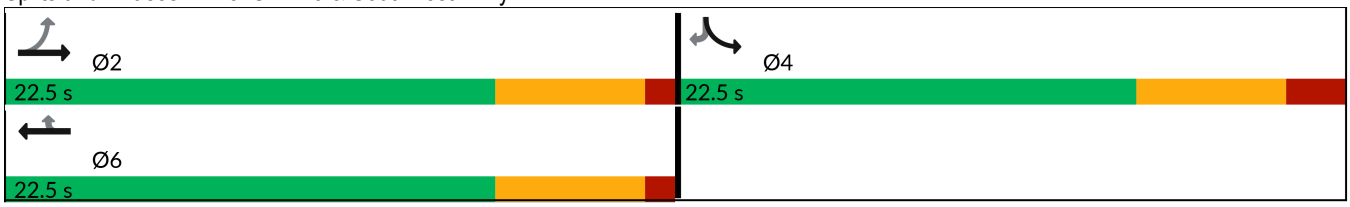


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	94	1121	1077	59	116	65
Future Volume (vph)	94	1121	1077	59	116	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300			500	100	0
Storage Lanes	1			1	1	1
Taper Length (ft)	150				100	
Lane Util. Factor	1.00	0.91	0.91	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1752	5036	5036	1568	1752	1568
Flt Permitted	0.227				0.950	
Satd. Flow (perm)	419	5036	5036	1568	1752	1568
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				63		15
Link Speed (mph)		55	55		25	
Link Distance (ft)		2134	847		750	
Travel Time (s)		26.5	10.5		20.5	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	101	1205	1158	63	125	70
Shared Lane Traffic (%)						
Lane Group Flow (vph)	101	1205	1158	63	125	70
Enter Blocked Intersection	No	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	L NA	R NA
Median Width(ft)		36	36		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2			6		4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	2	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.0	24.0	24.0	24.0	25.0	25.0
Total Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	16.5	16.5	16.5	16.5	15.5	15.5
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.5	4.5	4.5	4.5	3.5	3.5
Recall Mode	Min	Min	Min	Min	None	None
Act Effct Green (s)	21.7	21.7	21.7	21.7	10.4	10.4
Actuated g/C Ratio	0.55	0.55	0.55	0.55	0.26	0.26
v/c Ratio	0.44	0.44	0.42	0.07	0.27	0.17
Control Delay (s/veh)	21.3	8.5	8.4	3.0	14.0	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	21.3	8.5	8.4	3.0	14.0	10.8
LOS	C	A	A	A	B	B
Approach Delay (s/veh)		9.5	8.1		12.9	
Approach LOS		A	A		B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 39.7			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.44			
Intersection Signal Delay (s/veh): 9.1		Intersection LOS: A	
Intersection Capacity Utilization 53.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 28: SR 219 & Southwest Drwy



95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
6. Patterson Rd/SR 108	EBTR	458	110	201
	WBL	458	119	202
	WBT	525	228	73
	NBR	1,387	481	117
7. McHenry Ave/SR 108	WBLR	658	170	81
	NBT	699	242	270
	SBT	469	424	479
	SBT	469	413	475
14. Carver Rd/SR 219	EBUL	430	123	75
	EBTR	1,445	276	333
	EBTR	1,445	245	269
	EBTR	580	178	162
	EBR	580	81	65
	WBUL	595	134	146
	WBT	1,236	342	177
	WBT	1,236	393	206
	WBT	1,236	425	234
	WBR	540	22	15
	NBL	260	314	117
	NBTR	1,190	220	166
	SBL	95	57	34
	SBTR	1,325	202	168
15. Tully Rd/SR 219	EBL	715	54	82
	EBTR	1,232	259	342
	EBTR	1,232	259	342
	EBTR	1,232	245	312
	EBR	355	111	77
	WBUL	665	206	151
	WBL	665	224	168
	WBT	1,874	366	235
	WBT	1,874	435	284
	WBT	1,874	480	321
	WBR	415	52	20
	NBL	275	264	201
	NBT	1,296	132	186

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
	NBR	395	63	101
	SBL	300	47	40
	SBTR	1,249	284	203
16. SR 108/SR 219/Claribel Rd	EBUL	765	81	65
	EBL	765	102	79
	EBTR	1,249	235	475
	EBTR	1,249	254	509
	EBTR	1,249	259	527
	EBR	650	204	161
	WBL	960	196	165
	WBL	960	222	191
	WBT	1,594	497	447
	WBT	1,594	425	397
	WBT	1,594	326	310
	WBR	75	175	172
	NBL	500	277	418
	NBT	1,401	438	1,369
	NBT	1,401	444	1,459
	NBR	210	123	400
	SBL	420	235	537
	SBT	1,228	423	544
	SBT	1,228	389	492
	SBR	535	102	31
26. Pelandale Ave/SR 108	EBUL	300	167	213
	EBL	781	200	354
	EBT	781	371	561
	EBT	781	330	483
	EBR	380	114	204
	WBL	195	61	63
	WBL	195	75	64
	WBT	640	252	216
	WBT	640	242	208
	WBT	640	220	304
	WBR	320	190	155
	NBUL	325	143	466

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
	NBL	325	221	236
	NBT	776	383	430
	NBT	776	341	629
	NBR	776	0	570
	SBL	300	102	261
	SBL	300	152	272
	SBT	2,487	398	457
	SBTR	2,487	422	758

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
9. SR 99 SB Ramps/SR 219	EBT	350	176	126
	EBT	350	221	144
	EBT	248	225	156
	EBTR	248	228	170
	EBR	248	145	113
	WBUL	361	435	241
	WBL	361	436	258
	WBT	361	216	387
	WBT	361	182	392
	SBL	450	341	199
	SBLT	1,118	340	214
	SBR	450	80	108
10. SR 99 NB Ramps/SR 219	EBL	361	191	157
	EBT	361	107	17
	EBT	361	52	14
	EBT	361	82	33
	WBT	360	535	194
	WBT	868	926	344
	WBT	868	927	464
	WBR	1,013	671	405
	NBLT	1,264	116	244
	NBR	1,264	123	138
	NBR	565	87	115
11. Sisk Rd/SR 219	EBUL	250	92	93
	EBL	327	140	143
	EBL	327	163	169
	EBT	868	378	192
	EBT	868	365	237
	EBT	654	650	270
	EBR			
	WBUL	735	111	118
	WBT	1,467	476	316
	WBT	1,157	475	338
	WBT	819	444	334
	WBR	525	146	67

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
	NBL	555	247	206
	NBT	1,927	270	150
	NBTR	230	248	139
	SBL	505	105	47
	SBT	1,125	396	239
	SBR	1,125	300	103
	SBR	150	184	69
12. Stoddard Rd/SR 219	EBUL	1,000	277	41
	EBL	1,000	301	61
	EBT	1,611	330	224
	EBT	1,611	383	244
	EBT	1,611	422	265
	EBR	620	83	21
	WBL	495	242	87
	WBT	1,265	345	202
	WBT	1,265	391	235
	WBT	1,265	414	260
	WBR	640	169	38
	NBL	70	101	112
	NBTR	652	837	227
	SBL	155	234	32
	SBT	1,766	176	54
	SBR	1,766	178	69
13. Dale Rd/SR 219	EBUL	555	231	169
	EBL	555	174	127
	EBT	816	262	290
	EBT	816	304	319
	EBT	816	315	342
	EBR	700	194	102
	WBUL	450	239	183
	WBL	450	268	199
	WBT	2,520	400	245
	WBT	2,520	413	234
	WBT	2,520	447	261
	WBR	500	396	108

95th Queue Length				
Intersection	Lane	Storage	Queue Length	
			AM	PM
	NBL	320	349	299
	NBL	897	387	334
	NBT	897	371	272
	NBT	897	423	299
	NBR	300	192	145
	SBL	300	258	263
	SBL	300	281	286
	SBT	488	309	236
	SBT	488	331	257
	SBR	300	113	70
28. Southwest Drwy/SR 219	EBL	300	174	124
	EBT	2,074	116	116
	EBT	2,074	171	155
	EBT	2,074	212	184
	WBT	783	250	169
	WBT	783	247	175
	WBT	783	251	178
	WBR	500	49	43
	SBL	100	90	117
	SBR	666	52	55

FEHR PEERS

Final Memorandum

Date: May 15, 2024

To: Carl Gibson, WMH

From: Ian Barnes, Fehr & Peers
Eddie Barrios, Barrios Transportation Consulting

Subject: Traffic Engineering Performance Assessment for the Beckwith/Standiford Multimodal Safety and Complete Streets Improvement Project PSR/PDS (EA 10-1M500) [FINAL]

WC23-3986

This memorandum presents the traffic engineering performance assessment (TEPA) in support of the Beckwith/Standiford Multimodal Safety and Complete Streets Improvement Project (Project). The analysis has been prepared in accordance with Article 5 of *Appendix S: Preparation Guideline for Project Study Report/Project Development Support Project Initiation Document* of the Project Development Procedures Manual prepared by Caltrans. The analysis for this TEPA was prepared in coordination with Caltrans District 10 and the City of Modesto.

Proposed Project Purpose & Need

The proposed Project will include construction of complete streets and safety-related improvements along the Beckwith/Standiford Avenue corridor and at the SR 99/Beckwith Road-Standiford Avenue interchange; for simplicity, the interchange will be referred to the SR 99/Beckwith Road interchange in the remainder of this memorandum. The proposed project Purpose and Need is summarized below.

Project Purpose

The purpose of the proposed project is to provide transportation improvements that address multiple existing deficiencies. Specifically, the objectives of this Project are to:

- Improve access for all travel modes in the area including bicycles, pedestrians, and transit.
- Improve safety for all travel modes in the area.
- Improve economic vitality of local commercial centers and City of Modesto

- Encourage mode shift from fossil fuel-powered Single Occupancy Vehicles (SOV) to High Occupancy Vehicle (HOV), electric vehicle, and transit by improving supporting facilities, and reliability for these modes of travel.

Project Need

The project need includes the following elements:

Accommodation for All Modes of Transportation – There is insufficient multi-modal access and connectivity within the project area. There are limited facilities for pedestrians and no dedicated facilities for bicyclists. Existing transit facilities are inadequate to provide convenient accessibility to local destinations as well as planned regional transit improvements such as the ACE Rail expansion Project.

Safety – Several features within the project limits are not desirable for providing safe travel for all modes of transportation including vehicle/pedestrian conflicts and vehicle queueing which extends into upstream intersections on local streets and onto the freeway. Collision rates on most facilities within the project area significantly exceed the statewide average.

Economic Vitality for Local Commercial Centers – Efficient and low-stress mobility for all users accessing the local commercial centers is critical to a healthy and sustainable economy and tax base. Inconvenience and lack of accessibility to the local commercial centers decreases shopping trip frequency and leads shoppers to use alternative commercial centers in other jurisdictions.

Usage of HOV, Electric Vehicle, and Transit – There are currently limited or no facilities that benefit users not travelling in fossil fuel-powered Single Occupancy Vehicles (SOV). Usage of High Occupancy Vehicle (HOV), electric vehicles, and transit can be encouraged by providing accommodations which provide a benefit to those who choose these forms of travel and reduce vehicle miles of travel (VMT) and greenhouse gases (GHG).

Project Alternatives Under Study

The Project alternatives are grouped into two sets: one set refers to the SR 99/Beckwith Road interchange ("B" alternatives) and one set refers to the Modesto local streets ("M" alternatives). The alternatives are described below in narrative format, with conceptual layouts of the alternatives provided in **Appendix A**. The alternatives selected for evaluation in the TEPA include only alternatives that passed an initial screening based on a qualitative review by Caltrans District 10 and City of Modesto. The initial screening also included preliminary traffic analysis to identify fatal flaws. Out of 10 initial "B" alternatives only 4 advanced for further study in the TEPA and out of 4 initial "M" alternatives only 2 advanced for further study in the TEPA.

"B" Alternatives

The following narrative describes the "B" Alternatives related to the SR 99/Beckwith Road interchange. All intersections (except those involving Diverging Diamond interchanges) were evaluated as a roundabout and with a traffic signal.

Alternative B1: This alternative includes construction of a modified Type L-5 "split diamond" interchange where all 4 ramp intersections would include roundabouts. In general, the ramps to the north of the interchange would shift northward and a new bridge would be constructed over SR 99 to facilitate a new connection to Sisk Road near Vintage Faire Mall. A new Class I multimodal pathway would be constructed along the southern frontage of Beckwith Road. The Class I path would be grade separated across the off- and on-ramps at the interchange.

Alternative B5: This alternative retains the Type L-1 interchange configuration for the SR 99/Beckwith Road interchange, but replaces the signalized ramp intersections with roundabouts. In addition, a new off-ramp from northbound SR 99 and an on-ramp to southbound SR 99 to/from a new connection along Sisk Road is provided near Vintage Faire Mall. A new Class I multimodal pathway would be constructed along the southern frontage of Beckwith Road. The Class I path would be grade separated across the off- and on-ramps at the interchange.

Alternative B7: This alternative modifies the interchange to a Type L-13 "Diverging Diamond" interchange. A new off-ramp from northbound SR 99 and an on-ramp to northbound SR 99 to/from a new connection along Sisk Road is provided near Vintage Faire Mall. A new Class I multimodal pathway would be constructed along the southern frontage of Beckwith Road. The Class I path would be grade separated across the off- and on-ramps at the interchange.

Alternative B8: This alternative is similar to Alternative B7, except that the new on-ramp from Sisk Road goes onto southbound SR 99 via a new flyover structure.

"M" Alternatives

The following narrative describes the "M" Alternatives related to the City of Modesto local roadway system. All intersections were evaluated as a roundabout and with a traffic signal.

Alternative M2: This alternative includes construction of a new public road connection which begins at the intersection of Sisk Road and the new ramp connections described in the "B" alternatives and extends eastward to Dale Road. Dale Road would be extended southward past Standiford Avenue and terminate at Sisk Road thereby completing the roadway grid in the area. Class I pathways would be provided for multimodal circulation, and all pedestrian and bicycle crossings of vehicular travelways will be grade separated from all major roadways.

Alternative M3: This alternative is similar to Alternative M2, except a full grade separation of Beckwith-Standiford Avenue at Sisk Road would be provided in lieu of an at-grade intersection. No ramps would be provided at the grade separation.

Summary of Preliminary Findings and Recommendations

Data Sources, Study Locations, Assumptions, and Traffic Volumes

Sources of Available Data

Per the PSR/PDS guidelines the TEPA should be limited to an assessment of readily available information and data, and macro-level analysis and evaluation. The following data sources were used in the preparation of this document:

- AM and PM period traffic counts collected in early May 2019 (before COVID-19 shelter in place orders were implemented) at the following locations:
    - SR 99 Southbound Existing Ramps/Beckwith Road
    - SR 99 Northbound Existing Ramps/Beckwith Road
    - Dale Road/Vintage Faire Mall Driveway
    - Dale Road/Standiford Avenue
    - Vintage Faire Mall Driveway/Sisk Road
    - Sisk Road/Standiford Avenue
- Freeway mainline volume data from the Caltrans Freeway and Performance Measuring System (PeMS).
- Collision history between January 1, 2017 and December 31, 2019 provided by Caltrans District 10 – this data range was chosen to be consistent with the counts described above and to limit the effects of the COVID-19 pandemic.

The traffic counts are presented in **Appendix B**. As discussed later in this TEPA, it is proposed that new count data be established in Spring 2024 to support the PA/ED phase of the Project.

Study Intersection Locations

The following intersections were evaluated as part of this study:

1. SR 99 Northbound On-Ramp/New Connection (future intersection)
2. SR 99 Southbound Off-Ramp/New Connection (future intersection)
3. SR 99 Southbound Existing Ramps/Beckwith Road
4. SR 99 Northbound Existing Ramps/Beckwith Road
5. Dale Road/Vintage Faire Mall Driveway
6. Dale Road/Standiford Avenue
7. Dale Road/Sisk Road (future intersection)
8. Vintage Faire Mall Driveway/Circulator Roadway (future intersection)
9. Vintage Faire Mall Driveway-New Connection/Sisk Road

10. Sisk Road/Standiford Avenue

The study intersections are presented graphically in **Appendix C.**

Study Freeway Mainline Locations

The following freeway segments were studied as part of the analysis:

Northbound SR 99:

- Briggsmore Avenue On-Ramp to Beckwith Road Off-Ramp - Basic Freeway
- Beckwith Road Off-Ramp - Ramp Diverge
- Beckwith Road Off-Ramp to Beckwith Road On-Ramp - Basic Freeway
- Beckwith Road On-Ramp to Pelandale Avenue Off-Ramp - Weaving Section (evaluates on-ramp, mainline, and off-ramp)

Southbound SR 99:

- Pelandale Avenue On-Ramp to Beckwith Road Off-Ramp - Weaving Section (evaluates on-ramp, mainline, and off-ramp)
- Beckwith Road Off-Ramp to Beckwith Road On-Ramp - Basic Freeway
- Beckwith Road On-Ramp - Ramp Merge
- Beckwith Road On-Ramp to Briggsmore Avenue Off-Ramp - Basic Freeway

Traffic Forecasting Assumptions

Year 2050 AM and PM peak hour traffic volumes for the study locations were based on information from available traffic count data and an assumed 1% per year growth rate; the TOAR for the project will use the StanCOG RTP/SCS travel demand model, but due to validation concerns in the interchange area, the growth rate method was used for the TEPA to provide a conservative approach to forecasts. Existing, Year 2050 No Build, and Year 2050 With Project volumes are presented in **Appendix D**. Per the PSR/PDS guidelines the forecasts will be prepared in greater detail and updated during the PA/ED phase.

The observed truck percentages on the local street system were 3% in the AM peak hour and 2% in the PM peak hour; these percentages are carried forward into the Year 2050 operations analysis. The existing peak hour factors were 0.89-0.98 in the AM peak hour and 0.94-0.99 in the PM peak hour. Consistent with Caltrans District 10 policy, the Year 2050 operations analysis considers a peak hour factor of 0.92.

Preliminary Assessment Findings

Traffic operations for the study area were analyzed using the Synchro 11 software program for signalized intersections. Synchro is based on procedures outlined in the Transportation Research Board's *Highway Capacity Manual, 6th Edition.* Roundabout analysis was conducted using the Sidra 9.1 analysis program using typical District 10 analysis parameters.

The analysis results include a descriptive term known as level of service (LOS). LOS is a measure of traffic operating conditions, which varies from LOS A (indicating free flow traffic conditions with little or no delay) to LOS F (representing over-saturated conditions where traffic flows exceed design capacity, resulting in long queues and delays). The City of Modesto's LOS policy for peak hour operations is LOS D.

Existing Conditions

Intersection Operations

Table 1 presents the existing conditions intersection delay and LOS. All study intersections - except for Sisk Road/Standiford Avenue in the PM peak hour - currently operate at LOS D or better conditions. The existing conditions traffic analysis worksheets are provided in **Appendix E**.

Table 1: Existing Peak Hour Intersection Analysis Results

Intersection	Traffic Control	Peak Hour	Delay (seconds)[1]	LOS
3. SR 99 Northbound Ramps/Beckwith Road	Traffic Signal	AM	10.0	B
		PM	27.5	C
4. SR 99 Southbound Ramps/Beckwith Road	Traffic Signal	AM	38.1	D
		PM	43.9	D
5. Dale Road/ Vintage Faire Mall	Traffic Signal	AM	37.4	D
		PM	40.6	D
6. Dale Road/ Standiford Avenue	Traffic Signal	AM	16.7	B
		PM	21.9	C
9. Sisk Road/ Vintage Faire Mall	Traffic Signal	AM	36.1	D
		PM	30.9	C
10. Sisk Road/ Standiford Avenue	Traffic Signal	AM	32.7	C
		PM	**94.1**	**F**

Notes:
1. For signalized intersections the overall average intersection delay/LOS is presented. Delay and LOS per *Highway Capacity Manual, 6th Edition* methodologies.

Bold indicated unacceptable operations below the City of Modesto's LOS D standard (LOS E or LOS F).
Source: Fehr & Peers, 2024.

Table 2 presents the 95th percentile queue lengths under Existing Conditions. The 95th percentile queue lengths exceed storage distances at several locations, primarily during the PM peak hour. These unaccommodated queues result in queue spillback between intersections along the Standiford Avenue corridor, particularly along eastbound Beckwith Road-Standiford Avenue in the PM peak hour.

Table 2: 95th Percentile Queue Lengths – Existing Conditions

Intersection	Lane Group	Storage (feet)	95th Percentile Queue (feet)	
			AM Peak Hour	PM Peak Hour
3. SR 99 Northbound Ramps/Beckwith Road	EBL	105	67	23
	EBT	410	15	322
	WBT	460	384	**562**
	NBT	1,470	105	98
	NBR	850	56	399
4. SR 99 Southbound Ramps/Beckwith Road	EBT	4,240	160	301
	WBL	395	231	254
	WBT	430	53	74
	SBT	1,540	395	611
5. Dale Road/Vintage Faire Mall	EBL	190	16	39
	EBT	190	17	53
	WBL	140	34	**150**
	WBT	140	19	41
	NBL	150	26	65
	NBT	450	149	192
	SBL	130	15	68
	SBT	440	127	181
6. Dale Road/Standiford Avenue	EBL	210	170	**255**
	EBT	210	24	203
	WBT	1,210	160	160
	WBR	375	31	58
	SBL	460	103	200
	SBT	460	104	200

Table 2: 95th Percentile Queue Lengths – Existing Conditions

Intersection	Lane Group	Storage (feet)	95th Percentile Queue (feet)	
			AM Peak Hour	PM Peak Hour
	SBR	460	155	173
	NBR	255	0	0
9. Sisk Road/Vintage Faire Mall	WBL	75	12	**142**
	WBR	75	4	24
	NBT	930	121	221
	NBR	155	26	43
	SBL	210	13	54
	SBT	1,230	88	107
10. Sisk Road/Standiford Avenue	EBL	400	59	351
	EBT	400	247	**410**
	WBL	210	47	128
	WBT	210	**498**	191
	WBR	210	0	17
	NBL	200	94	156
	NBT	930	77	230
	SBL	515	20	95
	SBT	930	81	142
	SBR	255	0	150

Notes:
Results in **bold** denote locations where storage length is exceeded.
EB = eastbound; WB = westbound; NB = northbound; SB = southbound; L= left-turn; T = through; R = right-turn
Source: Fehr & Peers, 2024.

Freeway Mainline Operations

Table 3 below presents the results of the Existing Conditions freeway mainline analysis. HCS analysis worksheets are presented in **Appendix F**. The analysis indicates that many segments along SR 99 operate at LOS F under Existing Conditions.

Table 3: Existing Peak Hour Freeway Segment Analysis Results

Segment	Type	Peak Hour	Density (pc/mi/ln)[1]	LOS
SR 99 NB: Briggsmore Avenue on-ramp to Beckwith Road off-ramp	Basic	AM	**55.6**	**F**
		PM	37.2	E
SR 99 NB: Beckwith Road off-ramp	Ramp Diverge	AM	**v/c > 1**	**F**[2]
		PM	28.2	D
SR 99 NB: Beckwith Road off-ramp to Beckwith Road on-ramp	Basic	AM	29.4	D
		PM	25.9	C
SR 99 NB: Beckwith Road on-ramp to Pelandale Avenue off-ramp	Weaving[3]	AM	23.7	C
		PM	21.6	C
SR 99 SB: Pelandale Avenue on-ramp to Beckwith Road off-ramp	Weaving[4]	AM	23.3	C
		PM	30.8	D
SR 99 SB: Beckwith Road off-ramp to Beckwith Road on-ramp	Basic	AM	**67.7**	**F**
		PM	**65.9**	**F**
SR 99 SB: Beckwith Road on-ramp	Ramp Merge	AM	**v/c > 1**	**F**[2]
		PM	**v/c > 1**	**F**[2]
SR 99 SB: Beckwith Road on-ramp to Briggsmore Avenue off-ramp	Basic	AM	**v/c > 1**	**F**[2]
		PM	**v/c > 1**	**F**[2]

Notes:
1. Segment density (passenger cars per mile per lane) and LOS per *Highway Capacity Manual, 6th Edition* methodologies.
2. Volume-to-capacity ratio is greater than 1 (demand exceeds capacity).
3. The weave segment short length is longer than the maximum weaving length of 1,500 feet and the volume is low. Therefore, the segment is analyzed as a basic segment.
4. The weave segment short length is longer than the maximum weaving length of 1,500 feet and the volume is low. Therefore, the AM peak hour segment is analyzed as a basic segment.

Bold indicates LOS F operations.
Source: Fehr & Peers, 2024.

Collision History

Caltrans staff provided collision data for the Caltrans facility mainline and ramps for the most recent available three-year period of non-pandemic affected data, from January 1, 2017 to December 31, 2019, as summarized in **Table 4**.

During this period, a total of 287 collisions were reported on the SR 99 mainline between postmile M18.809 (Briggsmore Avenue) and postmile R21.502 (Pelandale Avenue). Of these collisions, three were fatal collisions and 86 collisions included a fatality and/or injury. The fatal collision rate for northbound SR 99 is in excess of the statewide average for similar facilities.

For the ramps at the SR 99/Beckwith Road interchange, a total of 42 collisions were reported with 16 collisions including report of an injury (there were no fatal collisions). Collision rates for the northbound SR 99 off-ramp, northbound SR 99 on-ramp, and southbound SR 99 off-ramp exceed the statewide averages for similar facilities.

Table 4: Collision History for State Route 99 Mainline and Interchange Ramps

Location	Number of Collisions			Collision Rate (collisions/million vehicles)					
				Actual			State Average		
	Total	Fatal	Fatal+ Injury	Fatal	Fatal+ Injury	Total	Fatal	Fatal+ Injury	Total
SR 99 Northbound Mainline	142	2	36	**0.010**	0.18	0.73	0.006	0.41	1.26
SR 99 Southbound Mainline	145	1	50	0.005	0.26	0.74	0.006	0.41	1.26
SR 99 Northbound Off-Ramp	17	0	4	0.000	0.37	**1.55**	0.003	0.38	1.04
SR 99 Northbound On-Ramp	4	0	3	0.000	**0.48**	**0.64**	0.002	0.23	0.63
SR 99 Southbound Off-Ramp	18	0	9	0.000	**1.39**	**2.78**	0.003	0.38	1.04
SR 99 Southbound On-Ramp	3	0	0	0.000	0.00	0.34	0.002	0.23	0.63

Notes:
Bold indicates actual crash rate in excess of the Statewide Average for similar facilities.
Source: Caltrans District 10.

Year 2050 No Build Alternative Conditions

Year 2050 No Build Intersection Levels of Service

Table 5 presents the Year 2050 No Build Conditions intersection delay and LOS. Under No Build conditions, the intersections of SR 99 Northbound Ramps/Beckwith Road and Sisk Road/Standiford Avenue operate at LOS F. The Year 2050 No Build conditions traffic analysis worksheets are provided in **Appendix G**.

Table 5: Year 2050 No Build Conditions Peak Hour Intersection Analysis Results

Intersection	Traffic Control[1]	Peak Hour	Delay (seconds)[1]	LOS
3. SR 99 Northbound Ramps/Beckwith Road	Traffic Signal	AM	28.0	C
		PM	**88.2**	**F**
4. SR 99 Southbound Ramps/Beckwith Road	Traffic Signal	AM	42.3	D
		PM	54.3	D
5. Dale Road/ Vintage Faire Mall	Traffic Signal	AM	35.7	D
		PM	38.8	D
6. Dale Road/ Standiford Avenue	Traffic Signal	AM	22.5	C
		PM	45.1	D
9. Sisk Road/ Vintage Faire Mall	Traffic Signal	AM	39.3	D
		PM	31.4	C
10. Sisk Road/ Standiford Avenue	Traffic Signal	AM	**128.6**	**F**
		PM	**93.8**	**F**

Notes:
1. For signalized intersections the overall average intersection delay/LOS is presented. Delay and LOS per *Highway Capacity Manual, 6th Edition* methodologies.

Bold indicates unacceptable operations below the City of Modesto's LOS D standard (LOS E or LOS F).
Source: Fehr & Peers, 2024.

Table 6 presents the 95th percentile queue lengths under Year 2050 No Build conditions. Under No Build conditions, several movements are expected to have queues that exceed turn pocket lengths and/or distances between intersections. This represents a worsening of Existing Conditions.

Table 6: 95th Percentile Queue Lengths – Year 2050 No Build Conditions

Intersection	Lane Group	Storage (feet)	95th Percentile Queue (feet)	
			AM Peak Hour	PM Peak Hour
3. SR 99 Northbound Ramps/Beckwith Road	EBL	105	55	20
	EBT	410	194	124
	WBT	460	**1,020**	**1,109**
	NBT	1470	121	126
	NBR	850	223	790
4. SR 99 Southbound Ramps/Beckwith Road	EBT	4,240	280	558
	WBL	395	281	346
	WBT	430	91	35
	SBT	1,540	610	936
5. Dale Road/Vintage Faire Mall	EBL	190	20	58
	EBT	190	21	75
	WBL	140	45	**205**
	WBT	140	25	52
	NBL	150	30	69
	NBT	450	175	223
	SBL	130	21	89
	SBT	440	180	249
6. Dale Road/Standiford Avenue	EBL	210	**281**	**287**
	EBT	210	32	61
	WBT	1,210	247	247
	WBR	375	37	74
	SBL	460	16	66
	SBT	460	16	67
	SBR	460	0	11
	NBR	255	0	0
9. Sisk Road/Vintage Faire Mall	WBL	75	16	**251**
	WBR	75	6	34
	NBT	930	105	201

Table 6: 95th Percentile Queue Lengths – Year 2050 No Build Conditions

Intersection	Lane Group	Storage (feet)	95th Percentile Queue (feet)	
			AM Peak Hour	PM Peak Hour
	NBR	155	2	0
	SBL	210	20	81
	SBT	1,230	136	154
10. Sisk Road/Standiford Avenue	EBL	400	78	**470**
	EBT	400	384	**759**
	WBL	210	64	**224**
	WBT	210	**850**	**581**
	WBR	210	0	45
	NBL	200	**240**	**346**
	NBT	930	116	343
	SBL	515	25	124
	SBT	930	7	123
	SBR	255	1	157

Notes:
Results in **bold** denote locations where storage length is exceeded.
EB = eastbound; WB = westbound; NB = northbound; SB = southbound; L= left-turn; T = through; R = right-turn
Source: Fehr & Peers, 2024.

Year 2050 No Build Freeway Levels of Service

Table 7 below presents the results of the Existing Conditions freeway mainline analysis. HCS analysis worksheets are presented in **Appendix H**. The analysis indicates that many segments along SR 99 are anticipated to operate at LOS F under Year 2050 No Build Conditions.

Table 7: Year 2050 No Build Conditions Peak Hour Freeway Segment Analysis

Segment	Type	Peak Hour	Density (pc/mi/ln)[1]	LOS
SR 99 NB: Briggsmore Avenue on-ramp to Beckwith Road off-ramp	Basic	AM	**v/c >1**	**F[2]**
		PM	**v/c >1**	**F[2]**
SR 99 NB: Beckwith Road off-ramp	Ramp Diverge	AM	**v/c >1**	**F[2]**
		PM	**v/c >1**	**F[2]**
SR 99 NB: Beckwith Road off-ramp to Beckwith Road on-ramp	Basic	AM	**v/c >1**	**F[2]**
		PM	23.3	C
SR 99 NB: Beckwith Road on-ramp to Pelandale Avenue off-ramp	Weaving[3]	AM	23.7	C
		PM	21.0	C
SR 99 SB: Pelandale Avenue on-ramp to Beckwith Road off-ramp	Weaving[4]	AM	**63.0**	**F**
		PM	**70.5**	**F**
SR 99 SB: Beckwith Road off-ramp to Beckwith Road on-ramp	Basic	AM	**v/c >1**	**F[2]**
		PM	**v/c >1**	**F[2]**
SR 99 SB: Beckwith Road on-ramp	Ramp Merge	AM	**v/c >1**	**F[2]**
		PM	**v/c >1**	**F[2]**
SR 99 SB: Beckwith Road on-ramp to Briggsmore Avenue off-ramp	Basic	AM	**v/c >1**	**F[2]**
		PM	**v/c >1**	**F[2]**

Notes:
1. Segment density (passenger cars per mile per lane) and LOS per *Highway Capacity Manual, 6th Edition* methodologies.
2. Volume-to-capacity ratio is greater than 1 (demand exceeds capacity).
3. The weave segment short length is longer than the maximum weaving length of 1,500 feet and the volume is low. Therefore, the segment is analyzed as a basic segment.
4. The weave segment short length is longer than the maximum weaving length of 1,500 feet and the volume is low. Therefore, the AM peak hour segment is analyzed as a basic segment.

Bold indicates LOS F operations.
Source: Fehr & Peers, 2024.

Year 2050 Build Alternative Conditions

The project proposes to modify conditions in the study area by redistributing volumes at the SR 99/Beckwith Road-Standiford Avenue interchange through the provision of new ramps. On the location roadway system, configurations are proposed to be changed, and traffic control devices are proposed to change from signals to roundabouts.

Year 2050 Build Alternative Levels of Service – "B" Alternatives

Table 8A presents the Year 2050 Build Alternative intersection delay and LOS for the "B" Alternatives under signal control. **Table 8B** presents the Year 2050 Build Alternative intersection delay and LOS for the "B" Alternatives under roundabout control. Year 2050 Build Alternative conditions traffic analysis worksheets are provided in **Appendix I**. Under the "B" Alternatives with signals in place, all study intersections operate at an acceptable LOS D or better. Similarly, all study intersections operate acceptably with roundabouts in place under Alternatives B1 and B5

Year 2050 Build Alternative 95th Percentile Queuing – "B" Alternatives

Table 9A presents the Year 2050 Build Alternative 95th percentile queue lengths for the "B" Alternatives under signal control. **Table 9B** presents the Year 2050 Build Alternative 95th percentile queue lengths for the "B" Alternatives under roundabout control. Year 2050 Build Alternative conditions traffic analysis worksheets are provided in **Appendix I**. Under Build Alternative conditions with signals, 95th percentile queues are generally accommodated at all intersections except at SR 99 Northbound Ramps/Beckwith Road for the eastbound through movement during the PM peak hour under Build Alternatives B7 and B8. There is an opportunity for a PM peak hour queue flush phase to alleviate this spillback, and sufficient queue storage exists on other approaches to accommodate the additional green time for the eastbound queue flush.

Table 8A: Year 2050 Build Alternative Conditions Peak Hour Intersection Analysis Results – Signalized Intersections

Intersection	Peak Hour	No Build Alternative		Build Alternative B1		Build Alternative B5		Build Alternative B7		Build Alternative B8	
		Delay (sec)[1]	LOS	Delay (secs)[1]	LOS	Delay (secs)[1]	LOS	Delay (sec)[1]	LOS	Delay (sec)[1]	LOS
1. SR 99 Northbound Ramps/New Overcrossing	AM	*Intersection does not Exist in this Scenario.*		24.6	C	*Intersection does not Exist in these Scenarios.*					
	PM			25.2	C						
2. SR 99 Southbound Ramps/New Overcrossing	AM	*Intersection does not Exist in this Scenario.*		21.7	C	*Intersection does not Exist in these Scenarios.*					
	PM			24.3	C						
3. SR 99 Northbound Ramps/Beckwith Road	AM	28.0	C	17.6	B	8.6	A	22.0	C	23.0	C
	PM	**88.2**	**F**	24.1	C	25.1	C	39.3	D	36.1	D
4. SR 99 Southbound Ramps/Beckwith Road	AM	42.3	D	28.2	C	25.5	C	26.9	C	24.5	C
	PM	54.3	D	40.3	D	35.9	D	31.9	C	27.2	C

Notes:
1. For signalized intersections the overall average intersection delay/LOS is presented. Delay and LOS per *Highway Capacity Manual, 6th Edition* methodologies.
Bold indicates unacceptable operations below the City of Modesto's LOS D standard (LOS E or LOS F).
Source: Fehr & Peers, 2024.

Table 8B: Year 2050 Build Alternative Conditions Peak Hour Intersection Analysis Results – Roundabout Intersections

Intersection	Peak Hour	No Build Alternative[1]		Build Alternative B1		Build Alternative B5	
		Delay (sec)[2]	LOS	Delay (secs)[2]	LOS	Delay (secs)[2]	LOS
1. SR 99 Northbound Ramps/New Overcrossing	AM	*Intersection does not Exist in this Scenario.*		5.6	A	*Intersection does not Exist in these Scenarios.*	
	PM			7.6	A		
2. SR 99 Southbound Ramps/New Overcrossing	AM	*Intersection does not Exist in this Scenario.*		9.4	A	*Intersection does not Exist in these Scenarios.*	
	PM			11.3	B		
3. SR 99 Northbound Ramps/Beckwith Road	AM	28.0	C	4.9	A	3.7	A
	PM	**88.2**	**F**	5.0	A	4.0	A
4. SR 99 Southbound Ramps/Beckwith Road	AM	42.3	D	9.9	A	10.5	B
	PM	54.3	D	15.4	B	13.2	B

Notes:
1. Intersections are signalized under the No Build Alternative.
2. For signalized intersections the overall average intersection delay/LOS is presented. Delay and LOS per *Highway Capacity Manual, 6th Edition* methodologies.

Bold indicates unacceptable operations below the City of Modesto's LOS D standard (LOS E or LOS F).
Source: Fehr & Peers, 2024.

Table 9A: 95th Percentile Queues – Year 2050 Conditions – B Alternatives (Signalized Intersections)

Intersection	Lane Group	95th Percentile Queue Length (feet)											
		Build Alternative B1			Build Alternative B5			Build Alternative B7			Build Alternative B8		
		Storage	AM	PM	Storage	AM	PM	Storage	AM	PM	Storage	AM	PM
1. SR 99 Northbound Ramps/New Overcrossing	EBT	400	32	43	*Intersection does not Exist in these Scenarios.*								
	WBT	300	113	253									
	NBTR	500	236	224									
	NBR	500	35	51									
2. SR 99 Southbound Ramps/New Overcrossing	WBL	400	128	251	*Intersection does not Exist in these Scenarios.*								
	SBTL	500	195	272									
3. SR 99 Northbound Ramps/Beckwith Road	EBL	150	50	16	150	43	23	--	--	--	--	--	--
	EBT	450	129	314	450	5	15	350	282	**411**	350	300	**428**
	WBT	450	217	170	450	181	144	550	266	380	550	221	209
	WBR	450	345	346	450	45	51	650	4	25	650	6	10
	NBL	--	--	--	--	--	--	1,450	131	122	1,450	125	116
	NBTL	1,450	180	358	1,450	117	160	--	--	--	--	--	--
	NBR	1,000	94	271	1,000	37	167	1,000	91	169	1,000	94	164
4. SR 99 Southbound Ramps/Beckwith Road	EBT	1,050	175	393	1,050	165	375	1,050	222	305	1,050	208	354
	EBR	--	--	--	--	--	--	150	78	59	150	46	5
	WBL	300	191	166	300	180	112	350	29	159	350	26	45
	WBT	450	140	136	450	25	156	--	--	--	--	--	--

Table 9A: 95th Percentile Queues – Year 2050 Conditions – B Alternatives (Signalized Intersections)

Intersection	Lane Group	95th Percentile Queue Length (feet)											
		Build Alternative B1			Build Alternative B5			Build Alternative B7			Build Alternative B8		
		Storage	AM	PM	Storage	AM	PM	Storage	AM	PM	Storage	AM	PM
	WBTL	--	--	--	--	--	--	350	226	312	350	213	265
	SBL	--	--	--	1,500	241	535	1,500	155	263	1,500	154	264
	SBTLR	1,500	171	310	1,500	227	541	--	--	--	--	--	--
	SBR	--	--	--	--	--	--	1,500	37	42	1,500	29	26

Notes:
Results in **bold** denote locations where storage length is exceeded.
EB = eastbound; WB = westbound; NB = northbound; SB = southbound; L= left-turn; T = through; R = right-turn
Source: Fehr & Peers, 2024.

Table 9B: 95th Percentile Queues – Year 2050 Conditions – B Alternatives (Roundabouts)

Intersection	Lane Group	95th Percentile Queue Length (feet)					
		Build Alternative B1			Build Alternative B5		
		Storage	AM	PM	Storage	AM	PM
1. SR 99 Northbound Ramps/New Overcrossing	NBTL	300	79	103	*Intersection does not Exist in these Scenarios.*		
	NBTR	500	80	206			
	EBTL	300	0	0			
	WBT	200	40	116			
	WBTR	200	40	116			
2. SR 99 Southbound Ramps/New Overcrossing	SBL	1,300	68	152	*Intersection does not Exist in these Scenarios.*		
	SBTL	1,300	68	152			
	WBL	300	0	0			
3. SR 99 Northbound Ramps/Beckwith Road	NBL	--	--	--	--	--	--
	NBTL	1,300	23	57	1,300	12	17
	NBT	1,300	24	61	1,300	10	15
	NBR	1,700	0	0	1,700	10	15
	EBTL	300	0	0	300	0	0
	EBT	300	0	0	300	0	0
	WBT	300	56	45	300	54	43
	WBR	200	56	45	200	54	43

Table 9B: 95th Percentile Queues – Year 2050 Conditions – B Alternatives (Roundabouts)

Intersection	Lane Group	95th Percentile Queue Length (feet)					
		Build Alternative B1			Build Alternative B5		
		Storage	AM	PM	Storage	AM	PM
4. SR 99 Southbound Ramps/Beckwith Road	SBTL	350	68	110	350	83	135
	SBTR	350	70	112	350	8	6
	EBT	1,050	83	266	1,050	100	216
	EBTR	1,050	83	266	1,050	100	216
	WBTL	300	0	0	300	0	0
	WBT	300	0	0	300	0	0

Notes:
Results in **bold** denote locations where storage length is exceeded.
EB = eastbound; WB = westbound; NB = northbound; SB = southbound; L= left-turn; T = through; R = right-turn
Source: Fehr & Peers, 2024.

Year 2050 Build Alternative Levels of Service – "M" Alternatives

Table 10A presents the Year 2050 Build Alternative intersection delay and LOS for the "M" Alternatives under signal control. **Table 10B** presents the Year 2050 Build Alternative intersection delay and LOS for the "M" Alternatives under roundabout control. Year 2050 Build Alternative conditions traffic analysis worksheets are provided in **Appendix J**. Under the "M" Alternatives with signals in place, all study intersections operate at an acceptable LOS D or better, except for Dale Road/Standiford Avenue under Build Alternative M2 in the PM peak hour and Vintage Faire Mall Driveway/Circulator Roadway under both Build Alternatives M2 and M3 in the PM peak hour; it is noted that the forecasts for the intersection of Vintage Faire Mall Driveway/Circulator Roadway in the Build Alternative condition rely on placeholder forecasts that are highly likely to change during the PA/ED phase. All study intersections operate acceptably with roundabouts in place.

Year 2050 Build Alternative 95th Percentile Queuing – "M" Alternatives

Table 11A presents the Year 2050 Build Alternative 95th percentile queue lengths for the "M" Alternatives under signal control. **Table 11B** presents the Year 2050 Build Alternative 95th percentile queue lengths for the "M" Alternatives under roundabout control. Year 2050 Build Alternative conditions traffic analysis worksheets are provided in **Appendix J**. Under Build Alternative conditions with signals, 95th percentile queue spillback exceedances exist at multiple locations in the study area; the main spillback issue is that queues will spill between the Dale Road/Standiford Avenue and Sisk Road/Standiford Avenue intersections in both the AM and PM peak hours under Build Alternative M2. Under Build Alternative conditions with roundabouts, 95th percentile queues are better accommodated in the system; however, the queue spillback conditions between the Dale Road/Standiford Avenue and Sisk Road/Standiford Avenue intersections in both the AM and PM peak hours under Build Alternative M2 remains.

Table 10A: Year 2050 Build Alternative Conditions Peak Hour Intersection Analysis Results – Signalized Intersections

Intersection	Peak Hour	No Build Alternative		Build Alternative M2		Build Alternative M3	
		Delay (sec)[1]	LOS	Delay (secs)[1]	LOS	Delay (secs)[1]	LOS
5. Dale Road/ Vintage Faire Mall	AM	35.7	D	15.9	B	15.7	B
	PM	38.8	D	28.7	C	28.2	C
6. Dale Road/ Standiford Avenue	AM	22.5	C	31.2	C	39.7	D
	PM	45.1	D	**62.4**	**E**	40.0	D
7. Dale Road/Sisk Road	AM	*Does not Exist in this Scenario*		12.2	B	19.2	B
	PM			22.6	C	48.1	D
8. Vintage Faire Mall Driveway/Circulator Roadway	AM	*Does not Exist in this Scenario*		23.0	C	23.0	C
	PM			**67.3**	**E**	**67.3**	**E**
9. Vintage Faire Mall Driveway-New SR 99 Connection/Sisk Road	AM	39.3	D	28.3	C	28.3	C
	PM	31.4	C	45.5	D	45.5	D
10. Sisk Road/ Standiford Avenue	AM	**128.6**	**F**	34.9	C	*Does not Exist in this Scenario*	
	PM	**93.8**	**F**	43.0	D		

Notes:
1. For signalized intersections the overall average intersection delay/LOS is presented. Delay and LOS per *Highway Capacity Manual, 6th Edition* methodologies.

Bold indicates unacceptable operations below the City of Modesto's LOS D standard (LOS E or LOS F).
Source: Fehr & Peers, 2024.

Table 10B: Year 2050 Build Alternative Conditions Peak Hour Intersection Analysis Results – Roundabout Intersections

Intersection	Peak Hour	No Build Alternative[1]		Build Alternative M2		Build Alternative M3	
		Delay (sec)[2]	LOS	Delay (secs)[2]	LOS	Delay (secs)[2]	LOS
5. Dale Road/ Vintage Faire Mall	AM	35.7	D	5.8	A	5.8	A
	PM	38.8	D	11.0	B	10.9	B
6. Dale Road/ Standiford Avenue	AM	22.5	C	6.0	A	8.8	A
	PM	45.1	D	18.1	B	51.4	D
7. Dale Road/Sisk Road	AM	*Does not Exist in this Scenario*		6.8	A	6.2	A
	PM			7.1	A	7.4	A
8. Vintage Faire Mall Driveway/Circulator Roadway	AM	*Does not Exist in this Scenario*		6.2	A	6.1	A
	PM			9.3	A	9.1	A
9. Vintage Faire Mall Driveway-New SR 99 Connection/Sisk Road	AM	39.3	D	5.3	A	6.2	A
	PM	31.4	C	10.9	B	13.0	B
10. Sisk Road/ Standiford Avenue	AM	**128.6**	**F**	7.1	A	*Does not Exist in this Scenario*	
	PM	**93.8**	**F**	22.2	C		

Notes:
1. Intersections are signalized under the No Build Alternative.
2. For signalized intersections the overall average intersection delay/LOS is presented. Delay and LOS per *Highway Capacity Manual, 6th Edition* methodologies.

Bold indicates unacceptable operations below the City of Modesto's LOS D standard (LOS E or LOS F).
Source: Fehr & Peers, 2024.

Table 11A: 95th Percentile Queues – Year 2050 Conditions – M Alternatives (Signalized Intersections)

Intersection	Lane Group	95th Percentile Queue (feet)					
		Build Alternative M2			Build Alternative M3		
		Storage	AM	PM	Storage	AM	PM
5. Dale Road/Vintage Faire Mall	EBL	250	61	**407**	250	60	**403**
	EBT	250	19	48	250	14	46
	WBL	350	25	200	350	25	199
	WBT	350	15	46	350	15	46
	NBL	200	26	133	200	26	123
	NBT	500	42	148	500	41	141
	NBR	100	0	59	100	0	61
	SBL	300	11	82	300	11	81
	SBT	450	57	212	450	56	210
6. Dale Road/Standiford Avenue	EBL	250	37	147	250	62	100
	EBT	250	40	**587***	730	40	638
	WBL	200	80	115	200	179	147
	WBT	1,210	200	333	1,210	22	252
	WBR	375	34	88	375	41	71
	NBL	200	14	18	200	135	**331**
	NBT	500	86	288	500	86	341
	SBL	250	84	**303**	250	73	**296**
	SBT	500	73	237	500	73	181
7. Dale Road/Sisk Road	WBL	500	105	273	500	187	417
	NBT	700	225	**704**	700	105	424
	NBR	700	7	34	700	36	218
	SBL	300	43	66	1,300	69	179
	SBT	300	124	**502**	1,300	162	581
8. Vintage Faire Mall Driveway/Circulator Roadway	EBL	100**	0	66	100**	0	66
	EBR	100**	34	47	100**	34	47
	NBL	900	207	474	900	207	474
	NBT	900	141	374	900	141	374

Table 11A: 95th Percentile Queues – Year 2050 Conditions – M Alternatives (Signalized Intersections)

Intersection	Lane Group	95th Percentile Queue (feet)					
		Build Alternative M2			Build Alternative M3		
		Storage	AM	PM	Storage	AM	PM
	SBT	1,200	108	442	1,200	108	442
	SBTR	1,200	154	520	1,200	154	520
9. Vintage Faire Mall Driveway-New SR 99 Connection/Sisk Road	EBL	1,250	94	692	1,250	94	692
	EBTR	1,250	320	360	1,250	320	360
	WBLT	100**	29	63	100**	29	63
	WBTR	100**	63	60	100**	63	60
	NBL	250	32	69	250	32	69
	NBT	950	129	274	1,300	129	274
	NBR	250	46	**255**	250	46	**255**
	SBL	300	28	206	300	28	206
	SBT	1,250	70	240	1,250	70	240
	SBR	300	54	108	300	54	108
10. Sisk Road/Standiford Avenue	EBL	300	24	84	*Does not Exist in this Scenario*		
	EBT	500	192	**571**			
	WBL	250	5	17			
	WBT	250	**432***	40			
	WBR	250	0	13			
	NBL	300	158	241			
	NBT	300	77	**301**			
	SBL	250	18	106			
	SBT	950	92	227			
	SBR	350	0	31			

Notes:
* Indicates substantial queue spillback between Dale Road/Standiford Avenue and Sisk Road/Standiford Avenue intersections.
** Distance between Intersections 8 and 9 to be confirmed during PA/ED phase.
Results in **bold** denote locations where storage length is exceeded.
EB = eastbound; WB = westbound; NB = northbound; SB = southbound; L= left-turn; T = through; R = right-turn
Source: Fehr & Peers, 2024.

Table 11B: 95th Percentile Queues – Year 2050 Conditions – M Alternatives (Roundabouts)

Intersection	Lane Group	95th Percentile Queue (feet)					
		Build Alternative M2			Build Alternative M3		
		Storage	AM	PM	Storage	AM	PM
5. Dale Road/Vintage Faire Mall	NBTL	400	17	101	400	17	97
	NBTR	400	17	106	400	17	102
	SBTL	400	30	70	400	30	70
	SBTR	400	30	72	400	30	71
	EBTL	220	22	206	220	22	206
	EBTR	220	5	39	220	5	39
	WBTL	200	3	47	200	3	47
	WBTR	200	2	20	200	2	20
6. Dale Road/Standiford Avenue	NBTL	350	9	51	350	70	**1,415***
	NBTR	350	9	59	350	25	**966***
	SBTL	400	42	106	400	69	161
	SBTR	400	45	100	400	68	141
	EBTL	150	62	**501**	750	63	426
	EBR	--	--	--	700	0	0
	EBTR	150	63	**551**	750	65	426
	WBTL	900	123	146	900	204	193
	WBTR	900	124	149	900	210	204
7. Dale Road/Sisk Road	NBL	200	29	78	200	21	78
	NBLR	200	29	78	200	46	105
	SBL	300	12	31	300	25	79
	SBLR	300	12	31	300	25	79
	EBR	200	20	41	900	18	46
	EBLR	300	20	41	1,100	18	46
8. Vintage Faire Mall Driveway/Circulator Roadway	NBTL	450	17	104	1,100	17	104
	NBT	450	11	40	1,100	11	40
	SBT	1,200	11	43	1,200	11	43
	SBTR	1,200	12	43	1,200	12	43

Table 11B: 95th Percentile Queues – Year 2050 Conditions – M Alternatives (Roundabouts)

Intersection	Lane Group	95th Percentile Queue (feet)					
		Build Alternative M2			Build Alternative M3		
		Storage	AM	PM	Storage	AM	PM
	EBLR	100**	18	56	100**	18	56
	EBR	100**	18	48	100**	18	48
9. Vintage Faire Mall Driveway-New SR 99 Connection/Sisk Road	NBTL	600	18	111	1,100	18	111
	NBTR	600	19	118	1,100	19	118
	SBTL	1,200	18	84	1,200	18	84
	SBTR	1,200	19	87	1,200	19	87
	EBTL	150	22	117	150	22	117
	EBTR	150	22	84	150	22	84
	WBTL	100**	15	**103**	100**	15	**103**
	WBTR	100**	15	**112**	100**	15	**112**
10. Sisk Road/Standiford Avenue	NBTL	300	45	553	*Does not Exist in this Scenario*		
	NBTR	300	43	721			
	SBTL	600	24	60			
	SBT	600	29	69			
	SB_R	650	0	0			
	EBTL	300	45	133			
	EBT	300	47	144			
	EBR	300	25	49			
	WBTL	150	**170**	140			
	WBTR	150	**176**	**155**			

Notes:
* Local street queue resulting from traffic volume forecasts that do not reflect availability of bypass around intersection using Sisk Road undercrossing and new connections to/from SR 99 and through Vintage Faire Mall. This will be refined during the PA/ED phase.
** Distance between Intersections 8 and 9 to be confirmed during PA/ED phase.
Results in **bold** denote locations where storage length is exceeded.
EB = eastbound; WB = westbound; NB = northbound; SB = southbound; L= left-turn; T = through; R = right-turn
Source: Fehr & Peers, 2024.

Year 2050 Build Alternative – "B" Alternatives Freeway Mainline Analysis

Table 12 below presents the results of the Existing Conditions freeway mainline analysis. HCS analysis worksheets are presented in **Appendix K**. The analysis indicates that many segments along SR 99 would continue to operate at LOS F under the Build alternatives; it is noted that improved freeway operations is not included in the project Purpose and Need statement.

Table 12: Year 2050 Build Conditions Peak Hour Freeway Segment Analysis

Segment	Type	Peak Hour	Build Alternative B1		Build Alternative B7		Build Alternatives B5 & B8	
			Density (pc/mi/ln)[1]	LOS	Density (pc/mi/ln)[1]	LOS	Density (pc/mi/ln)[1]	LOS
SR 99 NB: Briggsmore Avenue on-ramp to Beckwith Road off-ramp	Basic	AM	**v/c > 1**	**F[2]**	**v/c > 1**	**F[2]**	**v/c > 1**	**F[2]**
		PM	**v/c > 1**	**F[2]**	**v/c > 1**	**F[2]**	**v/c > 1**	**F[2]**
SR 99 NB: Beckwith Road off-ramp	Ramp Diverge	AM	**v/c > 1**	**F[2]**	**v/c > 1**	**F[2]**	**v/c > 1**	**F[2]**
		PM	**v/c > 1**	**F[2]**	**v/c > 1**	**F[2]**	**v/c > 1**	**F[2]**
SR 99 NB: Sisk Road off-ramp	Ramp Diverge	AM	*Does not exist in this scenario*		**v/c > 1**	**F[2]**	**v/c > 1**	**F[2]**
		PM			32.4	D	32.7	D
SR 99 NB: Beckwith/Sisk Road off-ramp to Beckwith Road on-ramp	Basic	AM	**v/c > 1**	**F[2]**	**v/c > 1**	**F[2]**	**v/c > 1**	**F[2]**
		PM	24.6	C	23.5	C	24.0	C
SR 99 NB: Beckwith Road on-ramp to Pelandale Avenue off-ramp	Weaving[3]	AM	23.7	C	23.6	C	23.8	C
		PM	21.8	C	21.2	C	21.5	C
SR 99 SB: Pelandale Avenue on-ramp to Beckwith Road off-ramp	Weaving[3]	AM	**63.0**	**F**	**63.0**	**F**	**71.9**	**F**
		PM	**69.0**	**F**	**69.0**	**F**	**75.7**	**F**
SR 99 SB: Beckwith Road off-ramp to Beckwith/Sisk Road on-ramp	Basic	AM	**v/c > 1**	**F[2]**	**v/c > 1**	**F[2]**	**v/c > 1**	**F[2]**
		PM	**v/c > 1**	**F[2]**	**v/c > 1**	**F[2]**	**v/c > 1**	**F[2]**
SR 99 SB: Sisk Road on-ramp	Ramp Merge	AM	*Does not exist in this scenario*		*Does not exist in this scenario*		**v/c > 1**	**F[2]**
		PM					**v/c > 1**	**F[2]**
SR 99 SB: Beckwith Road on-ramp	Ramp Merge	AM	**v/c > 1**	**F[2]**	**v/c > 1**	**F[2]**	**v/c > 1**	**F[2]**
		PM	**v/c > 1**	**F[2]**	**v/c > 1**	**F[2]**	**v/c > 1**	**F[2]**
SR 99 SB: Beckwith Road on-ramp to Briggsmore Avenue off-ramp	Basic	AM	**v/c > 1**	**F[2]**	**v/c > 1**	**F[2]**	**v/c > 1**	**F[2]**
		PM	**v/c > 1**	**F[2]**	**v/c > 1**	**F[2]**	**v/c > 1**	**F[2]**

Notes:

1. Segment density (passenger cars per mile per lane) and LOS per *Highway Capacity Manual, 6th Edition* methodologies.
2. Volume-to-capacity ratio is greater than 1 (demand exceeds capacity).
3. The weave segment short length is longer than the maximum weaving length of 1,500 feet and the volume is low. Therefore, the segment is analyzed as a basic segment.

Bold indicates LOS F operations.
Source: Fehr & Peers, 2024.

Future PA/ED Traffic Scope

Per the TEPA guidelines a traffic scope is presented for the PA/ED phase. Prior to initiation of the PA/ED phase the traffic scope should be reviewed to ensure it is still acceptable to the Project Development Team (PDT) members. Changes and/or modifications to the traffic scope can be made prior to initiating the PA/ED phase. The detailed traffic analysis that will be performed during the PA/ED phase will be used to better support the purpose and need of the project.

Analysis Years and Study Periods

The following analysis years and study periods should be evaluated:

- *Analysis Years*: Existing Conditions, Opening Year (2030), and Design Year (2050)
- *Study Periods*: Weekday AM (peak hour between 7-10 AM) and Weekday PM (peak hour between 3-6 PM). A Saturday afternoon scenario (peak hour between 1-5 PM) may be required for study (pending traffic count information from May 2024).

Study Area

Based on the location of the project and the potential to impact local and Caltrans facility traffic operations, the following intersections should be evaluated. Note that intersections that do not exist today are indicated as "future intersection". A map of these locations is included in **Appendix C**.

1. SR 99 Northbound On-Ramp/New Connection (future intersection)
2. SR 99 Southbound Off-Ramp/New Connection (future intersection)
3. SR 99 Southbound Existing Ramps/Beckwith Road
4. SR 99 Northbound Existing Ramps/Beckwith Road
5. Dale Road/Vintage Faire Mall Driveway
6. Dale Road/Standiford Avenue
7. Dale Road/Sisk Road (future intersection)
8. Vintage Faire Mall Driveway/Circulator Roadway (future intersection)
9. Vintage Faire Mall Driveway-New SR 99 Connection/Sisk Road
10. Sisk Road/Standiford Avenue

The following freeway segments (presented below in **Table 13**) should be included in the analysis:

Table 13: Proposed SR 99 Mainline and Ramp Study Locations

Route	Description	Freeway Analysis Type
NB SR 99	Mainline south of Briggsmore Avenue Off-Ramp	Basic Freeway
NB SR 99	Briggsmore Avenue Off-Ramp	Ramp Diverge
NB SR 99	Briggsmore Avenue Off-Ramp to Briggsmore Avenue On-Ramp	Basic Freeway

Table 13: Proposed SR 99 Mainline and Ramp Study Locations

Route	Description	Freeway Analysis Type
NB SR 99	Briggsmore Avenue On-Ramp	Ramp Merge
NB SR 99	Briggsmore Avenue On-Ramp to Beckwith Road Off-Ramp	Basic Freeway
NB SR 99	Beckwith Road Off-Ramp	Ramp Diverge
NB SR 99	Beckwith Road Off-Ramp to Beckwith Road On-Ramp	Basic Freeway
NB SR 99	Beckwith Road On-Ramp to Pelandale Avenue Off-Ramp	Weaving Section (evaluates on-ramp, mainline, and off-ramp)
NB SR 99	Pelandale Avenue Off-Ramp to Pelandale Avenue On-Ramp	Basic Freeway
NB SR 99	Pelandale Avenue On-Ramp to Kiernan Avenue Off-Ramp	Weaving Section (evaluates on-ramp, mainline, and off-ramp)
SB SR 99	Kiernan Avenue On-Ramp to Pelandale Avenue Off-Ramp	Weaving Section (evaluates on-ramp, mainline, and off-ramp)
SB SR 99	Pelandale Avenue Off-Ramp to Pelandale Avenue On-Ramp	Basic Freeway
SB SR 99	Pelandale Avenue On-Ramp to Beckwith Road Off-Ramp	Weaving Section (evaluates on-ramp, mainline, and off-ramp)
SB SR 99	Beckwith Road Off-Ramp to Beckwith Road On-Ramp	Basic Freeway
SB SR 99	Beckwith Road On-Ramp	Ramp Merge
SB SR 99	Beckwith Road On-Ramp to Briggsmore Avenue Off-Ramp	Basic Freeway
SB SR 99	Briggsmore Avenue Off-Ramp	Ramp Diverge
SB SR 99	Briggsmore Avenue Off-Ramp to Briggsmore Avenue On-Ramp	Basic Freeway
SB SR 99	Briggsmore Avenue On-Ramp	Ramp Merge
SB SR 99	Mainline south of Briggsmore Avenue On-Ramp	Basic Freeway

Analysis Tool and Measures of Effectiveness

The intersection analysis tool should be consistent with the methodologies presented in the *Highway Capacity Manual, 6th Edition*. Generally, isolated intersections will be analyzed using the Synchro 12 software package (for signals) and the Sidra 9.1 software package for roundabouts (using District 10 typical analysis parameters). Measures of effectiveness will include: 1) intersection delay; 2) level of service; and 3) 95th percentile queue lengths.

For closely spaced or clustered signalized intersections (e.g. Diverging Diamond intersections), consideration should be given to modeling the intersections in microsimulation (e.g., SimTraffic) to better account for the interaction of closely spaced intersections and turn pocket overflow. The measures of effectiveness (MOEs) should include the following for each intersection: 1)

intersection delay; 2) level of service; and 3) 95th percentile queue lengths. In addition, the following networkwide MOEs should be considered depending on the analysis tool selected:

- Vehicle Demand
- Vehicles Served
- % Demand Served
- Total Stops
- Stop/Vehicle
- Vehicle hours of delay (VHD)
- Vehicle miles traveled (VMT)
- Vehicle hours of travel (VHT)
- Average Speed
- Fuel Used
- Total Emissions

The intersection operational analysis results should be based on a minimum of 12 SimTraffic model runs with a SimTraffic parameter setting of 1 hour (4 15-minute time intervals). A 10-minute seeding interval will be used.

Data Collection

Intersection Traffic Counts

New weekday AM (7 AM to 10 AM), weekday PM peak period (3 PM to 6 PM), and Saturday midday (1 PM to 5 PM) intersection traffic counts should be collected at the existing study intersections identified earlier in the study area. The counts will be taken in Spring 2024 when local schools are in session; it is presumed that the effects of the COVID-19 pandemic are now negligible.

Roadway Traffic Volumes

New 72-hour traffic counts and truck classification surveys should be collected at the following locations:

1. All ramps at SR 99/Beckwith Road (4 ramps)
2. All ramps at SR 99/Briggsmore Avenue (4 ramps)
3. All ramps at SR 99/Pelandale Avenue (4 ramp segments and merge/diverge gore points)
4. SR 99 southbound on-ramp from Kiernan Avenue and SR 99 northbound off-ramp to Kiernan Avenue (2 ramps)

This data will provide AM, PM, ADTs, and truck classification information on these roadways.

Collision Data

Collision data for the Caltrans facilities in the corridor for the most recent three-year period should be summarized from Caltrans' Traffic Accident Surveillance and Analysis System (TASAS).

Travel Demand Forecasting

The most recent version of StanCOG travel demand model (TDM), which reflects the current RTP/SCS, should be used to develop traffic demand forecasts for the study area. The model should be locally validated to current conditions prior to developing traffic demand forecasts. The traffic forecasts from the TDM should not be used directly in predicting future year traffic demand forecasts. Instead, changes in the traffic demand between the validated base and future year models (delta method) should be added to 2024 estimated existing conditions traffic demands to determine the adjusted future year traffic forecasts.

Intersection Control Evaluation Process

As part of the Design Year traffic operations analysis an Intersection Control Evaluation (ICE) evaluation should be performed at the intersections listed below to determine the most appropriate intersection control (e.g., signal, roundabout, all-way stop, etc.).

1. SR 99 Northbound On-Ramp/New Connection (future intersection)
2. SR 99 Southbound Off-Ramp/New Connection (future intersection)
3. SR 99 Southbound Existing Ramps/Beckwith Road
4. SR 99 Northbound Existing Ramps/Beckwith Road
9. Vintage Faire Mall Driveway-New SR 99 Connection/Sisk Road (future modified intersection)

With the exception of roundabouts, the intersection analysis tool should be consistent with the methodologies presented in the *Highway Capacity Manual, 6th Edition*. Roundabout operations analysis should be performed using SIDRA 9.1 to determine traffic operations for the Design Year AM and PM peak hour. For the Design Year, a traffic analysis comparison should be made to allow the project team to advance one intersection control concept for each intersection.

Vehicle-Miles Traveled (VMT) Evaluation

A Vehicle-Miles Traveled Decision Document (VMTDD) will be prepared during the PSR/PDS phase that will exempt the Project from further VMT evaluation. Detailed VMT analysis is not anticipated during the PA&ED phase.

Documentation

The following deliverables should be provided to the project team for review and comment. The documentation should include electronic HCS 7, SIDRA, Synchro and SimTraffic files.

1. Traffic Analysis Approach Memorandum (final submitted in May 2024)
2. Existing Conditions Report
3. Travel Demand Model Validation and Forecasting Memorandum
4. Traffic Operations Analysis Report (TOAR)

Appendix A – Conceptual Project Layouts

VINTAGE FAIRE MALL

CHILI'S

NOTE:
ROUNDABOUT SIZE AND LANE CONFIGURATIONS ARE CONCEPTUAL ONLY, AT THIS TIME, AND WILL BE REFINED AS THE PROJECT PROGRESSES.

OIL CHANGERS

CHEVRON

TEXAS ROADHOUSE

HETCH HETCHY CORRIDOR

MATCH LINE SEE "M" ALTERNATIVES

SISK ROAD

DRAINAGE BASIN

MID POWER STATION

MATCH LINE SEE "M" ALTERNATIVES

SISK ROAD

PURPOSE-BUILT

HOME STYLE FURNITURE

SOCCER PRO

CHUCK E. CHEESE

NEW BRIDGE

PRESERVE EXISTING BRIDGE

CALIFORNIA 99

UPRR RAILROAD TRACKS

PRESERVE EXISTING BRIDGE

MID CANAL

BECKWITH ROAD

LEGEND

- PROPOSED ROADWAY
- PROPOSED BRIDGE
- PROPOSED CLASS I PATH
- FULL RIGHT OF WAY TAKE
- PROPOSED TUNNEL
- PROPOSED LANDSCAPE
- REMOVE PAVEMENT
- RETAINING WALL
- EXISTING RIGHT OF WAY
- MID CANAL PIPELINE

BECKWITH-STANDIFORD IMPROVEMENT PROJECT

ALTERNATIVE B-1 : MODIFIED TYPE L-5

MODESTO CALIFORNIA

SCALE: 1"=150'

WMH CORPORATION

VINTAGE FAIRE MALL

CHILI'S

NOTE:
ROUNDABOUT SIZE AND LANE CONFIGURATIONS ARE CONCEPTUAL ONLY, AT THIS TIME, AND WILL BE REFINED AS THE PROJECT PROGRESSES.

SISK ROAD

MATCH LINE SEE "M" ALTERNATIVES

DRAINAGE BASIN

MID POWER STATION

MATCH LINE SEE "M" ALTERNATIVES

OIL CHANGERS

CHEVRON

TEXAS ROADHOUSE

HETCH HETCHY CORRIDOR

SISK ROAD

PURPOSE-BUILT

HOME STYLE FURNITURE

SOCCER PRO

CHUCK E. CHEESE

N

NEW BRIDGE

NEW BRIDGE

NEW BRIDGE

PRESERVE EXISTING BRIDGE

CALIFORNIA 99

UPRR RAILROAD TRACKS

PRESERVE EXISTING BRIDGE

MID CANAL

BECKWITH ROAD

LEGEND

- PROPOSED ROADWAY
- PROPOSED BRIDGE
- PROPOSED CLASS I PATH
- FULL RIGHT OF WAY TAKE
- PROPOSED TUNNEL
- PROPOSED LANDSCAPE
- REMOVE PAVEMENT
- RETAINING WALL
- EXISTING RIGHT OF WAY
- MID CANAL PIPELINE

BECKWITH-STANDIFORD IMPROVEMENT PROJECT

ALTERNATIVE B-5 : TYPE L-1/F-8 (OVERCROSSING)

CITY OF MODESTO CALIFORNIA

SCALE: 1"=150'

WMH CORPORATION

VINTAGE FAIRE MALL

CHILI'S

NOTE:
ROUNDABOUT SIZE AND LANE CONFIGURATIONS ARE CONCEPTUAL ONLY, AT THIS TIME, AND WILL BE REFINED AS THE PROJECT PROGRESSES.

SISK ROAD

MATCH LINE SEE "L" ALTERNATIVES

DRAINAGE BASIN

MID POWER STATION

MATCH LINE SEE "L" ALTERNATIVES

OIL CHANGERS

CHEVRON

TEXAS ROADHOUSE

HETCH HETCHY CORRIDOR

SISK ROAD

PURPOSE-BUILT

HOME STYLE FURNITURE

SOCCER PRO

CHUCK E. CHEESE

N

NEW BRIDGE

NEW BRIDGE

CALIFORNIA 99

UPRR RAILROAD TRACKS

WIDEN EXISTING BRIDGE

MID CANAL

BECKWITH ROAD

LEGEND

- PROPOSED ROADWAY
- PROPOSED BRIDGE
- PROPOSED CLASS I PATH
- FULL RIGHT OF WAY TAKE
- PROPOSED TUNNEL
- PROPOSED LANDSCAPE
- REMOVE PAVEMENT
- RETAINING WALL
- EXISTING RIGHT OF WAY
- MID CANAL PIPELINE

BECKWITH-STANDIFORD IMPROVEMENT PROJECT

ALTERNATIVE B-7 : DIVERGING DIAMOND/TYPE L-6

CITY OF MODESTO CALIFORNIA

SCALE: 1"=150'

WMH CORPORATION

VINTAGE FAIRE MALL

CHILI'S

NOTE:
ROUNDABOUT SIZE AND LANE CONFIGURATIONS ARE CONCEPTUAL ONLY, AT THIS TIME, AND WILL BE REFINED AS THE PROJECT PROGRESSES.

SISK ROAD

DRAINAGE BASIN

MID POWER STATION

MATCH LINE SEE "L" ALTERNATIVES

MATCH LINE SEE "L" ALTERNATIVES

OIL CHANGERS

CHEVRON

TEXAS ROADHOUSE

HETCH HETCHY CORRIDOR

SISK ROAD

PURPOSE-BUILT

HOME STYLE FURNITURE

SOCCER PRO

CHUCK E. CHEESE

N

NEW BRIDGE

NEW BRIDGE

NEW BRIDGE

CALIFORNIA 99

UPRR RAILROAD TRACKS

WIDEN EXISTING BRIDGE

MID CANAL

BECKWITH ROAD

LEGEND

- PROPOSED ROADWAY
- PROPOSED BRIDGE
- PROPOSED CLASS I PATH
- FULL RIGHT OF WAY TAKE
- PROPOSED TUNNEL
- PROPOSED LANDSCAPE
- REMOVE PAVEMENT
- RETAINING WALL
- EXISTING RIGHT OF WAY
- MID CANAL PIPELINE

BECKWITH-STANDIFORD IMPROVEMENT PROJECT

ALTERNATIVE B-8 : DIVERGING DIAMOND/TYPE F-8

CITY OF MODESTO CALIFORNIA

SCALE: 1"=150'

WMH CORPORATION

NOTE:
ROUNDABOUT SIZE AND LANE CONFIGURATIONS ARE CONCEPTUAL ONLY, AT THIS TIME, AND WILL BE REFINED AS THE PROJECT PROGRESSES.

5-LEGGED ROUNDABOUT OPTION:

DUAL TURBO ROUNDABOUT OPTION:

DALE ROAD
FIRESTONE
MATCH LINE STANDIFORD AVE.
STANDIFORD AVE
SMART & FINAL
HETCH HETCHY CORRIDOR
CHASE BANK
SISK ROAD
TEXAS ROADHOUSE
CHUCK E. CHEESE
CHEVRON
OIL CHANGERS
SOCCER PRO
HOME STYLE FURNITURE
PURPOSE-BUILT
BOB'S DISCOUNT FURNITURE
NEW PUBLIC ROAD
DRAINAGE BASIN
MID POWER STATION
MATCH LINE SEE "B" ALTERNATIVES
BECKWITH ROAD
CHILI'S
SISK ROAD
MATCH LINE SEE "B" ALTERNATIVES
STANDIFORD AVE
MATCH LINE STANDIFORD AVE.

LEGEND
- PROPOSED ROADWAY
- PROPOSED CLASS I PATH
- FULL RIGHT OF WAY TAKE
- PROPOSED BRIDGE
- PROPOSED LANDSCAPE
- REMOVE PAVEMENT
- EXISTING RIGHT OF WAY

BECKWITH-STANDIFORD IMPROVEMENT PROJECT

M-2: DUAL ROUNDABOUTS (DALE CONNECTION TO SISK)

CITY OF MODESTO CALIFORNIA

SCALE: 1"=150'

WMH CORPORATION

NOTE:
ROUNDABOUT SIZE AND LANE CONFIGURATIONS ARE CONCEPTUAL ONLY, AT THIS TIME, AND WILL BE REFINED AS THE PROJECT PROGRESSES.

MATCH LINE STANDIFORD AVE.

STANDIFORD AVE

FIRESTONE

DALE ROAD

SMART & FINAL

HETCH HETCHY CORRIDOR

CHASE BANK

SISK ROAD

TEXAS ROADHOUSE

CHEVRON

CHUCK E. CHEESE

SOCCER PRO

NEW BRIDGE

HOME STYLE FURNITURE

PURPOSE-BUILT

BOB'S DISCOUNT FURNITURE

NEW PUBLIC ROAD

DRAINAGE BASIN

MID POWER STATION

MATCH LINE SEE "B" ALTERNATIVES

BECKWITH ROAD

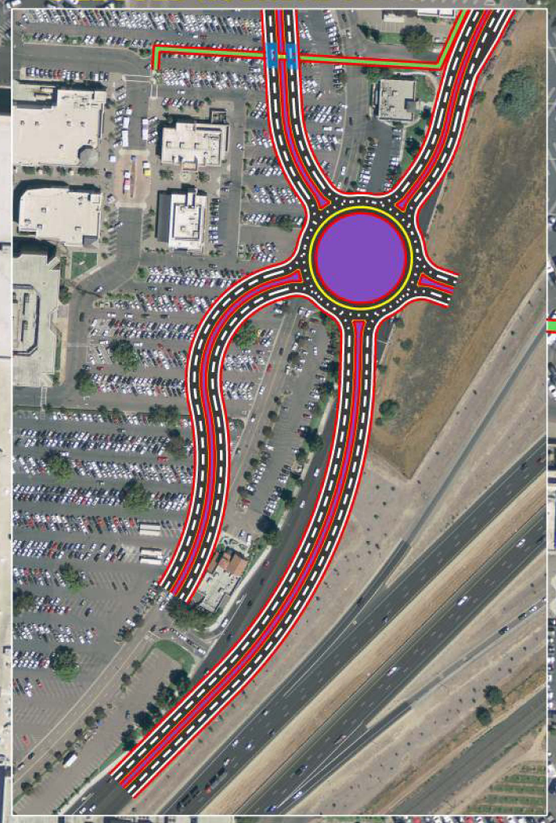
CHILI'S

SISK ROAD

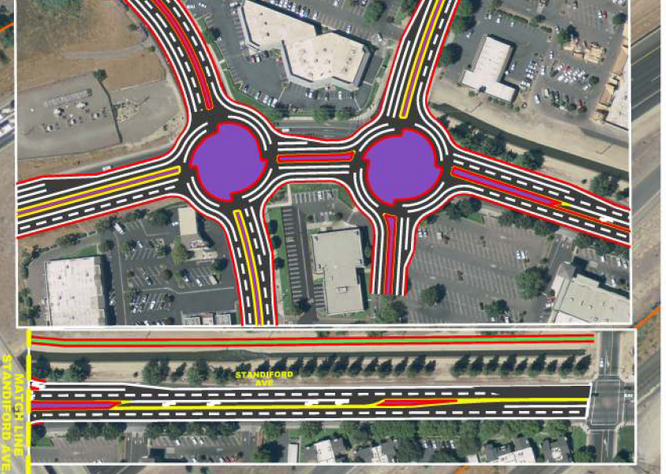
MATCH LINE SEE "B" ALTERNATIVES

MATCH LINE STANDIFORD AVE.

5-LEGGED ROUNDABOUT OPTION:



DUAL TURBO ROUNDABOUT OPTION:





LEGEND

- PROPOSED ROADWAY
- PROPOSED CLASS I PATH
- FULL RIGHT OF WAY TAKE
- PROPOSED BRIDGE
- PROPOSED LANDSCAPE
- REMOVE PAVEMENT
- EXISTING RIGHT OF WAY

BECKWITH-STANDIFORD IMPROVEMENT PROJECT

M-3: BECKWITH-STANDIFORD/SISK GRADE SEPARATION

SCALE: 1"=150'

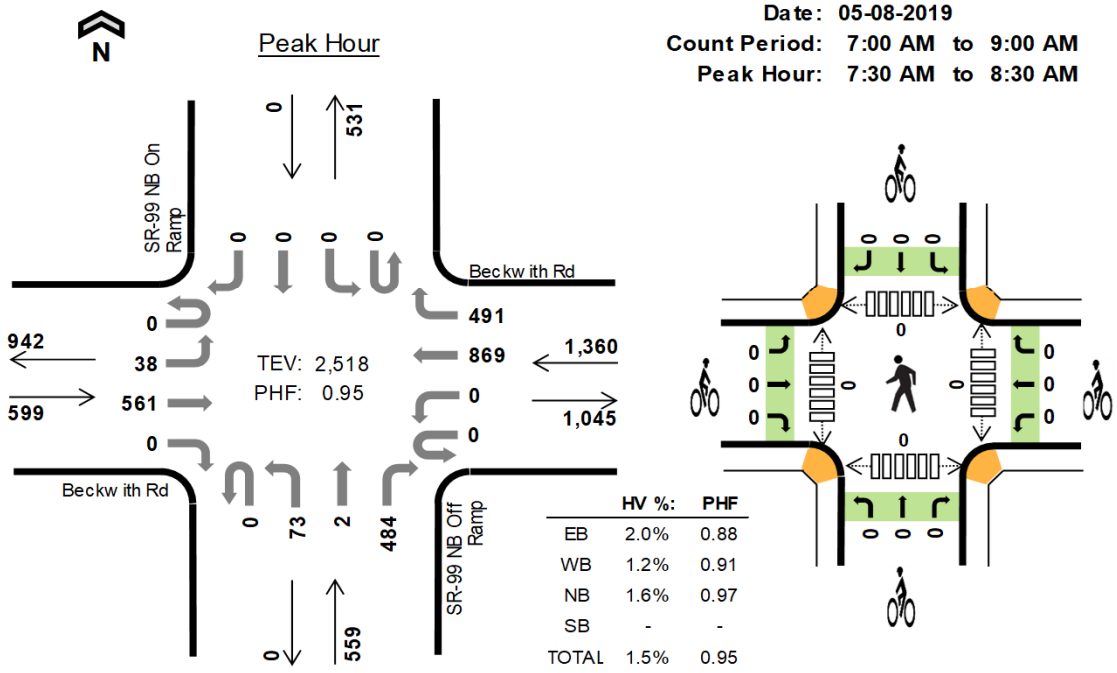
CITY OF MODESTO CALIFORNIA

WMH CORPORATION

Appendix B – Traffic Counts

SR-99 NB Ramp
Beckwith Rd

Date: 05-08-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM



Two-Hour Count Summaries

Interval Start		Beckwith Rd Eastbound				Beckwith Rd Westbound				SR-99 NB Off Ramp Northbound				SR-99 NB On Ramp Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	2	77	0	0	0	159	120	0	10	0	64	0	0	0	0	432	0
7:15 AM		0	8	108	0	0	0	228	126	0	8	1	99	0	0	0	0	578	0
7:30 AM		**0**	**9**	**123**	**0**	**0**	**0**	**244**	**119**	**0**	**21**	**1**	**118**	**0**	**0**	**0**	**0**	**635**	0
7:45 AM		**0**	**7**	**137**	**0**	**0**	**0**	**258**	**114**	**0**	**20**	**0**	**124**	**0**	**0**	**0**	**0**	**660**	2,305
8:00 AM		**0**	**8**	**162**	**0**	**0**	**0**	**193**	**126**	**0**	**18**	**1**	**113**	**0**	**0**	**0**	**0**	**621**	2,494
8:15 AM		**0**	**14**	**139**	**0**	**0**	**0**	**174**	**132**	**0**	**14**	**0**	**129**	**0**	**0**	**0**	**0**	**602**	**2,518**
8:30 AM		0	3	131	0	0	0	153	74	0	20	0	133	0	0	0	0	514	2,397
8:45 AM		0	9	156	0	0	0	160	86	0	22	1	147	0	0	0	0	581	2,318
Count Total		0	60	1,033	0	0	0	1,569	897	0	133	4	927	0	0	0	0	4,623	0
Peak Hour	**All**	**0**	**38**	**561**	**0**	**0**	**0**	**869**	**491**	**0**	**73**	**2**	**484**	**0**	**0**	**0**	**0**	**2,518**	**0**
	HV	**0**	**6**	**6**	**0**	**0**	**0**	**10**	**6**	**0**	**4**	**1**	**4**	**0**	**0**	**0**	**0**	**37**	**0**
	HV%	**-**	**16%**	**1%**	**-**	**-**	**-**	**1%**	**1%**	**-**	**5%**	**50%**	**1%**	**-**	**-**	**-**	**-**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	4	2	0	0	*6*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	7	7	4	0	*18*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	**3**	**2**	**5**	**0**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:45 AM	**0**	**2**	**2**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**3**	**5**	**2**	**0**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**6**	**7**	**0**	**0**	***13***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:30 AM	3	5	6	0	*14*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	6	5	3	0	*14*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	32	35	22	0	*89*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**12**	**16**	**9**	**0**	***37***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Beckwith Rd				Beckwith Rd				SR-99 NB Off Ramp				SR-99 NB On Ramp				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	3	0	0	0	2	0	0	0	0	0	0	0	0	0	6	0
7:15 AM	0	3	4	0	0	0	3	4	0	2	0	2	0	0	0	0	18	0
7:30 AM	**0**	**1**	**2**	**0**	**0**	**0**	**1**	**1**	**0**	**3**	**1**	**1**	**0**	**0**	**0**	**0**	**10**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**4**	38
8:00 AM	**0**	**2**	**1**	**0**	**0**	**0**	**3**	**2**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**10**	42
8:15 AM	**0**	**3**	**3**	**0**	**0**	**0**	**4**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**13**	**37**
8:30 AM	0	1	2	0	0	0	4	1	0	5	0	1	0	0	0	0	14	41
8:45 AM	0	3	3	0	0	0	4	1	0	2	0	1	0	0	0	0	14	51
Count Total	0	14	18	0	0	0	23	12	0	13	1	8	0	0	0	0	89	0
Peak Hour	**0**	**6**	**6**	**0**	**0**	**0**	**10**	**6**	**0**	**4**	**1**	**4**	**0**	**0**	**0**	**0**	**37**	**0**

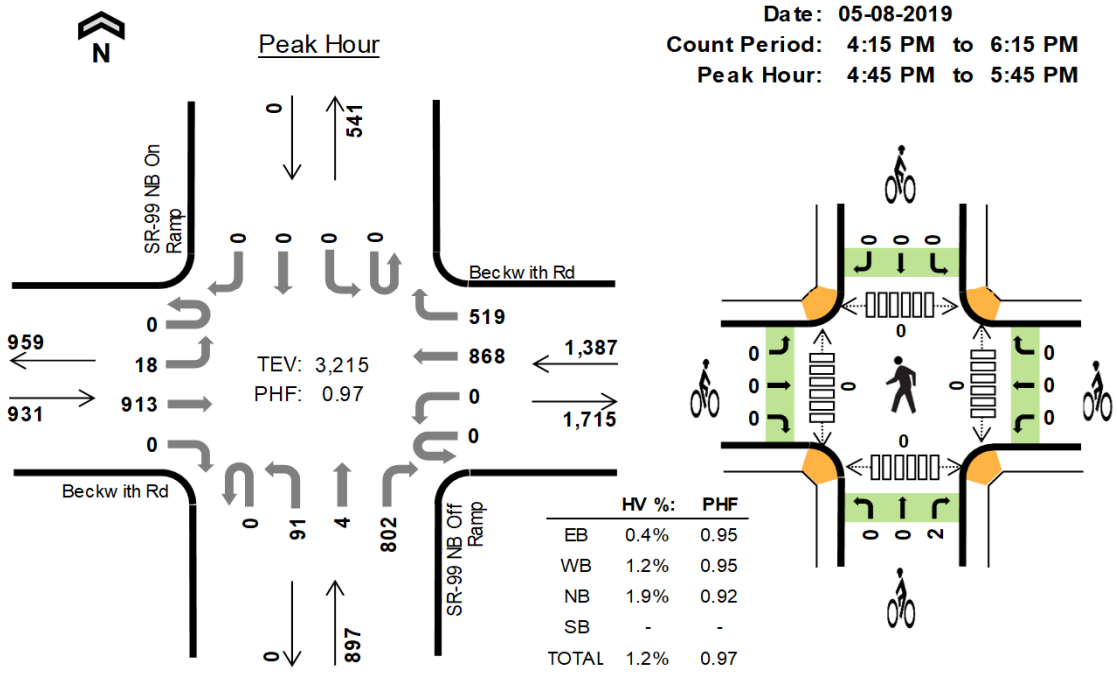
Two-Hour Count Summaries - Bikes

Interval Start	Beckwith Rd			Beckwith Rd			SR-99 NB Off Ramp			SR-99 NB On Ramp			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

SR-99 NB Ramp
Beckwith Rd

Date: 05-08-2019
Count Period: 4:15 PM to 6:15 PM
Peak Hour: 4:45 PM to 5:45 PM



Two-Hour Count Summaries

Interval Start		Beckwith Rd Eastbound				Beckwith Rd Westbound				SR-99 NB Off Ramp Northbound				SR-99 NB On Ramp Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM		0	10	240	0	0	0	218	111	0	14	2	200	0	0	0	0	795	0
4:30 PM		0	9	212	0	0	0	202	106	0	16	1	170	0	0	0	0	716	0
4:45 PM		**0**	**4**	**233**	**0**	**0**	**0**	**221**	**138**	**0**	**28**	**0**	**191**	**0**	**0**	**0**	**0**	**815**	0
5:00 PM		**0**	**5**	**241**	**0**	**0**	**0**	**218**	**115**	**0**	**20**	**1**	**182**	**0**	**0**	**0**	**0**	**782**	3,108
5:15 PM		**0**	**6**	**212**	**0**	**0**	**0**	**230**	**135**	**0**	**26**	**2**	**217**	**0**	**0**	**0**	**0**	**828**	3,141
5:30 PM		**0**	**3**	**227**	**0**	**0**	**0**	**199**	**131**	**0**	**17**	**1**	**212**	**0**	**0**	**0**	**0**	**790**	**3,215**
5:45 PM		0	8	206	0	0	0	201	109	0	12	0	228	0	0	0	0	764	3,164
6:00 PM		0	6	203	0	0	0	210	90	0	21	0	188	0	0	0	0	718	3,100
Count Total		0	51	1,774	0	0	0	1,699	935	0	154	7	1,588	0	0	0	0	6,208	0
Peak Hour	**All**	**0**	**18**	**913**	**0**	**0**	**0**	**868**	**519**	**0**	**91**	**4**	**802**	**0**	**0**	**0**	**0**	**3,215**	**0**
	HV	**0**	**1**	**3**	**0**	**0**	**0**	**9**	**8**	**0**	**9**	**0**	**8**	**0**	**0**	**0**	**0**	**38**	**0**
	HV%	**-**	**6%**	**0%**	**-**	**-**	**-**	**1%**	**2%**	**-**	**10%**	**0%**	**1%**	**-**	**-**	**-**	**-**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:15 PM	2	6	4	0	*12*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	1	2	2	0	*5*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	**3**	**4**	**4**	**0**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**1**	**7**	**5**	**0**	***13***	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**0**	**2**	**3**	**0**	***5***	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	*0*
5:30 PM	**0**	**4**	**5**	**0**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:45 PM	1	2	1	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
6:00 PM	0	1	3	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	8	28	27	0	*63*	0	0	2	0	*2*	0	0	0	0	*0*
Peak Hour	**4**	**17**	**17**	**0**	***38***	**0**	**0**	**2**	**0**	***2***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Beckwith Rd				Beckwith Rd				SR-99 NB Off Ramp				SR-99 NB On Ramp				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM	0	0	2	0	0	0	4	2	0	1	0	3	0	0	0	0	12	0
4:30 PM	0	1	0	0	0	0	2	0	0	0	0	2	0	0	0	0	5	0
4:45 PM	**0**	**0**	**3**	**0**	**0**	**0**	**3**	**1**	**0**	**1**	**0**	**3**	**0**	**0**	**0**	**0**	**11**	0
5:00 PM	**0**	**1**	**0**	**0**	**0**	**0**	**4**	**3**	**0**	**3**	**0**	**2**	**0**	**0**	**0**	**0**	**13**	41
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**5**	34
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**0**	**4**	**0**	**1**	**0**	**0**	**0**	**0**	**9**	**38**
5:45 PM	0	0	1	0	0	0	1	1	0	0	0	1	0	0	0	0	4	31
6:00 PM	0	0	0	0	0	0	0	1	0	1	0	2	0	0	0	0	4	22
Count Total	0	2	6	0	0	0	16	12	0	11	0	16	0	0	0	0	63	0
Peak Hour	**0**	**1**	**3**	**0**	**0**	**0**	**9**	**8**	**0**	**9**	**0**	**8**	**0**	**0**	**0**	**0**	**38**	**0**

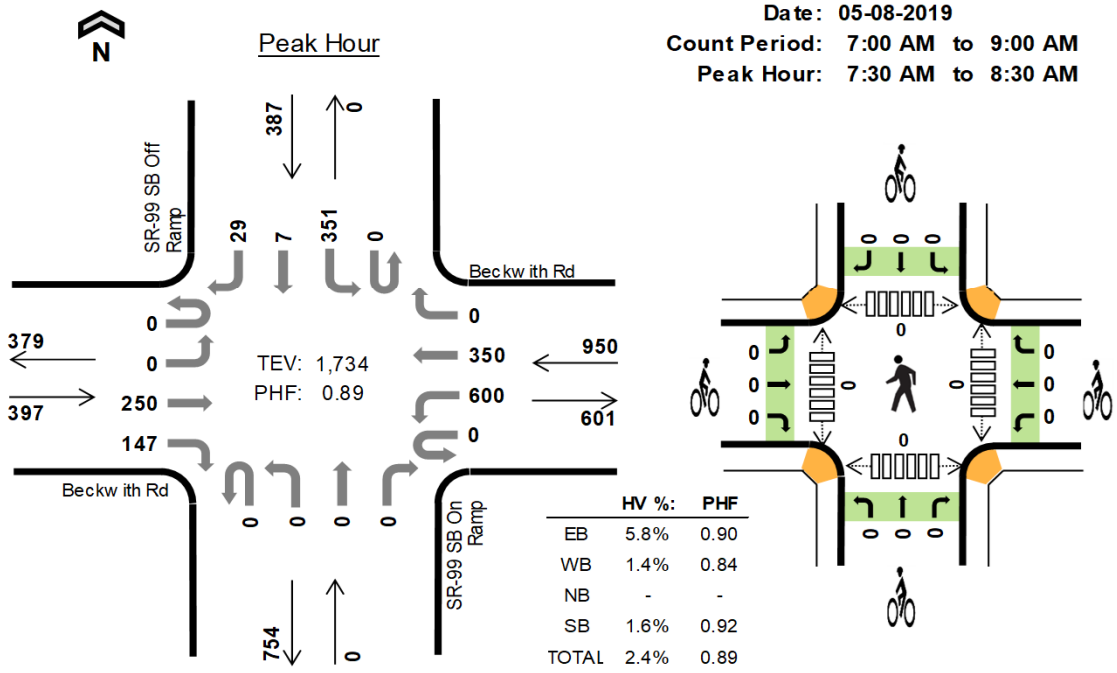
Two-Hour Count Summaries - Bikes

Interval Start	Beckwith Rd			Beckwith Rd			SR-99 NB Off Ramp			SR-99 NB On Ramp			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	1
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	2
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	0	0	0	2	0	0	0	2	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

SR-99 SB Ramp
Beckwith Rd

Date: 05-08-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM



Two-Hour Count Summaries

Interval Start		Beckwith Rd Eastbound				Beckwith Rd Westbound				SR-99 SB On Ramp Northbound				SR-99 SB Off Ramp Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	33	21	0	103	64	0	0	0	0	0	0	49	2	6	278	0
7:15 AM		0	0	40	20	0	144	83	0	0	0	0	0	0	73	2	2	364	0
7:30 AM		**0**	**0**	**57**	**39**	**0**	**162**	**101**	**0**	**0**	**0**	**0**	**0**	**0**	**78**	**2**	**8**	**447**	0
7:45 AM		**0**	**0**	**63**	**47**	**0**	**167**	**115**	**0**	**0**	**0**	**0**	**0**	**0**	**82**	**1**	**12**	**487**	1,576
8:00 AM		**0**	**0**	**69**	**37**	**0**	**143**	**72**	**0**	**0**	**0**	**0**	**0**	**0**	**100**	**1**	**4**	**426**	1,724
8:15 AM		**0**	**0**	**61**	**24**	**0**	**128**	**62**	**0**	**0**	**0**	**0**	**0**	**0**	**91**	**3**	**5**	**374**	**1,734**
8:30 AM		0	0	51	25	0	121	60	0	0	0	0	0	0	88	4	11	360	1,647
8:45 AM		0	0	73	27	0	105	73	0	0	0	0	0	0	93	2	10	383	1,543
Count Total		0	0	447	240	0	1,073	630	0	0	0	0	0	0	654	17	58	3,119	0
Peak Hour	**All**	**0**	**0**	**250**	**147**	**0**	**600**	**350**	**0**	**0**	**0**	**0**	**0**	**0**	**351**	**7**	**29**	**1,734**	**0**
	HV	**0**	**0**	**8**	**15**	**0**	**6**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**2**	**42**	**0**
	HV%	**-**	**-**	**3%**	**10%**	**-**	**1%**	**2%**	**-**	**-**	**-**	**-**	**-**	**-**	**1%**	**0%**	**7%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	7	2	0	1	*10*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	5	6	0	3	*14*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	**6**	**4**	**0**	**2**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:45 AM	**4**	**3**	**0**	**1**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**4**	**3**	**0**	**1**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**9**	**3**	**0**	**2**	***14***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:30 AM	8	8	0	4	*20*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	2	7	0	4	*13*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	45	36	0	18	*99*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**23**	**13**	**0**	**6**	***42***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Beckwith Rd				Beckwith Rd				SR-99 SB On Ramp				SR-99 SB Off Ramp				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	4	3	0	2	0	0	0	0	0	0	0	0	1	0	10	0
7:15 AM	0	0	4	1	0	3	3	0	0	0	0	0	0	3	0	0	14	0
7:30 AM	**0**	**0**	**2**	**4**	**0**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**12**	0
7:45 AM	**0**	**0**	**0**	**4**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**8**	44
8:00 AM	**0**	**0**	**2**	**2**	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**8**	42
8:15 AM	**0**	**0**	**4**	**5**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**14**	**42**
8:30 AM	0	0	1	7	0	3	5	0	0	0	0	0	0	3	0	1	20	50
8:45 AM	0	0	2	0	0	1	6	0	0	0	0	0	0	3	0	1	13	55
Count Total	0	0	19	26	0	15	21	0	0	0	0	0	0	13	1	4	99	0
Peak Hour	**0**	**0**	**8**	**15**	**0**	**6**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**2**	**42**	**0**

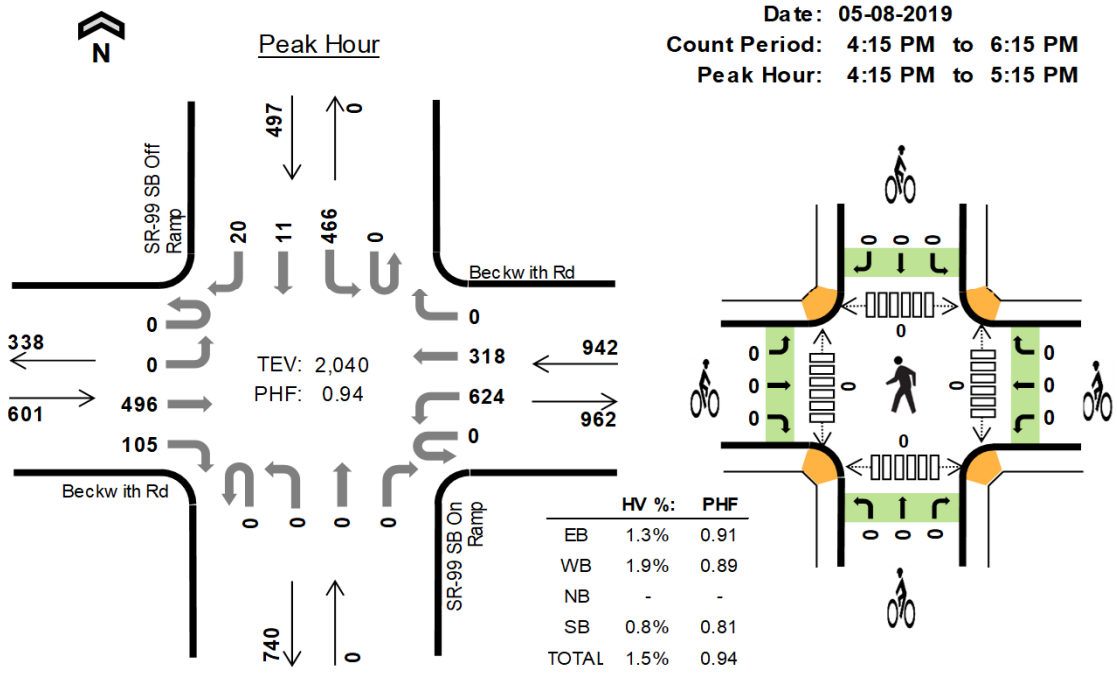
Two-Hour Count Summaries - Bikes

Interval Start	Beckwith Rd			Beckwith Rd			SR-99 SB On Ramp			SR-99 SB Off Ramp			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

SR-99 SB Ramp
Beckwith Rd

Date: 05-08-2019
Count Period: 4:15 PM to 6:15 PM
Peak Hour: 4:15 PM to 5:15 PM



Two-Hour Count Summaries

Interval Start		Beckwith Rd Eastbound				Beckwith Rd Westbound				SR-99 SB On Ramp Northbound				SR-99 SB Off Ramp Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM		**0**	**0**	**135**	**31**	**0**	**176**	**80**	**0**	**0**	**0**	**0**	**0**	**0**	**113**	**3**	**3**	**541**	0
4:30 PM		**0**	**0**	**114**	**37**	**0**	**137**	**64**	**0**	**0**	**0**	**0**	**0**	**0**	**106**	**3**	**5**	**466**	0
4:45 PM		**0**	**0**	**134**	**20**	**0**	**165**	**101**	**0**	**0**	**0**	**0**	**0**	**0**	**104**	**1**	**6**	**531**	0
5:00 PM		**0**	**0**	**113**	**17**	**0**	**146**	**73**	**0**	**0**	**0**	**0**	**0**	**0**	**143**	**4**	**6**	**502**	**2,040**
5:15 PM		0	0	91	17	0	167	102	0	0	0	0	0	0	129	1	13	520	2,019
5:30 PM		0	0	96	15	0	124	77	0	0	0	0	0	0	137	1	3	453	2,006
5:45 PM		0	0	110	17	0	154	76	0	0	0	0	0	0	106	1	9	473	1,948
6:00 PM		0	0	94	11	0	169	78	0	0	0	0	0	0	116	1	6	475	1,921
Count Total		0	0	887	165	0	1,238	651	0	0	0	0	0	0	954	15	51	3,961	0
Peak Hour	**All**	**0**	**0**	**496**	**105**	**0**	**624**	**318**	**0**	**0**	**0**	**0**	**0**	**0**	**466**	**11**	**20**	**2,040**	**0**
	HV	**0**	**0**	**5**	**3**	**0**	**8**	**10**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**30**	**0**
	HV%	**-**	**-**	**1%**	**3%**	**-**	**1%**	**3%**	**-**	**-**	**-**	**-**	**-**	**-**	**0%**	**0%**	**10%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:15 PM	**3**	**5**	**0**	**1**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:30 PM	**1**	**2**	**0**	**1**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**3**	**4**	**0**	**1**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**1**	**7**	**0**	**1**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:15 PM	0	2	0	0	*2*	1	0	0	1	*2*	0	0	0	0	*0*
5:30 PM	0	4	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	1	0	2	*3*	0	0	0	0	*0*	0	0	0	0	*0*
6:00 PM	2	2	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	10	27	0	6	*43*	1	0	0	1	*2*	0	0	0	0	*0*
Peak Hour	**8**	**18**	**0**	**4**	***30***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Beckwith Rd				Beckwith Rd				SR-99 SB On Ramp				SR-99 SB Off Ramp				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM	**0**	**0**	**1**	**2**	**0**	**2**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**9**	0
4:30 PM	**0**	**0**	**1**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**4**	0
4:45 PM	**0**	**0**	**2**	**1**	**0**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**8**	0
5:00 PM	**0**	**0**	**1**	**0**	**0**	**4**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**9**	**30**
5:15 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	23
5:30 PM	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	4	23
5:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	3	18
6:00 PM	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	4	13
Count Total	0	0	5	5	0	10	17	0	0	0	0	0	0	3	0	3	43	0
Peak Hour	**0**	**0**	**5**	**3**	**0**	**8**	**10**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**30**	**0**

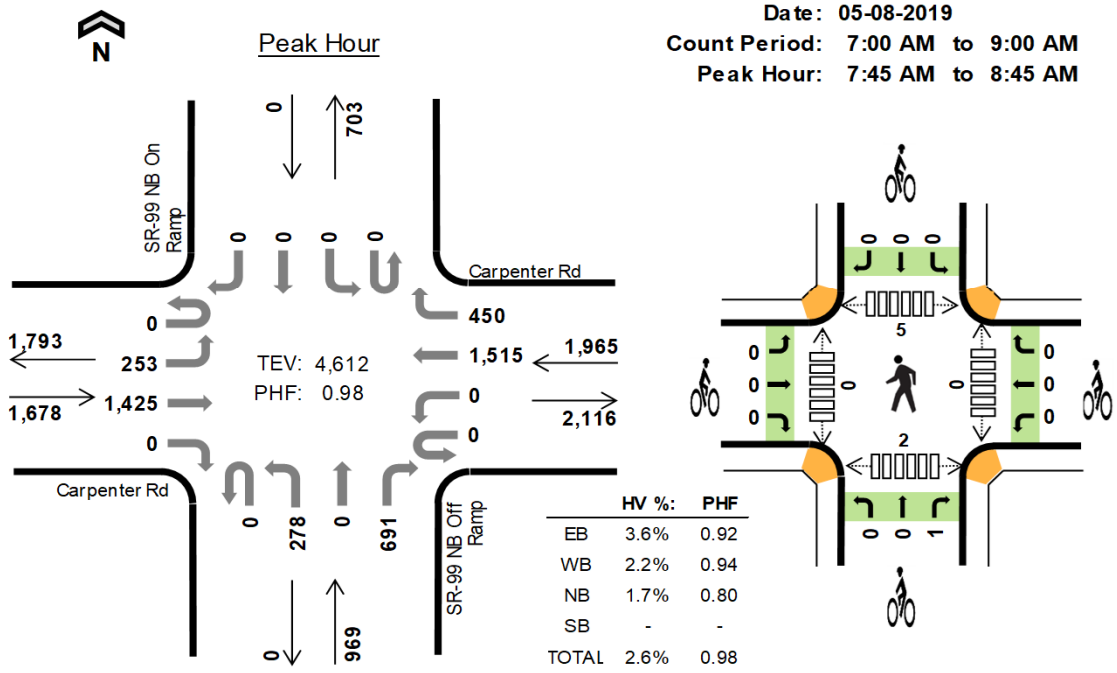
Two-Hour Count Summaries - Bikes

Interval Start	Beckwith Rd			Beckwith Rd			SR-99 SB On Ramp			SR-99 SB Off Ramp			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	0	1	0	0	0	0	0	0	0	1	0	0	2	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Count Total	0	1	0	0	0	0	0	0	0	1	0	0	2	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

SR-99 NB Ramp
Carpenter Rd

Date: 05-08-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM



Two-Hour Count Summaries

Interval Start		Carpenter Rd Eastbound				Carpenter Rd Westbound				SR-99 NB Off Ramp Northbound				SR-99 NB On Ramp Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	64	204	0	0	0	264	147	0	34	0	133	0	0	0	0	846	0
7:15 AM		0	53	292	0	0	0	308	163	0	62	0	145	0	0	0	0	1,023	0
7:30 AM		0	61	329	0	0	0	360	126	0	63	0	173	0	0	0	0	1,112	0
7:45 AM		**0**	**58**	**338**	**0**	**0**	**0**	**368**	**105**	**0**	**103**	**0**	**199**	**0**	**0**	**0**	**0**	**1,171**	4,152
8:00 AM		**0**	**58**	**374**	**0**	**0**	**0**	**380**	**95**	**0**	**55**	**0**	**136**	**0**	**0**	**0**	**0**	**1,098**	4,404
8:15 AM		**0**	**53**	**341**	**0**	**0**	**0**	**395**	**126**	**0**	**67**	**0**	**192**	**0**	**0**	**0**	**0**	**1,174**	4,555
8:30 AM		**0**	**84**	**372**	**0**	**0**	**0**	**372**	**124**	**0**	**53**	**0**	**164**	**0**	**0**	**0**	**0**	**1,169**	**4,612**
8:45 AM		0	64	362	0	0	0	313	90	0	57	0	140	0	0	0	0	1,026	4,467
Count Total		0	495	2,612	0	0	0	2,760	976	0	494	0	1,282	0	0	0	0	8,619	0
Peak Hour	**All**	**0**	**253**	**1,425**	**0**	**0**	**0**	**1,515**	**450**	**0**	**278**	**0**	**691**	**0**	**0**	**0**	**0**	**4,612**	**0**
	HV	**0**	**20**	**40**	**0**	**0**	**0**	**36**	**8**	**0**	**7**	**0**	**9**	**0**	**0**	**0**	**0**	**120**	**0**
	HV%	**-**	**8%**	**3%**	**-**	**-**	**-**	**2%**	**2%**	**-**	**3%**	**-**	**1%**	**-**	**-**	**-**	**-**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	23	5	5	0	*33*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	13	7	5	0	*25*	0	0	0	0	*0*	0	0	1	1	*2*
7:30 AM	6	8	5	0	*19*	0	0	0	0	*0*	0	0	1	3	*4*
7:45 AM	**14**	**10**	**5**	**0**	***29***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**15**	**8**	**3**	**0**	***26***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**0**	*2*
8:15 AM	**18**	**12**	**6**	**0**	***36***	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**1**	**1**	*2*
8:30 AM	**13**	**14**	**2**	**0**	***29***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**1**	***3***
8:45 AM	13	10	9	0	*32*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	115	74	40	0	*229*	0	0	1	0	*1*	0	0	7	6	*13*
Peak Hour	**60**	**44**	**16**	**0**	***120***	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**5**	**2**	***7***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Carpenter Rd				Carpenter Rd				SR-99 NB Off Ramp				SR-99 NB On Ramp				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	7	16	0	0	0	2	3	0	4	0	1	0	0	0	0	33	0
7:15 AM	0	5	8	0	0	0	6	1	0	4	0	1	0	0	0	0	25	0
7:30 AM	0	4	2	0	0	0	5	3	0	2	0	3	0	0	0	0	19	0
7:45 AM	**0**	**5**	**9**	**0**	**0**	**0**	**8**	**2**	**0**	**3**	**0**	**2**	**0**	**0**	**0**	**0**	**29**	106
8:00 AM	**0**	**6**	**9**	**0**	**0**	**0**	**7**	**1**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**26**	99
8:15 AM	**0**	**6**	**12**	**0**	**0**	**0**	**9**	**3**	**0**	**3**	**0**	**3**	**0**	**0**	**0**	**0**	**36**	110
8:30 AM	**0**	**3**	**10**	**0**	**0**	**0**	**12**	**2**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**29**	**120**
8:45 AM	0	5	8	0	0	0	7	3	0	6	0	3	0	0	0	0	32	123
Count Total	0	41	74	0	0	0	56	18	0	23	0	17	0	0	0	0	229	0
Peak Hour	**0**	**20**	**40**	**0**	**0**	**0**	**36**	**8**	**0**	**7**	**0**	**9**	**0**	**0**	**0**	**0**	**120**	**0**

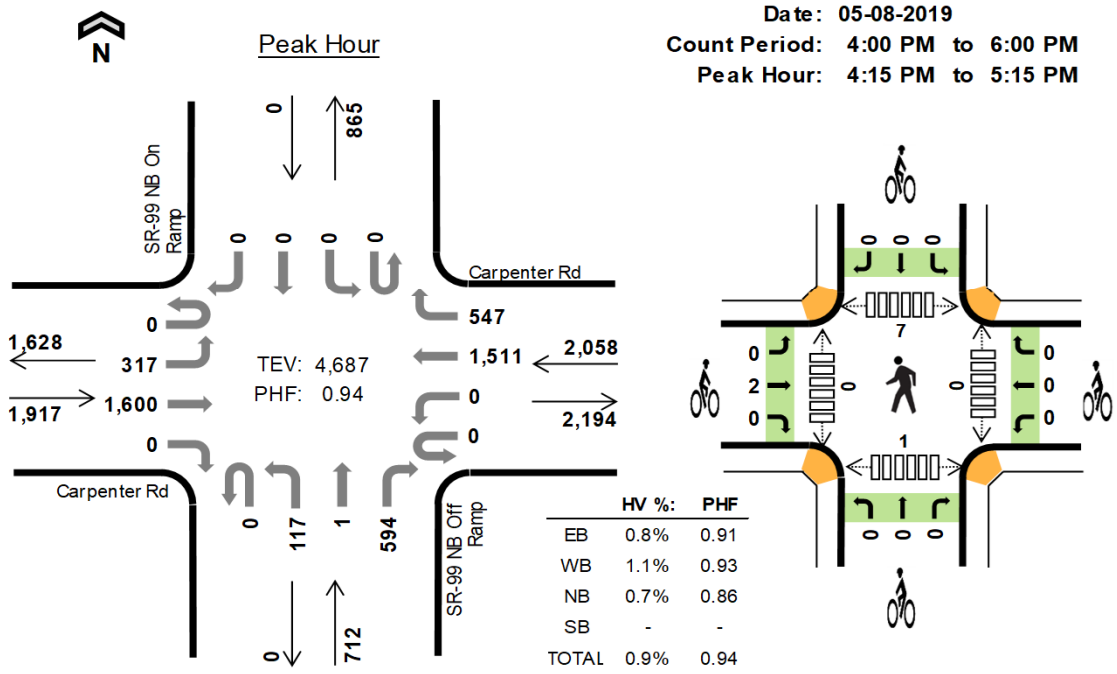
Two-Hour Count Summaries - Bikes

Interval Start	Carpenter Rd			Carpenter Rd			SR-99 NB Off Ramp			SR-99 NB On Ramp			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	1
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	0	0	0	1	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

SR-99 NB Ramp
Carpenter Rd

Date: 05-08-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM



Two-Hour Count Summaries

Interval Start		Carpenter Rd Eastbound				Carpenter Rd Westbound				SR-99 NB Off Ramp Northbound				SR-99 NB On Ramp Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	71	340	0	0	0	374	145	0	24	0	180	0	0	0	0	1,134	0
4:15 PM		**0**	**98**	**427**	**0**	**0**	**0**	**375**	**131**	**0**	**29**	**0**	**135**	**0**	**0**	**0**	**0**	**1,195**	0
4:30 PM		**0**	**72**	**355**	**0**	**0**	**0**	**393**	**133**	**0**	**28**	**1**	**148**	**0**	**0**	**0**	**0**	**1,130**	0
4:45 PM		**0**	**71**	**410**	**0**	**0**	**0**	**339**	**133**	**0**	**26**	**0**	**138**	**0**	**0**	**0**	**0**	**1,117**	4,576
5:00 PM		**0**	**76**	**408**	**0**	**0**	**0**	**404**	**150**	**0**	**34**	**0**	**173**	**0**	**0**	**0**	**0**	**1,245**	**4,687**
5:15 PM		0	76	366	0	0	0	354	120	0	32	1	185	0	0	0	0	1,134	4,626
5:30 PM		0	77	388	0	0	0	385	140	0	28	0	162	0	0	0	0	1,180	4,676
5:45 PM		0	72	335	0	0	0	349	107	0	42	0	158	0	0	0	0	1,063	4,622
Count Total		0	613	3,029	0	0	0	2,973	1,059	0	243	2	1,279	0	0	0	0	9,198	0
Peak Hour	**All**	**0**	**317**	**1,600**	**0**	**0**	**0**	**1,511**	**547**	**0**	**117**	**1**	**594**	**0**	**0**	**0**	**0**	**4,687**	**0**
	HV	**0**	**8**	**7**	**0**	**0**	**0**	**17**	**6**	**0**	**3**	**0**	**2**	**0**	**0**	**0**	**0**	**43**	**0**
	HV%	**-**	**3%**	**0%**	**-**	**-**	**-**	**1%**	**1%**	**-**	**3%**	**0%**	**0%**	**-**	**-**	**-**	**-**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	3	10	3	0	*16*	0	1	0	0	*1*	0	0	2	1	*3*
4:15 PM	**5**	**12**	**1**	**0**	***18***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**3**	**0**	*3*
4:30 PM	**5**	**5**	**0**	**0**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**1**	*3*
4:45 PM	**3**	**2**	**2**	**0**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**2**	**4**	**2**	**0**	***8***	**2**	**0**	**0**	**0**	***2***	**0**	**0**	**2**	**0**	***2***
5:15 PM	4	1	0	0	*5*	0	0	0	0	*0*	0	0	1	0	*1*
5:30 PM	2	3	2	0	*7*	0	0	0	0	*0*	0	0	1	0	*1*
5:45 PM	4	1	0	0	*5*	0	0	0	0	*0*	0	0	3	2	*5*
Count Total	28	38	10	0	*76*	2	1	0	0	*3*	0	0	14	4	*18*
Peak Hour	**15**	**23**	**5**	**0**	***43***	**2**	**0**	**0**	**0**	***2***	**0**	**0**	**7**	**1**	***8***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Carpenter Rd				Carpenter Rd				SR-99 NB Off Ramp				SR-99 NB On Ramp				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	3	0	0	0	7	3	0	2	0	1	0	0	0	0	16	0
4:15 PM	**0**	**4**	**1**	**0**	**0**	**0**	**8**	**4**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**18**	0
4:30 PM	**0**	**3**	**2**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	0
4:45 PM	**0**	**0**	**3**	**0**	**0**	**0**	**2**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**7**	51
5:00 PM	**0**	**1**	**1**	**0**	**0**	**0**	**2**	**2**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**43**
5:15 PM	0	2	2	0	0	0	1	0	0	0	0	0	0	0	0	0	5	30
5:30 PM	0	1	1	0	0	0	2	1	0	0	0	2	0	0	0	0	7	27
5:45 PM	0	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0	5	25
Count Total	0	11	17	0	0	0	28	10	0	5	0	5	0	0	0	0	76	0
Peak Hour	**0**	**8**	**7**	**0**	**0**	**0**	**17**	**6**	**0**	**3**	**0**	**2**	**0**	**0**	**0**	**0**	**43**	**0**

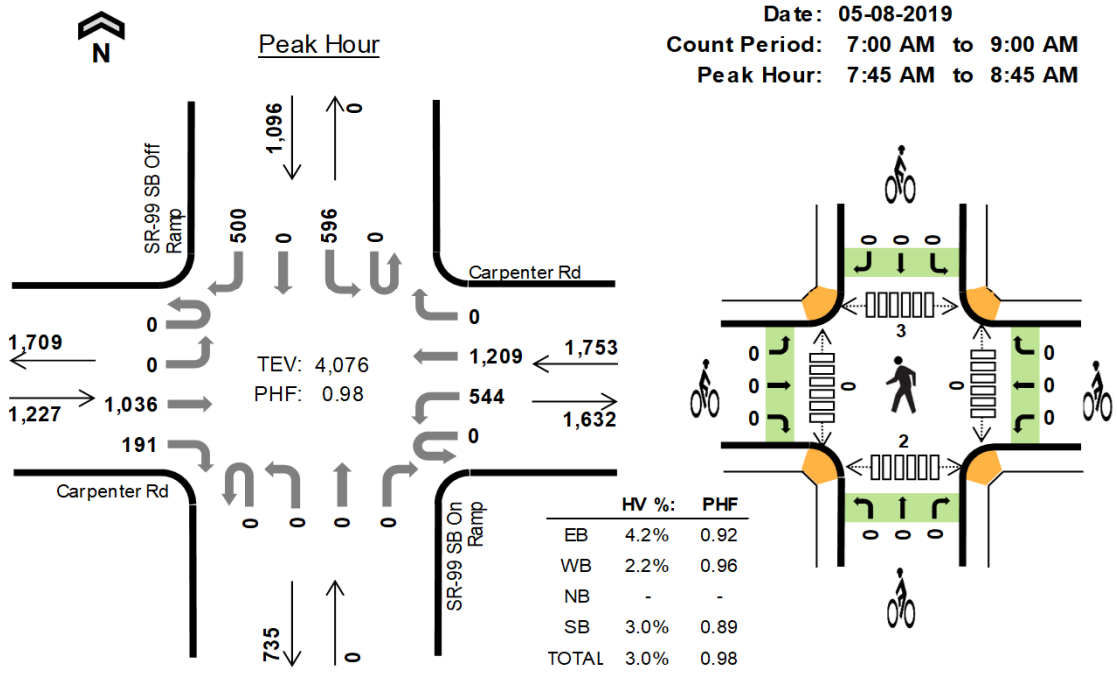
Two-Hour Count Summaries - Bikes

Interval Start	Carpenter Rd			Carpenter Rd			SR-99 NB Off Ramp			SR-99 NB On Ramp			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
5:00 PM	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**2**
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Count Total	0	2	0	0	1	0	0	0	0	0	0	0	3	0
Peak Hour	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

SR-99 SB Ramp
Carpenter Rd

Date: 05-08-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	4.2%	0.92
WB	2.2%	0.96
NB	-	-
SB	3.0%	0.89
TOTAL	3.0%	0.98

Two-Hour Count Summaries

Interval Start		Carpenter Rd Eastbound				Carpenter Rd Westbound				SR-99 SB On Ramp Northbound				SR-99 SB Off Ramp Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	168	45	0	117	177	0	0	0	0	0	0	103	0	97	707	0
7:15 AM		0	0	205	44	0	129	238	0	0	0	0	0	0	137	0	96	849	0
7:30 AM		0	0	232	50	0	166	243	0	0	0	0	0	0	166	0	124	981	0
7:45 AM		**0**	**0**	**202**	**47**	**0**	**131**	**307**	**0**	**0**	**0**	**0**	**0**	**0**	**166**	**0**	**142**	**995**	3,532
8:00 AM		**0**	**0**	**269**	**63**	**0**	**137**	**294**	**0**	**0**	**0**	**0**	**0**	**0**	**120**	**0**	**138**	**1,021**	3,846
8:15 AM		**0**	**0**	**270**	**42**	**0**	**126**	**329**	**0**	**0**	**0**	**0**	**0**	**0**	**164**	**0**	**106**	**1,037**	4,034
8:30 AM		**0**	**0**	**295**	**39**	**0**	**150**	**279**	**0**	**0**	**0**	**0**	**0**	**0**	**146**	**0**	**114**	**1,023**	**4,076**
8:45 AM		0	0	300	34	0	130	230	0	0	0	0	0	0	135	0	93	922	4,003
Count Total		0	0	1,941	364	0	1,086	2,097	0	0	0	0	0	0	1,137	0	910	7,535	0
Peak Hour	**All**	**0**	**0**	**1,036**	**191**	**0**	**544**	**1,209**	**0**	**0**	**0**	**0**	**0**	**0**	**596**	**0**	**500**	**4,076**	**0**
	HV	**0**	**0**	**43**	**9**	**0**	**7**	**31**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**0**	**18**	**123**	**0**
	HV%	**-**	**-**	**4%**	**5%**	**-**	**1%**	**3%**	**-**	**-**	**-**	**-**	**-**	**-**	**3%**	**-**	**4%**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	26	8	0	11	*45*	0	0	0	0	*0*	0	0	0	1	*1*
7:15 AM	19	9	0	8	*36*	0	0	0	0	*0*	0	0	0	2	*2*
7:30 AM	7	7	0	3	*17*	0	0	0	0	*0*	0	0	0	1	*1*
7:45 AM	**18**	**9**	**0**	**7**	***34***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**9**	**7**	**0**	**8**	***24***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**0**	*2*
8:15 AM	**16**	**11**	**0**	**11**	***38***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
8:30 AM	**9**	**11**	**0**	**7**	***27***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**1**	***2***
8:45 AM	16	12	0	9	*37*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	120	74	0	64	*258*	0	0	0	0	*0*	0	0	3	6	*9*
Peak Hour	**52**	**38**	**0**	**33**	***123***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**3**	**2**	***5***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Carpenter Rd				Carpenter Rd				SR-99 SB On Ramp				SR-99 SB Off Ramp				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	20	6	0	1	7	0	0	0	0	0	0	5	0	6	45	0
7:15 AM	0	0	12	7	0	1	8	0	0	0	0	0	0	3	0	5	36	0
7:30 AM	0	0	4	3	0	2	5	0	0	0	0	0	0	1	0	2	17	0
7:45 AM	**0**	**0**	**17**	**1**	**0**	**3**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**2**	**34**	132
8:00 AM	**0**	**0**	**7**	**2**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**7**	**24**	111
8:15 AM	**0**	**0**	**11**	**5**	**0**	**2**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**7**	**38**	113
8:30 AM	**0**	**0**	**8**	**1**	**0**	**2**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**2**	**27**	**123**
8:45 AM	0	0	12	4	0	2	10	0	0	0	0	0	0	4	0	5	37	126
Count Total	0	0	91	29	0	13	61	0	0	0	0	0	0	28	0	36	258	0
Peak Hour	**0**	**0**	**43**	**9**	**0**	**7**	**31**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**0**	**18**	**123**	**0**

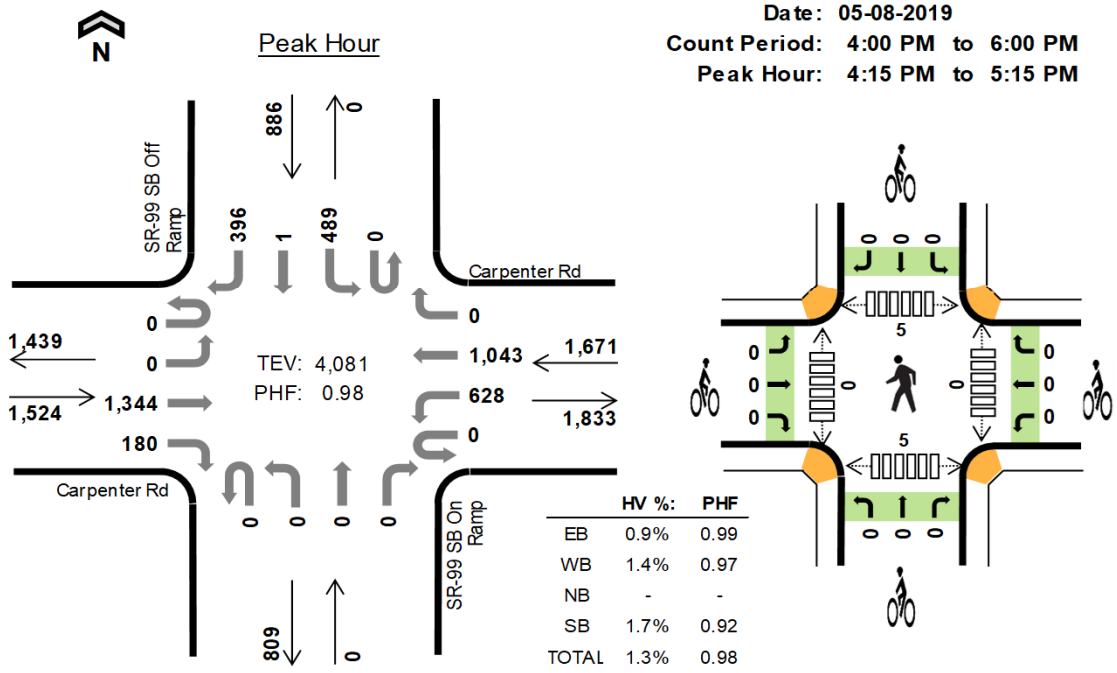
Two-Hour Count Summaries - Bikes

Interval Start	Carpenter Rd			Carpenter Rd			SR-99 SB On Ramp			SR-99 SB Off Ramp			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

SR-99 SB Ramp
Carpenter Rd

Date: 05-08-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM



	HV %:	PHF
EB	0.9%	0.99
WB	1.4%	0.97
NB	-	-
SB	1.7%	0.92
TOTAL	1.3%	0.98

Two-Hour Count Summaries

Interval Start		Carpenter Rd Eastbound				Carpenter Rd Westbound				SR-99 SB On Ramp Northbound				SR-99 SB Off Ramp Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	0	302	47	0	139	225	0	0	0	0	0	0	122	0	107	942	0
4:15 PM		**0**	**0**	**337**	**46**	**0**	**162**	**256**	**0**	**0**	**0**	**0**	**0**	**0**	**125**	**0**	**116**	**1,042**	0
4:30 PM		**0**	**0**	**327**	**59**	**0**	**154**	**256**	**0**	**0**	**0**	**0**	**0**	**0**	**100**	**1**	**90**	**987**	0
4:45 PM		**0**	**0**	**352**	**25**	**0**	**148**	**282**	**0**	**0**	**0**	**0**	**0**	**0**	**130**	**0**	**86**	**1,023**	3,994
5:00 PM		**0**	**0**	**328**	**50**	**0**	**164**	**249**	**0**	**0**	**0**	**0**	**0**	**0**	**134**	**0**	**104**	**1,029**	**4,081**
5:15 PM		0	0	323	31	0	140	259	0	0	0	0	0	0	117	0	121	991	4,030
5:30 PM		0	0	332	28	0	120	262	0	0	0	0	0	0	141	1	133	1,017	4,060
5:45 PM		0	0	318	33	0	146	263	0	0	0	0	0	0	134	0	115	1,009	4,046
Count Total		0	0	2,619	319	0	1,173	2,052	0	0	0	0	0	0	1,003	2	872	8,040	0
Peak Hour	**All**	**0**	**0**	**1,344**	**180**	**0**	**628**	**1,043**	**0**	**0**	**0**	**0**	**0**	**0**	**489**	**1**	**396**	**4,081**	**0**
	HV	**0**	**0**	**10**	**3**	**0**	**5**	**19**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**14**	**52**	**0**
	HV%	**-**	**-**	**1%**	**2%**	**-**	**1%**	**2%**	**-**	**-**	**-**	**-**	**-**	**-**	**0%**	**0%**	**4%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	8	0	5	*14*	0	0	0	0	*0*	0	0	1	4	*5*
4:15 PM	**5**	**7**	**0**	**6**	***18***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**2**	*3*
4:30 PM	**4**	**6**	**0**	**2**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**1**	*3*
4:45 PM	**1**	**5**	**0**	**2**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**1**	*2*
5:00 PM	**3**	**6**	**0**	**5**	***14***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**1**	***2***
5:15 PM	4	2	0	3	*9*	0	0	0	0	*0*	0	0	1	0	*1*
5:30 PM	2	2	0	4	*8*	0	0	0	0	*0*	0	0	1	2	*3*
5:45 PM	3	4	0	7	*14*	0	0	0	0	*0*	0	0	1	1	*2*
Count Total	23	40	0	34	*97*	0	0	0	0	*0*	0	0	9	12	*21*
Peak Hour	**13**	**24**	**0**	**15**	***52***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**5**	**5**	***10***

Two-Hour Count Summaries - Heavy Vehicles

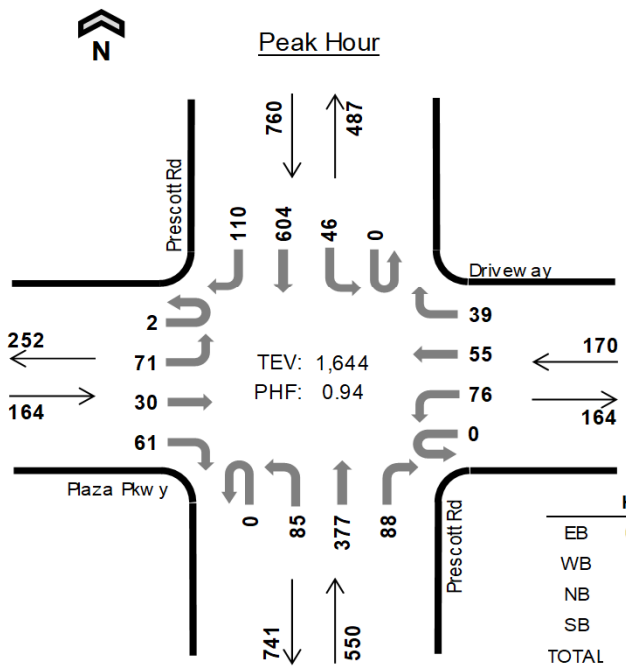
Interval Start	Carpenter Rd				Carpenter Rd				SR-99 SB On Ramp				SR-99 SB Off Ramp				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	1	0	0	1	7	0	0	0	0	0	0	3	0	2	14	0
4:15 PM	**0**	**0**	**3**	**2**	**0**	**1**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**18**	0
4:30 PM	**0**	**0**	**4**	**0**	**0**	**2**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**12**	0
4:45 PM	**0**	**0**	**1**	**0**	**0**	**1**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**8**	52
5:00 PM	**0**	**0**	**2**	**1**	**0**	**1**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**14**	**52**
5:15 PM	0	0	4	0	0	0	2	0	0	0	0	0	0	0	0	3	9	43
5:30 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	1	0	3	8	39
5:45 PM	0	0	3	0	0	0	4	0	0	0	0	0	0	2	0	5	14	45
Count Total	0	0	20	3	0	6	34	0	0	0	0	0	0	7	0	27	97	0
Peak Hour	**0**	**0**	**10**	**3**	**0**	**5**	**19**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**14**	**52**	**0**

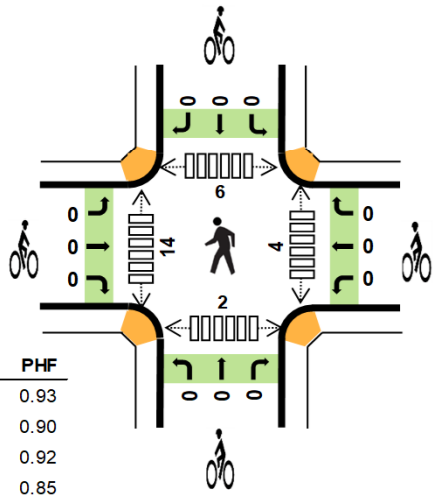
Two-Hour Count Summaries - Bikes

Interval Start	Carpenter Rd			Carpenter Rd			SR-99 SB On Ramp			SR-99 SB Off Ramp			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Prescott Rd
Plaza Pkwy





	HV %:	PHF
EB	0.6%	0.93
WB	1.8%	0.90
NB	1.1%	0.92
SB	1.2%	0.85
TOTAL	1.2%	0.94

Date: 05-08-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM

Two-Hour Count Summaries

Interval Start		Plaza Pkwy Eastbound				Driveway Westbound				Prescott Rd Northbound				Prescott Rd Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	9	2	9	0	11	5	3	0	9	58	9	0	9	100	11	235	0
7:15 AM		1	8	6	9	0	7	10	6	0	9	73	13	0	9	120	13	284	0
7:30 AM		0	14	6	12	0	24	9	7	0	6	96	15	0	9	154	20	372	0
7:45 AM		**2**	**14**	**6**	**12**	**0**	**21**	**11**	**15**	**0**	**19**	**99**	**15**	**0**	**11**	**181**	**31**	**437**	1,328
8:00 AM		**0**	**20**	**7**	**16**	**0**	**16**	**13**	**11**	**0**	**20**	**102**	**21**	**0**	**9**	**128**	**33**	**396**	1,489
8:15 AM		**0**	**19**	**10**	**15**	**0**	**22**	**15**	**4**	**0**	**26**	**101**	**23**	**0**	**17**	**160**	**22**	**434**	1,639
8:30 AM		**0**	**18**	**7**	**18**	**0**	**17**	**16**	**9**	**0**	**20**	**75**	**29**	**0**	**9**	**135**	**24**	**377**	**1,644**
8:45 AM		3	18	10	19	0	22	9	7	0	23	83	23	0	4	136	21	378	1,585
Count Total		6	120	54	110	0	140	88	62	0	132	687	148	0	77	1,114	175	2,913	0
Peak Hour	**All**	**2**	**71**	**30**	**61**	**0**	**76**	**55**	**39**	**0**	**85**	**377**	**88**	**0**	**46**	**604**	**110**	**1,644**	**0**
	HV	**0**	**0**	**0**	**1**	**0**	**3**	**0**	**0**	**0**	**0**	**3**	**3**	**0**	**1**	**7**	**1**	**19**	**0**
	HV%	**0%**	**0%**	**0%**	**2%**	**-**	**4%**	**0%**	**0%**	**-**	**0%**	**1%**	**3%**	**-**	**2%**	**1%**	**1%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	5	3	*8*	0	0	0	0	*0*	1	0	1	1	*3*
7:15 AM	1	1	1	1	*4*	0	0	0	0	*0*	0	2	1	0	*3*
7:30 AM	0	0	2	2	*4*	0	0	0	0	*0*	0	0	2	0	*2*
7:45 AM	**0**	**1**	**0**	**2**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**4**	**1**	**1**	***6***
8:00 AM	**0**	**0**	**3**	**3**	***6***	**0**	**0**	**0**	**0**	***0***	**2**	**1**	**0**	**1**	*4*
8:15 AM	**0**	**1**	**1**	**3**	***5***	**0**	**0**	**0**	**0**	***0***	**1**	**8**	**3**	**0**	*12*
8:30 AM	**1**	**1**	**2**	**1**	***5***	**0**	**0**	**0**	**0**	***0***	**1**	**1**	**2**	**0**	***4***
8:45 AM	0	0	2	2	*4*	0	0	0	0	*0*	0	4	1	0	*5*
Count Total	2	4	16	17	*39*	0	0	0	0	*0*	5	20	11	3	*39*
Peak Hour	**1**	**3**	**6**	**9**	***19***	**0**	**0**	**0**	**0**	***0***	**4**	**14**	**6**	**2**	***26***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Plaza Pkwy				Driveway				Prescott Rd				Prescott Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	4	1	0	0	3	0	8	0
7:15 AM	0	0	0	1	0	0	0	1	0	0	1	0	0	0	1	0	4	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**3**	19
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**2**	**1**	**6**	17
8:15 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**2**	**0**	**5**	18
8:30 AM	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**1**	**0**	**5**	**19**
8:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4	20
Count Total	0	0	0	2	0	3	0	1	0	0	12	4	0	1	15	1	39	0
Peak Hour	**0**	**0**	**0**	**1**	**0**	**3**	**0**	**0**	**0**	**0**	**3**	**3**	**0**	**1**	**7**	**1**	**19**	**0**

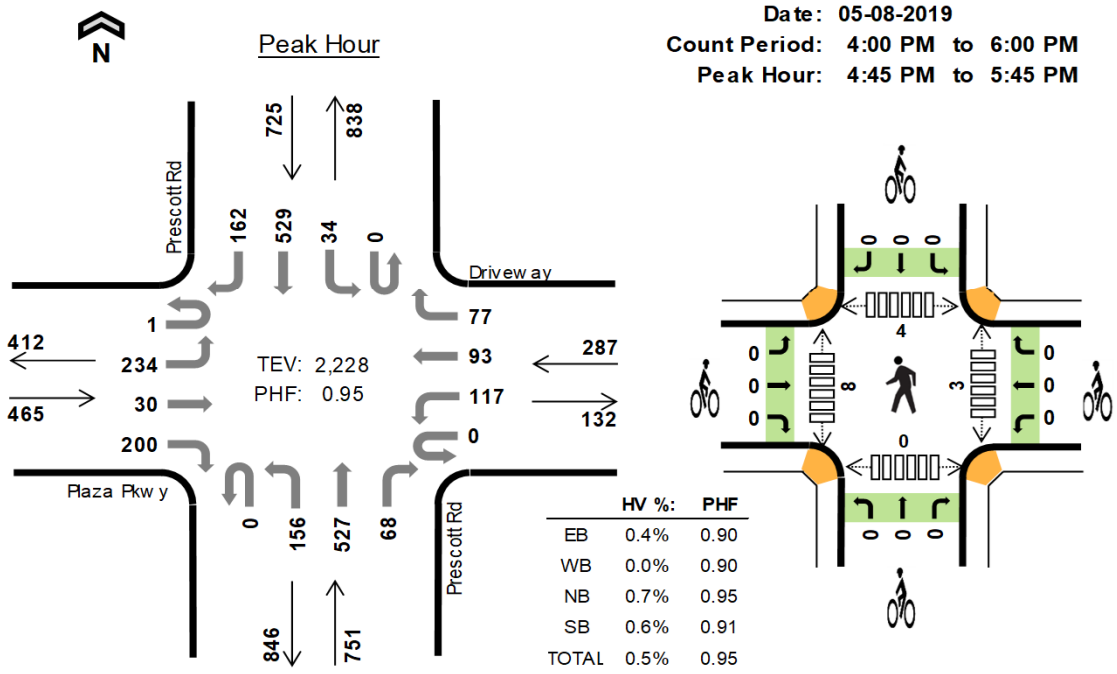
Two-Hour Count Summaries - Bikes

Interval Start	Plaza Pkwy			Driveway			Prescott Rd			Prescott Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Prescott Rd
Plaza Pkwy

Date: 05-08-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM



Two-Hour Count Summaries

Interval Start		Plaza Pkwy Eastbound				Driveway Westbound				Prescott Rd Northbound				Prescott Rd Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		3	57	18	70	0	30	43	15	0	40	121	9	0	16	96	32	550	0
4:15 PM		1	56	11	59	0	25	25	16	0	40	120	19	0	10	129	33	544	0
4:30 PM		1	45	8	52	0	30	19	22	0	40	133	18	0	7	135	45	555	0
4:45 PM		**0**	**53**	**9**	**42**	**0**	**28**	**20**	**15**	**0**	**27**	**145**	**17**	**0**	**5**	**147**	**48**	**556**	2,205
5:00 PM		**0**	**54**	**6**	**50**	**0**	**34**	**23**	**23**	**0**	**44**	**107**	**25**	**0**	**10**	**117**	**38**	**531**	2,186
5:15 PM		**0**	**68**	**5**	**56**	**0**	**26**	**31**	**22**	**0**	**46**	**130**	**12**	**0**	**10**	**104**	**46**	**556**	2,198
5:30 PM		**1**	**59**	**10**	**52**	**0**	**29**	**19**	**17**	**0**	**39**	**145**	**14**	**0**	**9**	**161**	**30**	**585**	**2,228**
5:45 PM		0	50	6	44	0	28	25	15	0	35	123	12	0	13	151	50	552	2,224
Count Total		6	442	73	425	0	230	205	145	0	311	1,024	126	0	80	1,040	322	4,429	0
Peak Hour	**All**	**1**	**234**	**30**	**200**	**0**	**117**	**93**	**77**	**0**	**156**	**527**	**68**	**0**	**34**	**529**	**162**	**2,228**	**0**
	HV	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**3**	**2**	**0**	**0**	**0**	**3**	**1**	**11**	**0**
	HV%	**0%**	**0%**	**0%**	**1%**	**-**	**0%**	**0%**	**0%**	**-**	**2%**	**0%**	**0%**	**-**	**0%**	**1%**	**1%**	**0%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	1	1	2	*4*	0	0	0	0	*0*	3	5	6	3	*17*
4:15 PM	1	0	0	0	*1*	0	1	0	2	*3*	1	3	2	0	*6*
4:30 PM	0	0	1	1	*2*	0	0	0	0	*0*	0	8	9	2	*19*
4:45 PM	**0**	**0**	**0**	**2**	***2***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**2**	**0**	*4*
5:00 PM	**0**	**0**	**2**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**1**	**2**	**2**	**0**	*5*
5:15 PM	**2**	**0**	**2**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**0**	**0**	*2*
5:30 PM	**0**	**0**	**1**	**2**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**4**	**0**	**0**	***4***
5:45 PM	0	1	1	1	*3*	0	0	0	0	*0*	1	1	1	0	*3*
Count Total	3	2	8	8	*21*	0	1	0	2	*3*	8	25	22	5	*60*
Peak Hour	**2**	**0**	**5**	**4**	***11***	**0**	**0**	**0**	**0**	***0***	**3**	**8**	**4**	**0**	***15***

Two-Hour Count Summaries - Heavy Vehicles

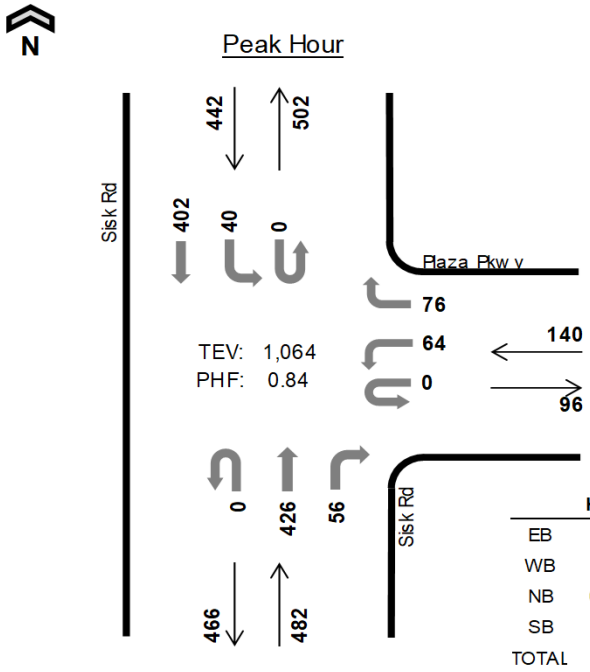
Interval Start	Plaza Pkwy				Driveway				Prescott Rd				Prescott Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	2	0	4	0
4:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**2**	9
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**2**	7
5:15 PM	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	10
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**0**	**3**	**11**
5:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	3	12
Count Total	0	0	0	3	0	1	1	0	0	4	4	0	0	0	7	1	21	0
Peak Hour	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**3**	**2**	**0**	**0**	**0**	**3**	**1**	**11**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Plaza Pkwy			Driveway			Prescott Rd			Prescott Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	1	0	0	0	1	1	0	3	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	1	0	0	0	1	1	0	3	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

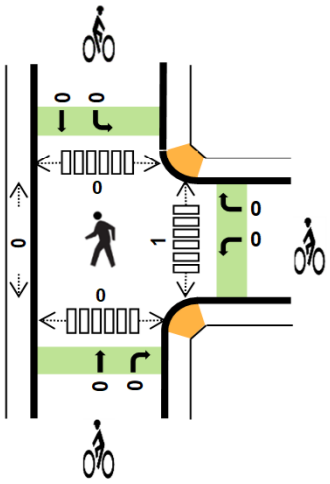
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Sisk Rd
Plaza Pkwy



Date: 05-08-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM

	HV %:	PHF
EB	-	-
WB	1.4%	0.83
NB	0.6%	0.82
SB	1.4%	0.88
TOTAL	1.0%	0.84



Two-Hour Count Summaries

Interval Start	n/a				Plaza Pkwy				Sisk Rd				Sisk Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	3	0	7	0	0	51	13	0	1	50	0	125	0
7:15 AM	0	0	0	0	0	8	0	11	0	0	92	14	0	3	65	0	193	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**12**	**0**	**12**	**0**	**0**	**111**	**10**	**0**	**5**	**111**	**0**	**261**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**18**	**0**	**24**	**0**	**0**	**133**	**14**	**0**	**7**	**119**	**0**	**315**	894
8:00 AM	**0**	**0**	**0**	**0**	**0**	**19**	**0**	**20**	**0**	**0**	**100**	**15**	**0**	**16**	**79**	**0**	**249**	1,018
8:15 AM	**0**	**0**	**0**	**0**	**0**	**15**	**0**	**20**	**0**	**0**	**82**	**17**	**0**	**12**	**93**	**0**	**239**	**1,064**
8:30 AM	0	0	0	0	0	10	0	9	0	0	70	24	0	12	90	0	215	1,018
8:45 AM	0	0	0	0	0	9	0	21	0	0	107	37	0	16	71	0	261	964
Count Total	0	0	0	0	0	94	0	124	0	0	746	144	0	72	678	0	1,858	0
Peak Hour All	**0**	**0**	**0**	**0**	**0**	**64**	**0**	**76**	**0**	**0**	**426**	**56**	**0**	**40**	**402**	**0**	**1,064**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**3**	**0**	**0**	**1**	**5**	**0**	**11**	**0**
Peak Hour HV%	**-**	**-**	**-**	**-**	**-**	**2%**	**-**	**1%**	**-**	**-**	**1%**	**0%**	**-**	**3%**	**1%**	**-**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	1	2	*3*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	0	0	5	2	*7*	0	0	0	0	*0*	1	0	0	0	*1*
7:30 AM	**0**	**0**	**1**	**1**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:45 AM	**0**	**0**	**1**	**2**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**0**	**1**	**1**	**1**	***3***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	*1*
8:15 AM	**0**	**1**	**0**	**2**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:30 AM	0	0	4	1	*5*	0	0	0	0	*0*	1	0	0	0	*1*
8:45 AM	0	1	5	4	*10*	0	0	0	0	*0*	1	0	0	2	*3*
Count Total	0	3	18	15	*36*	0	0	0	0	*0*	4	0	0	2	*6*
Peak Hr	**0**	**2**	**3**	**6**	***11***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	***1***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	n/a				Plaza Pkwy				Sisk Rd				Sisk Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	3	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	4	1	0	0	2	0	7	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**3**	15
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**3**	15
8:15 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**3**	**11**
8:30 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	1	0	5	14
8:45 AM	0	0	0	0	0	1	0	0	0	0	4	1	0	0	4	0	10	21
Count Total	0	0	0	0	0	2	0	1	0	0	16	2	0	1	14	0	36	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**3**	**0**	**0**	**1**	**5**	**0**	**11**	**0**

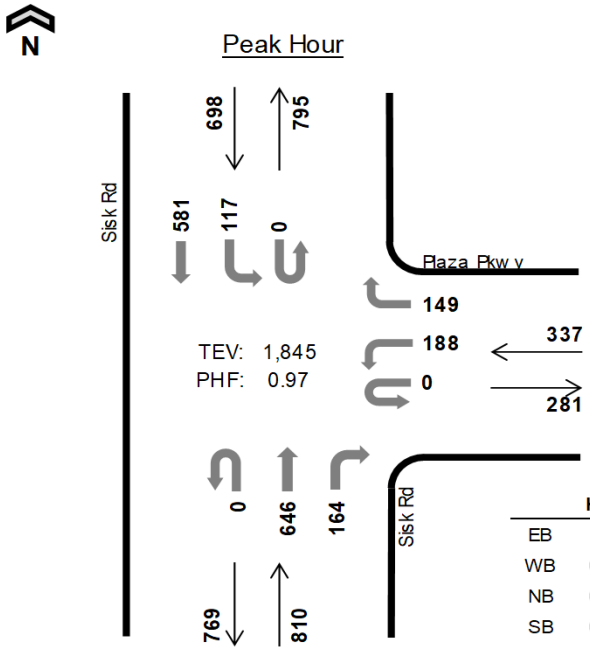
Two-Hour Count Summaries - Bikes

Interval Start	n/a			Plaza Pkwy			Sisk Rd			Sisk Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

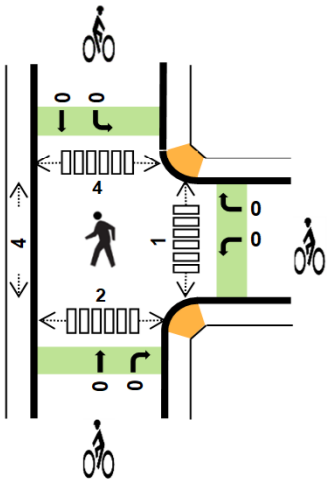
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Sisk Rd
Plaza Pkwy

Date: 05-08-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM



	HV %:	PHF
EB	-	-
WB	0.3%	0.96
NB	0.9%	0.94
SB	0.9%	0.93
TOTAL	0.8%	0.97



Two-Hour Count Summaries

Interval Start	n/a				Plaza Pkwy				Sisk Rd				Sisk Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	37	0	46	0	0	151	38	0	28	144	0	444	0
4:15 PM	0	0	0	0	0	53	0	36	0	0	144	55	0	36	152	0	476	0
4:30 PM	0	0	0	0	0	46	0	34	0	0	178	35	0	22	126	0	441	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**45**	**0**	**43**	**0**	**0**	**145**	**44**	**0**	**20**	**143**	**0**	**440**	1,801
5:00 PM	**0**	**0**	**0**	**0**	**0**	**53**	**0**	**35**	**0**	**0**	**163**	**47**	**0**	**33**	**140**	**0**	**471**	1,828
5:15 PM	**0**	**0**	**0**	**0**	**0**	**48**	**0**	**36**	**0**	**0**	**181**	**34**	**0**	**32**	**143**	**0**	**474**	1,826
5:30 PM	**0**	**0**	**0**	**0**	**0**	**42**	**0**	**35**	**0**	**0**	**157**	**39**	**0**	**32**	**155**	**0**	**460**	**1,845**
5:45 PM	0	0	0	0	0	44	0	27	0	0	143	38	0	30	114	0	396	1,801
Count Total	0	0	0	0	0	368	0	292	0	0	1,262	330	0	233	1,117	0	3,602	0
Peak Hour All	**0**	**0**	**0**	**0**	**0**	**188**	**0**	**149**	**0**	**0**	**646**	**164**	**0**	**117**	**581**	**0**	**1,845**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**7**	**0**	**0**	**0**	**6**	**0**	**14**	**0**
Peak Hour HV%	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**1%**	**-**	**-**	**1%**	**0%**	**-**	**0%**	**1%**	**-**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	1	2	3	*6*	0	0	0	0	*0*	0	1	1	1	*3*
4:15 PM	0	0	0	3	*3*	0	0	0	0	*0*	1	1	1	1	*4*
4:30 PM	0	0	1	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	**0**	**0**	**3**	**1**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**0**	**0**	**1**	**2**	***3***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**2**	*3*
5:15 PM	**0**	**0**	**1**	**2**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**1**	**0**	*2*
5:30 PM	**0**	**1**	**2**	**1**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**3**	**3**	**0**	***6***
5:45 PM	0	1	2	2	*5*	0	0	0	0	*0*	0	0	0	1	*1*
Count Total	0	3	12	14	*29*	0	0	0	0	*0*	2	6	6	5	*19*
Peak Hr	**0**	**1**	**7**	**6**	***14***	**0**	**0**	**0**	**0**	***0***	**1**	**4**	**4**	**2**	***11***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	n/a				Plaza Pkwy				Sisk Rd				Sisk Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	1	0	0	0	0	2	0	0	0	3	0	6	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**4**	14
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**3**	11
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**3**	11
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**4**	**14**
5:45 PM	0	0	0	0	0	1	0	0	0	0	2	0	0	0	2	0	5	15
Count Total	0	0	0	0	0	2	0	1	0	0	12	0	0	0	14	0	29	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**7**	**0**	**0**	**0**	**6**	**0**	**14**	**0**

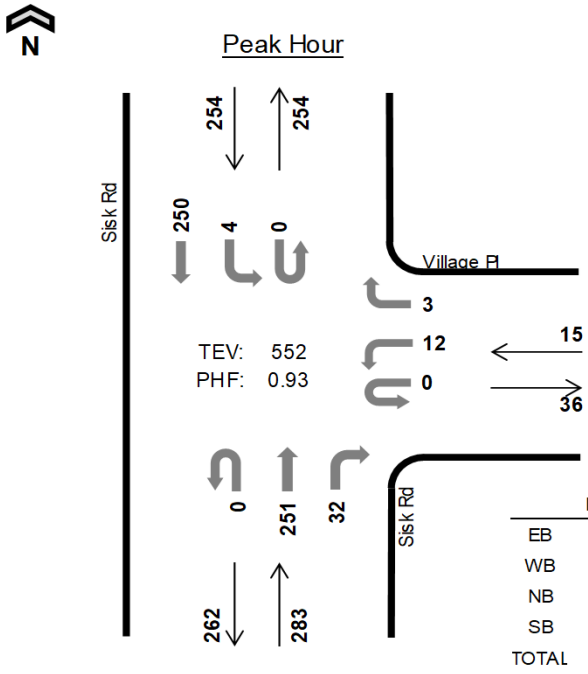
Two-Hour Count Summaries - Bikes

Interval Start	n/a			Plaza Pkwy			Sisk Rd			Sisk Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

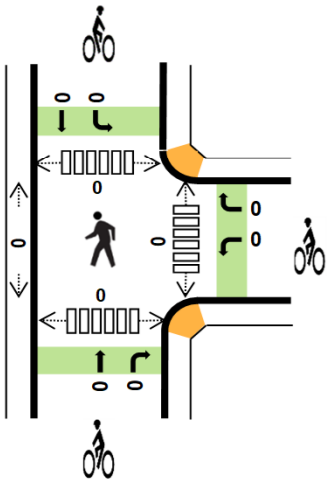
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Sisk Rd
Village Pl

Date: 05-07-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM



	HV %:	PHF
EB	-	-
WB	0.0%	0.63
NB	3.5%	0.79
SB	0.8%	0.82
TOTAL	2.2%	0.93



Two-Hour Count Summaries

Interval Start		n/a				Village Pl				Sisk Rd				Sisk Rd				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	0	0	0	5	0	1	0	0	53	4	0	0	35	0	98	0
7:15 AM		**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**53**	**10**	**0**	**1**	**53**	**0**	**121**	0
7:30 AM		**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**86**	**4**	**0**	**1**	**57**	**0**	**149**	0
7:45 AM		**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**60**	**8**	**0**	**1**	**76**	**0**	**149**	517
8:00 AM		**0**	**0**	**0**	**0**	**0**	**5**	**0**	**1**	**0**	**0**	**52**	**10**	**0**	**1**	**64**	**0**	**133**	**552**
8:15 AM		0	0	0	0	0	1	0	0	0	0	57	5	0	0	54	0	117	548
8:30 AM		0	0	0	0	0	0	0	0	0	0	66	9	0	1	55	0	131	530
8:45 AM		0	0	0	0	0	3	0	0	0	0	84	11	0	1	49	0	148	529
Count Total		0	0	0	0	0	21	0	4	0	0	511	61	0	6	443	0	1,046	0
Peak Hour	**All**	**0**	**0**	**0**	**0**	**0**	**12**	**0**	**3**	**0**	**0**	**251**	**32**	**0**	**4**	**250**	**0**	**552**	**0**
	HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	**0**	**0**	**0**	**2**	**0**	**12**	**0**
	HV%	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**0%**	**-**	**-**	**4%**	**0%**	**-**	**0%**	**1%**	**-**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	3	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:30 AM	**0**	**0**	**5**	**1**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:45 AM	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**0**	**0**	**3**	**1**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:15 AM	0	0	4	0	*4*	0	0	0	0	*0*	1	0	0	0	*1*
8:30 AM	0	0	3	1	*4*	0	0	0	0	*0*	1	0	0	0	*1*
8:45 AM	0	0	2	2	*4*	0	0	0	0	*0*	1	0	0	0	*1*
Count Total	0	0	22	5	*27*	0	0	0	0	*0*	3	0	0	0	*3*
Peak Hr	**0**	**0**	**10**	**2**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

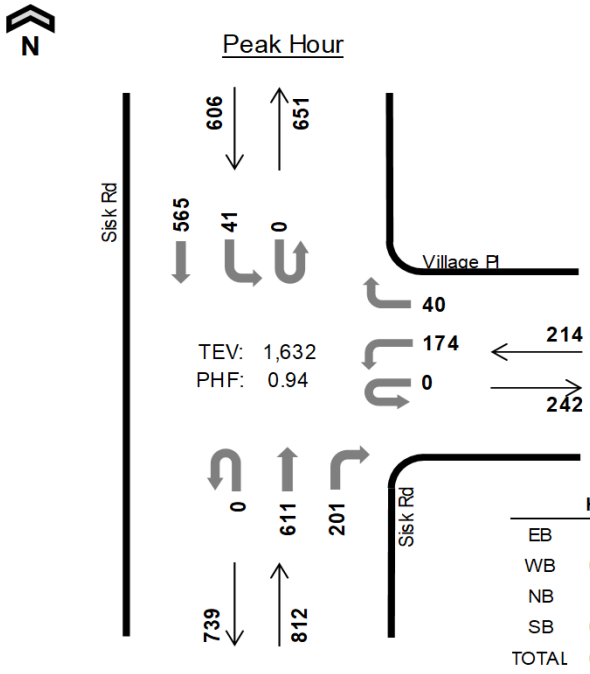
Interval Start	n/a				Village Pl				Sisk Rd				Sisk Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**1**	**0**	**6**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	11
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**4**	**12**
8:15 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	15
8:30 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	4	13
8:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4	16
Count Total	0	0	0	0	0	0	0	0	0	0	22	0	0	0	5	0	27	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	**0**	**0**	**0**	**2**	**0**	**12**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	n/a			Village Pl			Sisk Rd			Sisk Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

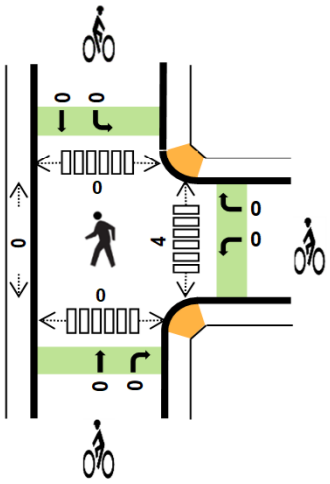
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Sisk Rd
Village Pl



Date: 05-07-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM

	HV %:	PHF
EB	-	-
WB	0.5%	0.82
NB	1.1%	0.90
SB	0.3%	0.92
TOTAL	0.7%	0.94



Two-Hour Count Summaries

Interval Start		n/a				Village Pl				Sisk Rd				Sisk Rd				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	0	0	0	0	34	0	6	0	0	145	47	0	6	155	0	393	0
4:15 PM		0	0	0	0	0	46	0	11	0	0	138	36	0	8	157	0	396	0
4:30 PM		0	0	0	0	0	53	0	12	0	0	169	49	0	12	127	0	422	0
4:45 PM		0	0	0	0	0	37	0	8	0	0	144	41	0	6	117	0	353	1,564
5:00 PM		**0**	**0**	**0**	**0**	**0**	**38**	**0**	**13**	**0**	**0**	**156**	**54**	**0**	**11**	**146**	**0**	**418**	1,589
5:15 PM		**0**	**0**	**0**	**0**	**0**	**46**	**0**	**7**	**0**	**0**	**159**	**29**	**0**	**10**	**147**	**0**	**398**	1,591
5:30 PM		**0**	**0**	**0**	**0**	**0**	**37**	**0**	**8**	**0**	**0**	**169**	**57**	**0**	**9**	**156**	**0**	**436**	1,605
5:45 PM		**0**	**0**	**0**	**0**	**0**	**53**	**0**	**12**	**0**	**0**	**127**	**61**	**0**	**11**	**116**	**0**	**380**	**1,632**
Count Total		0	0	0	0	0	344	0	77	0	0	1,207	374	0	73	1,121	0	3,196	0
Peak Hour	**All**	**0**	**0**	**0**	**0**	**0**	**174**	**0**	**40**	**0**	**0**	**611**	**201**	**0**	**41**	**565**	**0**	**1,632**	**0**
	HV	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**2**	**0**	**12**	**0**
	HV%	**-**	**-**	**-**	**-**	**-**	**1%**	**-**	**0%**	**-**	**-**	**1%**	**0%**	**-**	**0%**	**0%**	**-**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	4	2	*6*	0	0	0	1	*1*	0	0	0	0	*0*
4:15 PM	0	0	3	3	*6*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	0	0	6	0	*6*	0	0	0	0	*0*	2	0	0	0	*2*
4:45 PM	0	0	3	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	**0**	**0**	**3**	**1**	***4***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	*1*
5:15 PM	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:30 PM	**0**	**0**	**5**	**0**	***5***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**0**	*2*
5:45 PM	**0**	**1**	**0**	**1**	***2***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	***1***
Count Total	0	1	25	7	*33*	0	0	0	1	*1*	6	0	0	0	*6*
Peak Hr	**0**	**1**	**9**	**2**	***12***	**0**	**0**	**0**	**0**	***0***	**4**	**0**	**0**	**0**	***4***

Two-Hour Count Summaries - Heavy Vehicles

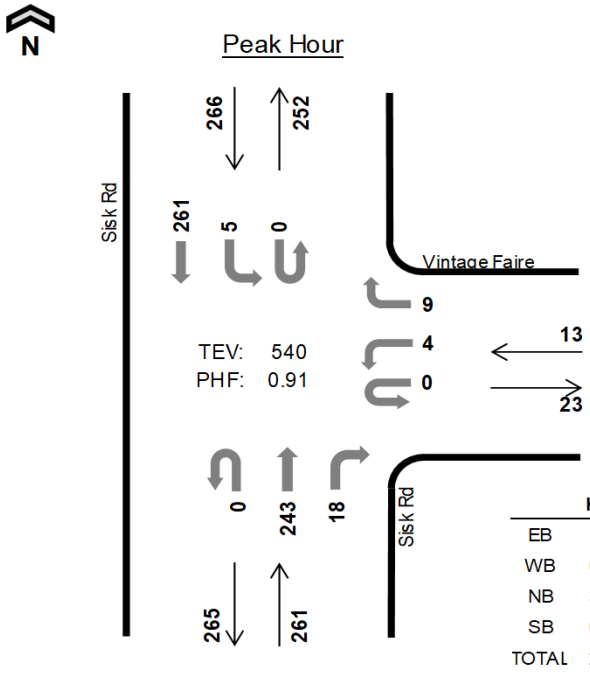
Interval Start	n/a				Village Pl				Sisk Rd				Sisk Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	2	0	6	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	6	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	6	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	21
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**4**	19
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	14
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**5**	13
5:45 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**12**
Count Total	0	0	0	0	0	1	0	0	0	0	25	0	0	0	7	0	33	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**2**	**0**	**12**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	n/a			Village Pl			Sisk Rd			Sisk Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	1	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

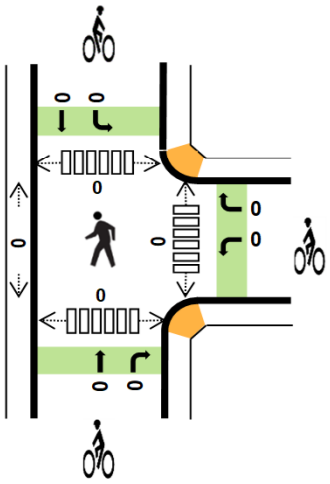
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Sisk Rd
Vintage Faire



Date: 05-07-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM

	HV %:	PHF
EB	-	-
WB	0.0%	0.81
NB	3.8%	0.74
SB	0.8%	0.84
TOTAL	2.2%	0.91



Two-Hour Count Summaries

Interval Start		n/a				Vintage Faire				Sisk Rd				Sisk Rd				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	0	0	0	0	0	2	0	0	42	10	0	1	32	0	87	0
7:15 AM		**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**51**	**5**	**0**	**1**	**61**	**0**	**120**	0
7:30 AM		**0**	**0**	**0**	**0**	**0**	**1**	**0**	**3**	**0**	**0**	**85**	**3**	**0**	**0**	**56**	**0**	**148**	0
7:45 AM		**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**57**	**4**	**0**	**2**	**77**	**0**	**144**	499
8:00 AM		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**50**	**6**	**0**	**2**	**67**	**0**	**128**	**540**
8:15 AM		0	0	0	0	0	1	0	2	0	0	52	2	0	0	55	0	112	532
8:30 AM		0	0	0	0	0	0	0	3	0	0	57	9	0	2	59	0	130	514
8:45 AM		0	0	0	0	0	0	0	3	0	0	74	10	0	2	47	0	136	506
Count Total		0	0	0	0	0	5	0	19	0	0	468	49	0	10	454	0	1,005	0
Peak Hour	**All**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**9**	**0**	**0**	**243**	**18**	**0**	**5**	**261**	**0**	**540**	**0**
	HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**7**	**0**	**0**	**2**	**0**	**12**	**0**
	HV%	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**0%**	**-**	**-**	**1%**	**39%**	**-**	**0%**	**1%**	**-**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	3	1	*4*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:30 AM	**0**	**0**	**5**	**1**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:45 AM	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**0**	**0**	**3**	**1**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:15 AM	0	0	3	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	0	1	4	1	*6*	0	0	0	0	*0*	3	0	0	0	*3*
8:45 AM	0	0	2	2	*4*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	0	1	22	6	*29*	0	0	0	0	*0*	3	0	0	0	*3*
Peak Hr	**0**	**0**	**10**	**2**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

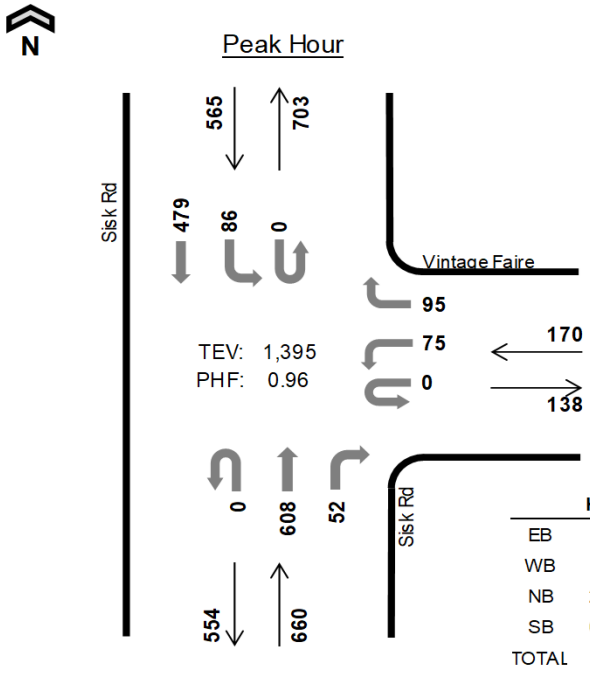
Interval Start	n/a				Vintage Faire				Sisk Rd				Sisk Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	1	2	0	0	1	0	4	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**3**	**0**	**0**	**1**	**0**	**6**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	12
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**1**	**0**	**4**	**12**
8:15 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	14
8:30 AM	0	0	0	0	0	0	0	1	0	0	0	4	0	0	1	0	6	14
8:45 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	4	17
Count Total	0	0	0	0	0	0	0	1	0	0	8	14	0	0	6	0	29	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**7**	**0**	**0**	**2**	**0**	**12**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	n/a			Vintage Faire			Sisk Rd			Sisk Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

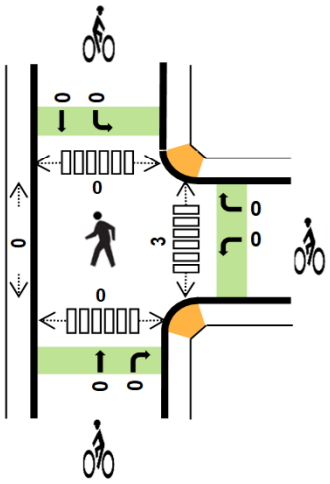
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Sisk Rd
Vintage Faire



Date: 05-07-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM

	HV %:	PHF
EB	-	-
WB	1.8%	0.79
NB	2.1%	0.94
SB	0.4%	0.91
TOTAL	1.4%	0.96



Two-Hour Count Summaries

Interval Start	n/a				Vintage Faire				Sisk Rd				Sisk Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	27	0	21	0	0	127	16	0	25	123	0	339	0
4:15 PM	0	0	0	0	0	22	0	30	0	0	128	21	0	17	139	0	357	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**21**	**0**	**33**	**0**	**0**	**159**	**16**	**0**	**18**	**115**	**0**	**362**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**23**	**0**	**22**	**0**	**0**	**140**	**12**	**0**	**28**	**93**	**0**	**318**	1,376
5:00 PM	**0**	**0**	**0**	**0**	**0**	**12**	**0**	**18**	**0**	**0**	**154**	**14**	**0**	**12**	**144**	**0**	**354**	1,391
5:15 PM	**0**	**0**	**0**	**0**	**0**	**19**	**0**	**22**	**0**	**0**	**155**	**10**	**0**	**28**	**127**	**0**	**361**	**1,395**
5:30 PM	0	0	0	0	0	29	0	22	0	0	144	19	0	18	127	0	359	1,392
5:45 PM	0	0	0	0	0	19	0	30	0	0	123	18	0	14	98	0	302	1,376
Count Total	0	0	0	0	0	172	0	198	0	0	1,130	126	0	160	966	0	2,752	0
Peak Hour All	**0**	**0**	**0**	**0**	**0**	**75**	**0**	**95**	**0**	**0**	**608**	**52**	**0**	**86**	**479**	**0**	**1,395**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**4**	**10**	**0**	**1**	**1**	**0**	**19**	**0**
Peak Hour HV%	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**3%**	**-**	**-**	**1%**	**19%**	**-**	**1%**	**0%**	**-**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	1	4	2	*7*	0	0	0	1	*1*	0	0	0	0	*0*
4:15 PM	0	1	3	4	*8*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	**0**	**3**	**6**	**0**	***9***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**0**	*2*
4:45 PM	**0**	**0**	**3**	**1**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**0**	**0**	**4**	**1**	***5***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	*1*
5:15 PM	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:30 PM	0	0	5	0	*5*	0	0	0	0	*0*	2	0	0	0	*2*
5:45 PM	0	0	0	1	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	0	5	26	9	*40*	0	0	0	1	*1*	5	0	0	0	*5*
Peak Hr	**0**	**3**	**14**	**2**	***19***	**0**	**0**	**0**	**0**	***0***	**3**	**0**	**0**	**0**	***3***

Two-Hour Count Summaries - Heavy Vehicles

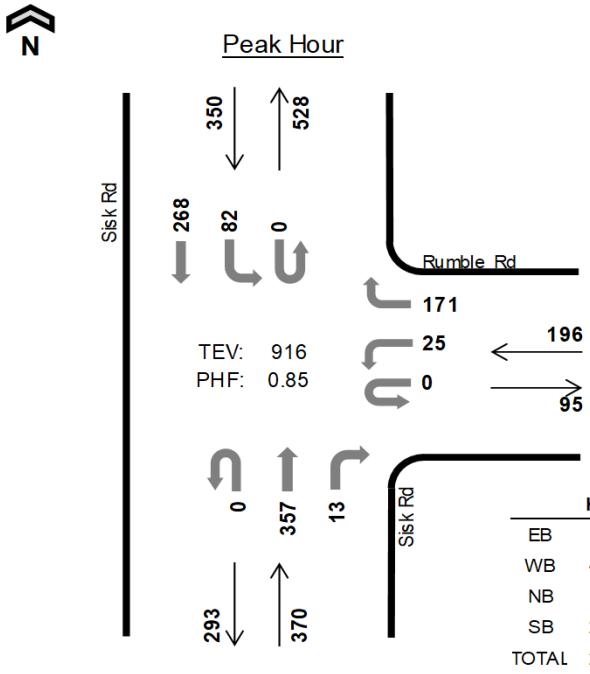
Interval Start	n/a				Vintage Faire				Sisk Rd				Sisk Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	1	0	0	0	0	0	4	0	0	2	0	7	0
4:15 PM	0	0	0	0	0	0	0	1	0	0	1	2	0	1	3	0	8	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**2**	**4**	**0**	**0**	**0**	**0**	**9**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**1**	**0**	**0**	**4**	28
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**0**	**0**	**1**	**0**	**5**	26
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**19**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	5	15
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	12
Count Total	0	0	0	0	0	1	0	4	0	0	5	21	0	2	7	0	40	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**4**	**10**	**0**	**1**	**1**	**0**	**19**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	n/a			Vintage Faire			Sisk Rd			Sisk Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	1	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

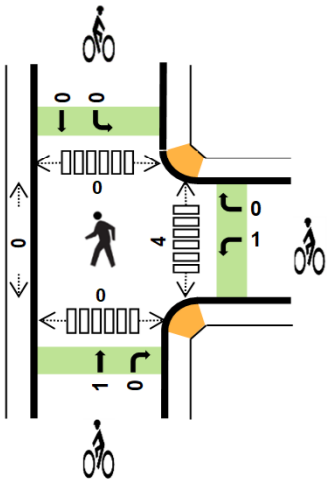
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Sisk Rd
Rumble Rd



Date: 05-08-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM

	HV %:	PHF
EB	-	-
WB	4.1%	0.89
NB	1.9%	0.76
SB	2.3%	0.90
TOTAL	2.5%	0.85



Two-Hour Count Summaries

Interval Start	n/a				Rumble Rd				Sisk Rd				Sisk Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	2	0	32	0	0	54	1	0	4	49	0	142	0
7:15 AM	0	0	0	0	0	1	0	36	0	0	75	0	0	9	55	0	176	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**49**	**0**	**0**	**83**	**3**	**0**	**16**	**62**	**0**	**219**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**8**	**0**	**46**	**0**	**0**	**118**	**4**	**0**	**16**	**77**	**0**	**269**	806
8:00 AM	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**40**	**0**	**0**	**79**	**3**	**0**	**24**	**58**	**0**	**211**	875
8:15 AM	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**36**	**0**	**0**	**77**	**3**	**0**	**26**	**71**	**0**	**217**	**916**
8:30 AM	0	0	0	0	0	7	0	24	0	0	51	5	0	30	74	0	191	888
8:45 AM	0	0	0	0	0	5	0	38	0	0	83	4	0	15	68	0	213	832
Count Total	0	0	0	0	0	40	0	301	0	0	620	23	0	140	514	0	1,638	0
Peak Hour All	**0**	**0**	**0**	**0**	**0**	**25**	**0**	**171**	**0**	**0**	**357**	**13**	**0**	**82**	**268**	**0**	**916**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**7**	**0**	**0**	**6**	**1**	**0**	**2**	**6**	**0**	**23**	**0**
Peak Hour HV%	**-**	**-**	**-**	**-**	**-**	**4%**	**-**	**4%**	**-**	**-**	**2%**	**8%**	**-**	**2%**	**2%**	**-**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	1	2	*3*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	0	0	2	2	*4*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	**0**	**2**	**1**	**1**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:45 AM	**0**	**2**	**1**	**1**	***4***	**0**	**1**	**0**	**0**	***1***	**1**	**0**	**0**	**0**	*1*
8:00 AM	**0**	**2**	**2**	**1**	***5***	**0**	**0**	**1**	**0**	***1***	**1**	**0**	**0**	**0**	*1*
8:15 AM	**0**	**2**	**3**	**5**	***10***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**0**	***2***
8:30 AM	0	3	2	1	*6*	0	0	0	0	*0*	1	0	0	0	*1*
8:45 AM	0	0	2	4	*6*	0	0	1	0	*1*	0	0	0	0	*0*
Count Total	0	11	14	17	*42*	0	1	2	0	*3*	5	0	0	0	*5*
Peak Hr	**0**	**8**	**7**	**8**	***23***	**0**	**1**	**1**	**0**	***2***	**4**	**0**	**0**	**0**	***4***

Two-Hour Count Summaries - Heavy Vehicles

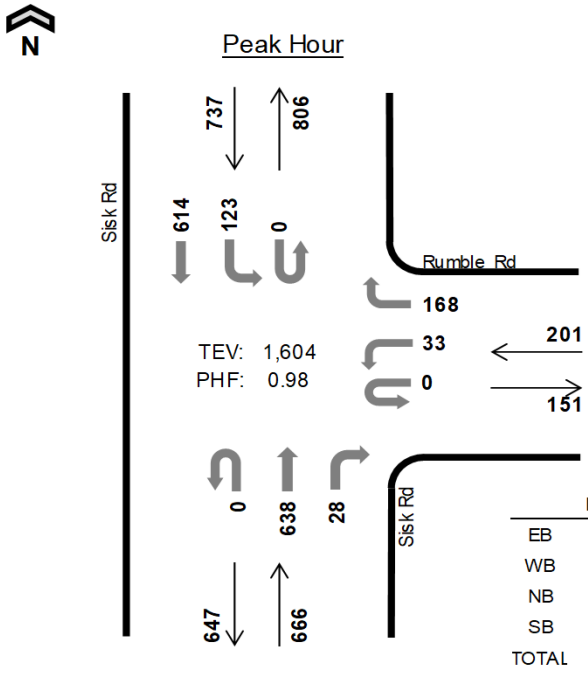
Interval Start	n/a				Rumble Rd				Sisk Rd				Sisk Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	3	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**4**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**4**	15
8:00 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**0**	**5**	17
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**3**	**0**	**0**	**2**	**3**	**0**	**10**	**23**
8:30 AM	0	0	0	0	0	1	0	2	0	0	2	0	0	1	0	0	6	25
8:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	4	0	6	27
Count Total	0	0	0	0	0	2	0	9	0	0	13	1	0	3	14	0	42	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**7**	**0**	**0**	**6**	**1**	**0**	**2**	**6**	**0**	**23**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	n/a			Rumble Rd			Sisk Rd			Sisk Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:45 AM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	1
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	2
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	1	2
Count Total	0	0	0	1	0	0	0	2	0	0	0	0	3	0
Peak Hour	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**0**

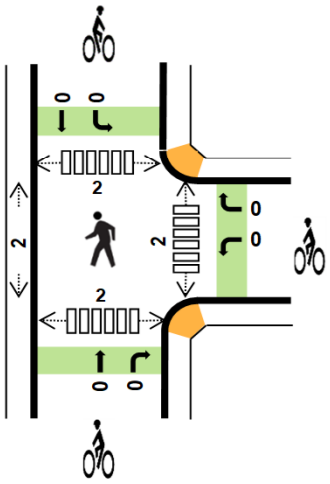
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Sisk Rd
Rumble Rd



	HV %:	PHF
EB	-	-
WB	0.5%	0.85
NB	1.2%	0.90
SB	0.7%	0.96
TOTAL	0.9%	0.98

Date: 05-08-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM



Two-Hour Count Summaries

Interval Start		n/a				Rumble Rd				Sisk Rd				Sisk Rd				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	0	0	0	0	14	0	39	0	0	157	10	0	26	158	0	404	0
4:15 PM		0	0	0	0	0	11	0	40	0	0	147	11	0	19	175	0	403	0
4:30 PM		**0**	**0**	**0**	**0**	**0**	**11**	**0**	**48**	**0**	**0**	**154**	**8**	**0**	**45**	**138**	**0**	**404**	0
4:45 PM		**0**	**0**	**0**	**0**	**0**	**9**	**0**	**50**	**0**	**0**	**151**	**10**	**0**	**27**	**144**	**0**	**391**	1,602
5:00 PM		**0**	**0**	**0**	**0**	**0**	**6**	**0**	**44**	**0**	**0**	**153**	**6**	**0**	**27**	**164**	**0**	**400**	1,598
5:15 PM		**0**	**0**	**0**	**0**	**0**	**7**	**0**	**26**	**0**	**0**	**180**	**4**	**0**	**24**	**168**	**0**	**409**	**1,604**
5:30 PM		0	0	0	0	0	7	0	35	0	0	144	8	0	23	158	0	375	1,575
5:45 PM		0	0	0	0	0	5	0	33	0	0	139	4	0	32	142	0	355	1,539
Count Total		0	0	0	0	0	70	0	315	0	0	1,225	61	0	223	1,247	0	3,141	0
Peak Hour	**All**	**0**	**0**	**0**	**0**	**0**	**33**	**0**	**168**	**0**	**0**	**638**	**28**	**0**	**123**	**614**	**0**	**1,604**	**0**
	HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**8**	**0**	**0**	**0**	**5**	**0**	**14**	**0**
	HV%	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**1%**	**-**	**-**	**1%**	**0%**	**-**	**0%**	**1%**	**-**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	1	6	2	*9*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	0	2	0	4	*6*	0	0	0	0	*0*	2	1	1	0	*4*
4:30 PM	**0**	**1**	**1**	**1**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**0**	**0**	**3**	**1**	***4***	**0**	**0**	**0**	**0**	***0***	**2**	**1**	**0**	**1**	*4*
5:00 PM	**0**	**0**	**3**	**1**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**2**	**1**	*4*
5:15 PM	**0**	**0**	**1**	**2**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:30 PM	0	1	2	1	*4*	0	0	0	0	*0*	0	0	1	0	*1*
5:45 PM	0	0	0	3	*3*	0	0	0	0	*0*	1	0	0	0	*1*
Count Total	0	5	16	15	*36*	0	0	0	0	*0*	5	3	4	2	*14*
Peak Hr	**0**	**1**	**8**	**5**	***14***	**0**	**0**	**0**	**0**	***0***	**2**	**2**	**2**	**2**	***8***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	n/a				Rumble Rd				Sisk Rd				Sisk Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	1	0	0	6	0	0	0	2	0	9	0
4:15 PM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	4	0	6	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**3**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**4**	22
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**4**	17
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**3**	**14**
5:30 PM	0	0	0	0	0	0	0	1	0	0	2	0	0	0	1	0	4	15
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	14
Count Total	0	0	0	0	0	0	0	5	0	0	16	0	0	0	15	0	36	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**8**	**0**	**0**	**0**	**5**	**0**	**14**	**0**

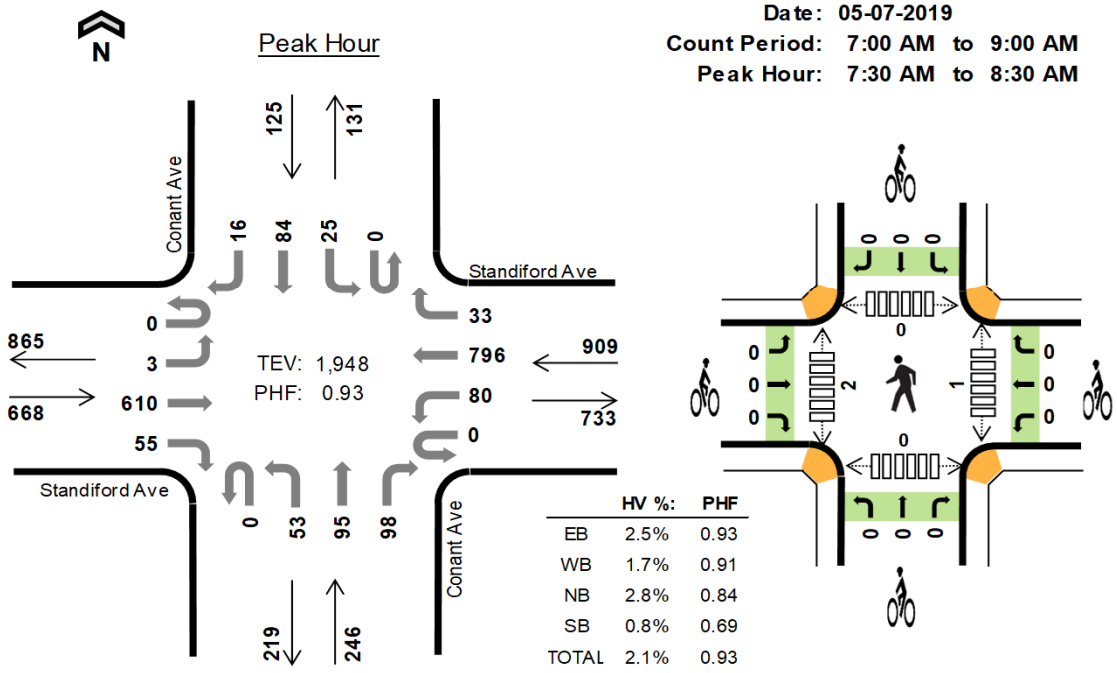
Two-Hour Count Summaries - Bikes

Interval Start	n/a			Rumble Rd			Sisk Rd			Sisk Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Conant Ave
Standiford Ave

Date: 05-07-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM



Two-Hour Count Summaries

Interval Start	Standiford Ave Eastbound				Standiford Ave Westbound				Conant Ave Northbound				Conant Ave Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	1	0	72	3	0	8	177	6	0	3	4	8	0	3	6	2	293	0
7:15 AM	1	0	123	13	0	12	191	3	0	12	7	13	0	6	12	5	398	0
7:30 AM	**0**	**1**	**127**	**13**	**0**	**17**	**210**	**5**	**0**	**14**	**21**	**17**	**0**	**8**	**13**	**7**	**453**	0
7:45 AM	**0**	**0**	**166**	**14**	**0**	**22**	**187**	**7**	**0**	**9**	**19**	**30**	**0**	**6**	**36**	**3**	**499**	1,643
8:00 AM	**0**	**2**	**154**	**16**	**0**	**21**	**219**	**11**	**0**	**14**	**35**	**24**	**0**	**4**	**22**	**2**	**524**	1,874
8:15 AM	**0**	**0**	**163**	**12**	**0**	**20**	**180**	**10**	**0**	**16**	**20**	**27**	**0**	**7**	**13**	**4**	**472**	**1,948**
8:30 AM	0	3	135	6	0	10	180	8	0	6	15	18	0	9	17	4	411	1,906
8:45 AM	0	0	139	5	0	9	175	9	0	3	14	12	0	10	17	2	395	1,802
Count Total	2	6	1,079	82	0	119	1,519	59	0	77	135	149	0	53	136	29	3,445	0
Peak Hour All	**0**	**3**	**610**	**55**	**0**	**80**	**796**	**33**	**0**	**53**	**95**	**98**	**0**	**25**	**84**	**16**	**1,948**	**0**
Peak Hour HV	**0**	**0**	**13**	**4**	**0**	**2**	**13**	**0**	**0**	**3**	**1**	**3**	**0**	**0**	**1**	**0**	**40**	**0**
Peak Hour HV%	**-**	**0%**	**2%**	**7%**	**-**	**3%**	**2%**	**0%**	**-**	**6%**	**1%**	**3%**	**-**	**0%**	**1%**	**0%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	2	2	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	6	2	1	1	*10*	0	0	0	0	*0*	2	0	0	0	*2*
7:30 AM	**4**	**5**	**1**	**0**	***10***	**0**	**0**	**0**	**0**	***0***	**1**	**2**	**0**	**0**	*3*
7:45 AM	**6**	**4**	**2**	**1**	***13***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**2**	**3**	**2**	**0**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**5**	**3**	**2**	**0**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:30 AM	7	1	0	0	*8*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	6	2	1	0	*9*	0	1	0	0	*1*	0	0	0	0	*0*
Count Total	38	22	9	2	*71*	0	1	0	0	*1*	3	2	0	0	*5*
Peak Hour	**17**	**15**	**7**	**1**	***40***	**0**	**0**	**0**	**0**	***0***	**1**	**2**	**0**	**0**	***3***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Standiford Ave				Standiford Ave				Conant Ave				Conant Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0	4	0
7:15 AM	0	0	6	0	0	0	2	0	0	1	0	0	0	0	1	0	10	0
7:30 AM	**0**	**0**	**3**	**1**	**0**	**0**	**5**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	0
7:45 AM	**0**	**0**	**4**	**2**	**0**	**2**	**2**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**0**	**13**	37
8:00 AM	**0**	**0**	**1**	**1**	**0**	**0**	**3**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**7**	40
8:15 AM	**0**	**0**	**5**	**0**	**0**	**0**	**3**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**10**	**40**
8:30 AM	0	0	6	1	0	0	1	0	0	0	0	0	0	0	0	0	8	38
8:45 AM	0	0	6	0	0	0	2	0	0	1	0	0	0	0	0	0	9	34
Count Total	0	0	32	6	0	2	19	1	0	5	1	3	0	0	2	0	71	0
Peak Hour	**0**	**0**	**13**	**4**	**0**	**2**	**13**	**0**	**0**	**3**	**1**	**3**	**0**	**0**	**1**	**0**	**40**	**0**

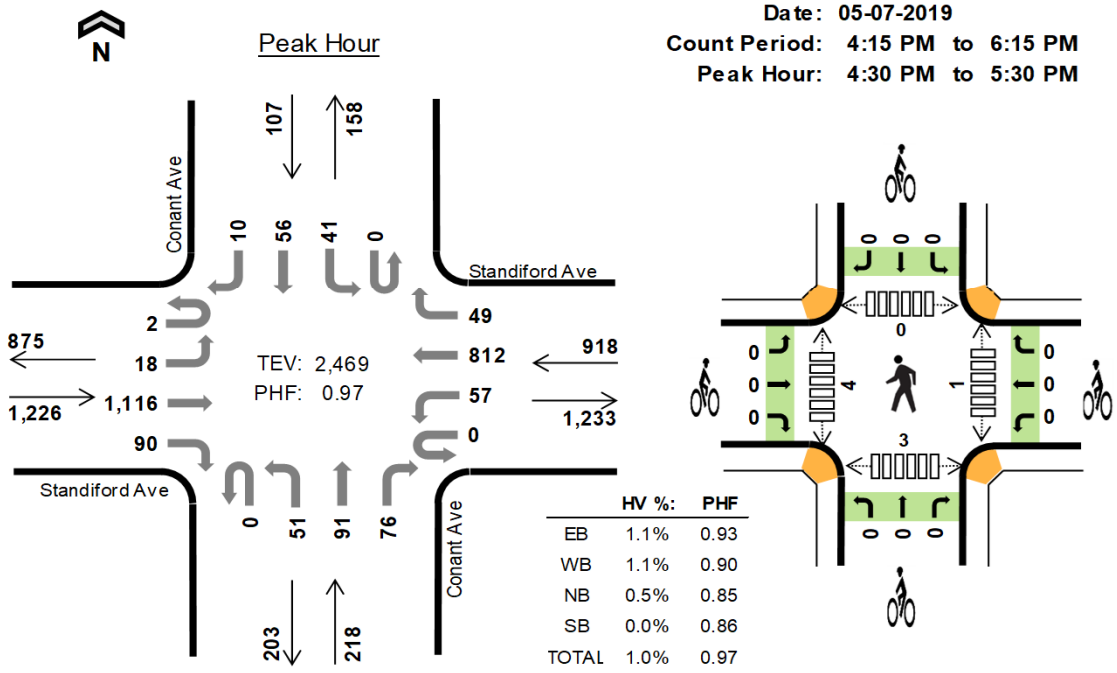
Two-Hour Count Summaries - Bikes

Interval Start	Standiford Ave			Standiford Ave			Conant Ave			Conant Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	1
Count Total	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Conant Ave
Standiford Ave

Date: 05-07-2019
Count Period: 4:15 PM to 6:15 PM
Peak Hour: 4:30 PM to 5:30 PM



Two-Hour Count Summaries

Interval Start	Standiford Ave Eastbound				Standiford Ave Westbound				Conant Ave Northbound				Conant Ave Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM	0	3	239	17	0	4	193	17	0	21	20	16	0	11	16	2	559	0
4:30 PM	**0**	**6**	**296**	**28**	**0**	**10**	**170**	**16**	**0**	**11**	**27**	**12**	**0**	**7**	**15**	**3**	**601**	0
4:45 PM	**1**	**4**	**280**	**20**	**0**	**17**	**204**	**11**	**0**	**12**	**19**	**19**	**0**	**6**	**13**	**3**	**609**	0
5:00 PM	**1**	**3**	**288**	**23**	**0**	**9**	**215**	**12**	**0**	**13**	**21**	**20**	**0**	**15**	**11**	**3**	**634**	2,403
5:15 PM	**0**	**5**	**252**	**19**	**0**	**21**	**223**	**10**	**0**	**15**	**24**	**25**	**0**	**13**	**17**	**1**	**625**	**2,469**
5:30 PM	0	7	248	26	0	5	186	9	0	11	19	17	0	5	27	3	563	2,431
5:45 PM	1	5	255	30	0	9	186	19	0	8	21	19	0	6	19	3	581	2,403
6:00 PM	1	3	221	16	0	14	171	13	0	6	19	15	0	12	10	0	501	2,270
Count Total	4	36	2,079	179	0	89	1,548	107	0	97	170	143	0	75	128	18	4,673	0
Peak Hour All	**2**	**18**	**1,116**	**90**	**0**	**57**	**812**	**49**	**0**	**51**	**91**	**76**	**0**	**41**	**56**	**10**	**2,469**	**0**
Peak Hour HV	**0**	**0**	**10**	**3**	**0**	**0**	**9**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**24**	**0**
Peak Hour HV%	**0%**	**0%**	**1%**	**3%**	**-**	**0%**	**1%**	**2%**	**-**	**2%**	**0%**	**0%**	**-**	**0%**	**0%**	**0%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:15 PM	4	3	1	0	*8*	0	0	0	0	*0*	0	0	0	2	*2*
4:30 PM	**2**	**3**	**0**	**0**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	*1*
4:45 PM	**6**	**4**	**1**	**0**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**2**	**2**	**0**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**3**	**0**	**2**	*5*
5:15 PM	**3**	**1**	**0**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**1**	***2***
5:30 PM	1	3	1	0	*5*	0	0	0	0	*0*	0	1	0	0	*1*
5:45 PM	2	2	1	0	*5*	0	0	0	0	*0*	0	2	0	0	*2*
6:00 PM	1	3	0	0	*4*	0	1	0	0	*1*	0	0	0	0	*0*
Count Total	21	21	4	0	*46*	0	1	0	0	*1*	1	7	0	5	*13*
Peak Hour	**13**	**10**	**1**	**0**	***24***	**0**	**0**	**0**	**0**	***0***	**1**	**4**	**0**	**3**	***8***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Standiford Ave				Standiford Ave				Conant Ave				Conant Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM	0	0	4	0	0	0	3	0	0	1	0	0	0	0	0	0	8	0
4:30 PM	**0**	**0**	**1**	**1**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	0
4:45 PM	**0**	**0**	**5**	**1**	**0**	**0**	**4**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	0
5:00 PM	**0**	**0**	**1**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	28
5:15 PM	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**24**
5:30 PM	0	0	0	1	0	0	3	0	0	1	0	0	0	0	0	0	5	24
5:45 PM	0	0	1	1	0	0	2	0	0	1	0	0	0	0	0	0	5	18
6:00 PM	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	4	18
Count Total	0	0	16	5	0	0	20	1	0	4	0	0	0	0	0	0	46	0
Peak Hour	**0**	**0**	**10**	**3**	**0**	**0**	**9**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**24**	**0**

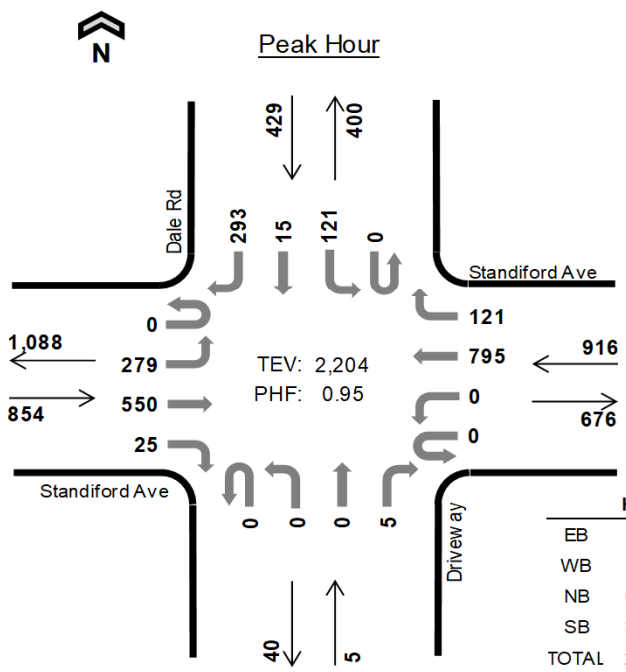
Two-Hour Count Summaries - Bikes

Interval Start	Standiford Ave			Standiford Ave			Conant Ave			Conant Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	1
Count Total	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

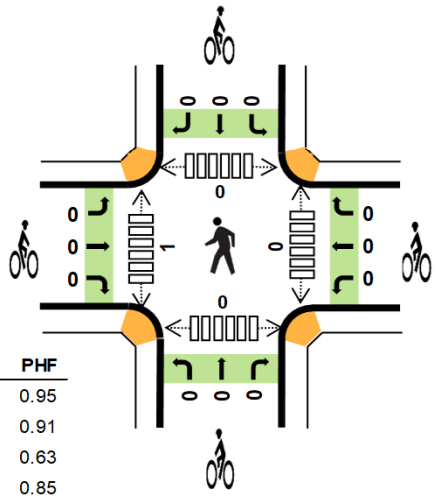
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Dale Rd
Standiford Ave

Date: 05-07-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM



	HV %:	PHF
EB	1.6%	0.95
WB	1.5%	0.91
NB	0.0%	0.63
SB	3.7%	0.85
TOTAL	2.0%	0.95



Two-Hour Count Summaries

Interval Start	Standiford Ave Eastbound				Standiford Ave Westbound				Driveway Northbound				Dale Rd Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	33	66	3	0	0	188	17	0	0	0	1	0	9	3	62	382	0
7:15 AM	0	63	110	9	0	0	211	30	0	0	0	2	0	19	2	73	519	0
7:30 AM	**0**	**68**	**125**	**3**	**0**	**0**	**229**	**23**	**0**	**0**	**0**	**1**	**0**	**28**	**3**	**72**	**552**	0
7:45 AM	**0**	**65**	**143**	**5**	**0**	**0**	**199**	**23**	**0**	**0**	**0**	**2**	**0**	**29**	**3**	**52**	**521**	1,974
8:00 AM	**0**	**69**	**147**	**5**	**0**	**0**	**206**	**37**	**0**	**0**	**0**	**2**	**0**	**35**	**2**	**79**	**582**	2,174
8:15 AM	**0**	**77**	**135**	**12**	**0**	**0**	**161**	**38**	**0**	**0**	**0**	**0**	**0**	**29**	**7**	**90**	**549**	**2,204**
8:30 AM	0	79	104	4	0	0	162	42	0	0	0	4	0	33	4	75	507	2,159
8:45 AM	0	84	109	9	0	0	135	42	0	0	0	1	0	25	5	69	479	2,117
Count Total	0	538	939	50	0	0	1,491	252	0	0	0	13	0	207	29	572	4,091	0
Peak Hour All	**0**	**279**	**550**	**25**	**0**	**0**	**795**	**121**	**0**	**0**	**0**	**5**	**0**	**121**	**15**	**293**	**2,204**	**0**
Peak Hour HV	**0**	**6**	**8**	**0**	**0**	**0**	**13**	**1**	**0**	**0**	**0**	**0**	**0**	**8**	**1**	**7**	**44**	**0**
Peak Hour HV%	**-**	**2%**	**1%**	**0%**	**-**	**-**	**2%**	**1%**	**-**	**-**	**-**	**0%**	**-**	**7%**	**7%**	**2%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	4	1	0	2	*7*	0	0	0	0	*0*	0	0	0	1	*1*
7:15 AM	4	4	0	5	*13*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	**6**	**3**	**0**	**3**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:45 AM	**5**	**3**	**0**	**5**	***13***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	*1*
8:00 AM	**1**	**4**	**0**	**2**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**2**	**4**	**0**	**6**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:30 AM	1	3	0	8	*12*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	1	4	0	9	*14*	0	1	0	0	*1*	1	0	0	1	*2*
Count Total	24	26	0	40	*90*	0	1	0	0	*1*	1	1	0	2	*4*
Peak Hour	**14**	**14**	**0**	**16**	***44***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	***1***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Standiford Ave				Standiford Ave				Driveway				Dale Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	2	2	0	0	0	1	0	0	0	0	0	0	2	0	0	7	0
7:15 AM	0	1	3	0	0	0	3	1	0	0	0	0	0	2	0	3	13	0
7:30 AM	**0**	**2**	**4**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**12**	0
7:45 AM	**0**	**2**	**3**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**2**	**13**	45
8:00 AM	**0**	**1**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**7**	45
8:15 AM	**0**	**1**	**1**	**0**	**0**	**0**	**3**	**1**	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**2**	**12**	**44**
8:30 AM	0	0	1	0	0	0	2	1	0	0	0	0	0	6	0	2	12	44
8:45 AM	0	1	0	0	0	0	4	0	0	0	0	0	0	6	0	3	14	45
Count Total	0	10	14	0	0	0	23	3	0	0	0	0	0	24	1	15	90	0
Peak Hour	**0**	**6**	**8**	**0**	**0**	**0**	**13**	**1**	**0**	**0**	**0**	**0**	**0**	**8**	**1**	**7**	**44**	**0**

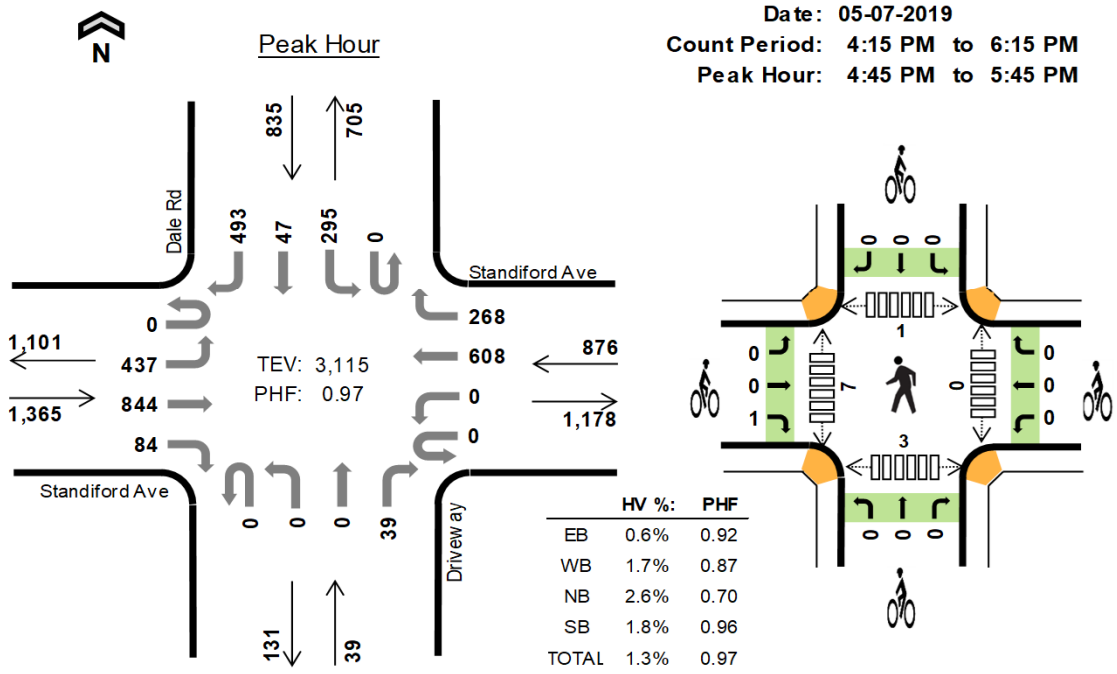
Two-Hour Count Summaries - Bikes

Interval Start	Standiford Ave			Standiford Ave			Driveway			Dale Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	1	1
Count Total	0	0	0	0	0	1	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Dale Rd
Standiford Ave

Date: 05-07-2019
Count Period: 4:15 PM to 6:15 PM
Peak Hour: 4:45 PM to 5:45 PM



Two-Hour Count Summaries

Interval Start		Standiford Ave Eastbound				Standiford Ave Westbound				Driveway Northbound				Dale Rd Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM		0	111	188	25	0	0	135	67	0	0	0	12	0	75	7	108	728	0
4:30 PM		0	101	231	18	0	0	122	67	0	0	0	16	0	83	11	109	758	0
4:45 PM		**0**	**127**	**223**	**22**	**0**	**0**	**134**	**63**	**0**	**0**	**0**	**13**	**0**	**61**	**7**	**130**	**780**	0
5:00 PM		**0**	**87**	**221**	**22**	**0**	**0**	**179**	**73**	**0**	**0**	**0**	**14**	**0**	**75**	**13**	**115**	**799**	3,065
5:15 PM		**0**	**118**	**189**	**19**	**0**	**0**	**146**	**72**	**0**	**0**	**0**	**3**	**0**	**88**	**12**	**117**	**764**	3,101
5:30 PM		**0**	**105**	**211**	**21**	**0**	**0**	**149**	**60**	**0**	**0**	**0**	**9**	**0**	**71**	**15**	**131**	**772**	**3,115**
5:45 PM		0	91	196	16	0	0	148	51	0	0	0	12	0	74	9	95	692	3,027
6:00 PM		0	78	174	14	0	0	120	53	0	0	0	5	0	65	10	106	625	2,853
Count Total		0	818	1,633	157	0	0	1,133	506	0	0	0	84	0	592	84	911	5,918	0
Peak Hour	**All**	**0**	**437**	**844**	**84**	**0**	**0**	**608**	**268**	**0**	**0**	**0**	**39**	**0**	**295**	**47**	**493**	**3,115**	**0**
	HV	**0**	**2**	**5**	**1**	**0**	**0**	**14**	**1**	**0**	**0**	**0**	**1**	**0**	**6**	**0**	**9**	**39**	**0**
	HV%	**-**	**0%**	**1%**	**1%**	**-**	**-**	**2%**	**0%**	**-**	**-**	**-**	**3%**	**-**	**2%**	**0%**	**2%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:15 PM	3	4	0	5	*12*	0	0	0	0	*0*	0	5	0	3	*8*
4:30 PM	2	2	0	3	*7*	0	0	0	0	*0*	0	4	3	3	*10*
4:45 PM	**3**	**6**	**0**	**6**	***15***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	*1*
5:00 PM	**3**	**3**	**0**	**3**	***9***	**1**	**0**	**0**	**0**	***1***	**0**	**1**	**0**	**0**	*1*
5:15 PM	**1**	**1**	**1**	**3**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**1**	**0**	*3*
5:30 PM	**1**	**5**	**0**	**3**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**3**	**0**	**3**	***6***
5:45 PM	0	2	0	2	*4*	0	0	0	0	*0*	0	1	2	1	*4*
6:00 PM	0	3	0	4	*7*	0	1	0	0	*1*	0	0	0	0	*0*
Count Total	13	26	1	29	*69*	1	1	0	0	*2*	0	17	6	10	*33*
Peak Hour	**8**	**15**	**1**	**15**	***39***	**1**	**0**	**0**	**0**	***1***	**0**	**7**	**1**	**3**	***11***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Standiford Ave				Standiford Ave				Driveway				Dale Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM	0	1	2	0	0	0	4	0	0	0	0	0	0	2	0	3	12	0
4:30 PM	0	0	1	1	0	0	2	0	0	0	0	0	0	2	0	1	7	0
4:45 PM	**0**	**1**	**2**	**0**	**0**	**0**	**5**	**1**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**3**	**15**	0
5:00 PM	**0**	**1**	**2**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**9**	43
5:15 PM	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**2**	**6**	37
5:30 PM	**0**	**0**	**0**	**1**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**9**	**39**
5:45 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	1	4	28
6:00 PM	0	0	0	0	0	0	3	0	0	0	0	0	0	1	0	3	7	26
Count Total	0	3	8	2	0	0	25	1	0	0	0	1	0	12	0	17	69	0
Peak Hour	**0**	**2**	**5**	**1**	**0**	**0**	**14**	**1**	**0**	**0**	**0**	**1**	**0**	**6**	**0**	**9**	**39**	**0**

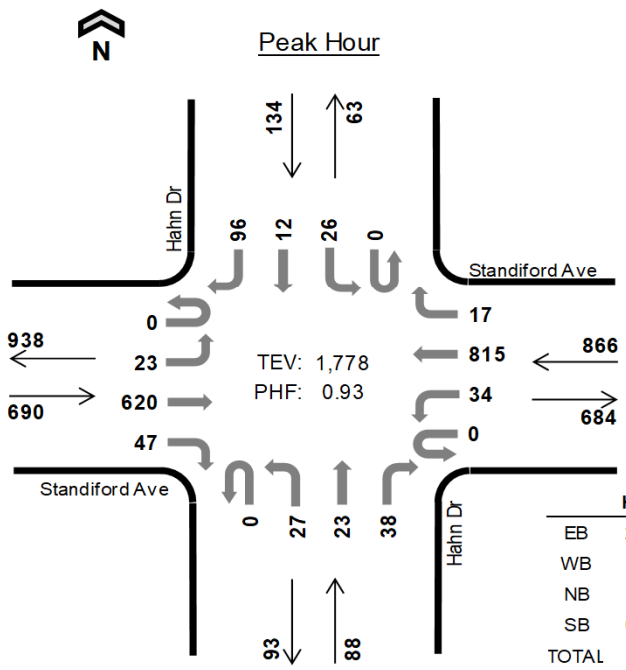
Two-Hour Count Summaries - Bikes

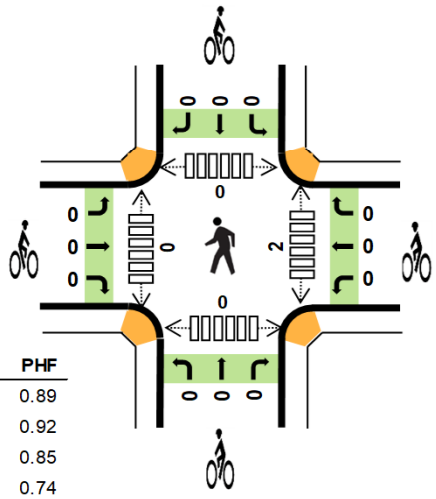
Interval Start	Standiford Ave			Standiford Ave			Driveway			Dale Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	1
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
6:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	1
Count Total	0	0	1	0	0	1	0	0	0	0	0	0	2	0
Peak Hour	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Hahn Dr
Standiford Ave

Date: 05-07-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM





	HV %:	PHF
EB	2.5%	0.89
WB	1.8%	0.92
NB	1.1%	0.85
SB	0.0%	0.74
TOTAL	1.9%	0.93

Two-Hour Count Summaries

Interval Start		Standiford Ave Eastbound				Standiford Ave Westbound				Hahn Dr Northbound				Hahn Dr Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	2	72	5	0	0	181	2	0	7	1	2	0	4	0	22	298	0
7:15 AM		0	4	132	2	1	1	210	4	0	7	7	7	0	2	4	24	405	0
7:30 AM		**0**	**3**	**142**	**5**	**0**	**6**	**225**	**4**	**0**	**9**	**1**	**9**	**0**	**6**	**2**	**37**	**449**	0
7:45 AM		**0**	**3**	**154**	**14**	**0**	**6**	**193**	**3**	**0**	**4**	**5**	**11**	**0**	**8**	**1**	**24**	**426**	1,578
8:00 AM		**0**	**15**	**164**	**15**	**0**	**11**	**217**	**3**	**0**	**9**	**8**	**9**	**0**	**7**	**3**	**16**	**477**	1,757
8:15 AM		**0**	**2**	**160**	**13**	**0**	**11**	**180**	**7**	**0**	**5**	**9**	**9**	**0**	**5**	**6**	**19**	**426**	**1,778**
8:30 AM		0	3	135	12	0	2	193	3	1	2	3	4	0	7	4	16	385	1,714
8:45 AM		0	6	132	4	0	4	167	6	0	3	5	2	0	2	5	11	347	1,635
Count Total		0	38	1,091	70	1	41	1,566	32	1	46	39	53	0	41	25	169	3,213	0
Peak Hour	**All**	**0**	**23**	**620**	**47**	**0**	**34**	**815**	**17**	**0**	**27**	**23**	**38**	**0**	**26**	**12**	**96**	**1,778**	**0**
	HV	**0**	**1**	**15**	**1**	**0**	**2**	**14**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**34**	**0**
	HV%	**-**	**4%**	**2%**	**2%**	**-**	**6%**	**2%**	**0%**	**-**	**0%**	**0%**	**3%**	**-**	**0%**	**0%**	**0%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	3	2	0	0	*5*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	7	1	1	0	*9*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	**4**	**6**	**0**	**0**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:45 AM	**5**	**2**	**1**	**0**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**4**	**4**	**0**	**0**	***8***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**0**	*2*
8:15 AM	**4**	**4**	**0**	**0**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:30 AM	7	1	0	1	*9*	0	0	0	0	*0*	1	1	1	1	*4*
8:45 AM	5	4	0	0	*9*	1	0	0	0	*1*	0	2	1	0	*3*
Count Total	39	24	2	1	*66*	1	0	0	0	*1*	3	3	2	1	*9*
Peak Hour	**17**	**16**	**1**	**0**	***34***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**0**	***2***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Standiford Ave				Standiford Ave				Hahn Dr				Hahn Dr				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	2	0	0	0	2	0	0	0	0	0	0	0	0	0	5	0
7:15 AM	0	0	6	1	0	0	1	0	0	1	0	0	0	0	0	0	9	0
7:30 AM	**0**	**0**	**3**	**1**	**0**	**2**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	0
7:45 AM	**0**	**0**	**5**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**8**	32
8:00 AM	**0**	**1**	**3**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	35
8:15 AM	**0**	**0**	**4**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**34**
8:30 AM	0	0	7	0	0	0	1	0	0	0	0	0	0	1	0	0	9	33
8:45 AM	0	0	5	0	0	0	4	0	0	0	0	0	0	0	0	0	9	34
Count Total	0	2	35	2	0	2	22	0	0	1	0	1	0	1	0	0	66	0
Peak Hour	**0**	**1**	**15**	**1**	**0**	**2**	**14**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**34**	**0**

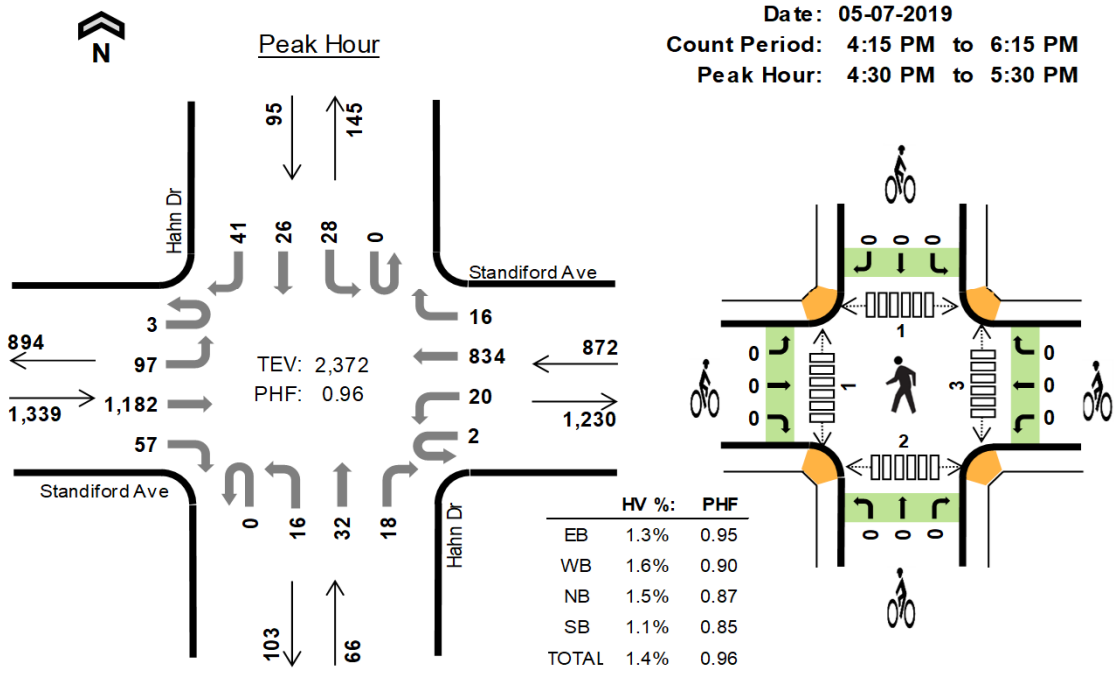
Two-Hour Count Summaries - Bikes

Interval Start	Standiford Ave			Standiford Ave			Hahn Dr			Hahn Dr			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	1	1
Count Total	0	0	1	0	0	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Hahn Dr
Standiford Ave

Date: 05-07-2019
Count Period: 4:15 PM to 6:15 PM
Peak Hour: 4:30 PM to 5:30 PM



Two-Hour Count Summaries

Interval Start		Standiford Ave Eastbound				Standiford Ave Westbound				Hahn Dr Northbound				Hahn Dr Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM		1	22	265	14	0	2	197	5	0	5	5	1	0	7	3	15	542	0
4:30 PM		**1**	**19**	**317**	**15**	**0**	**8**	**191**	**5**	**0**	**5**	**9**	**4**	**0**	**8**	**5**	**15**	**602**	0
4:45 PM		**2**	**24**	**303**	**13**	**0**	**5**	**184**	**4**	**0**	**5**	**13**	**1**	**0**	**4**	**6**	**11**	**575**	0
5:00 PM		**0**	**24**	**297**	**16**	**1**	**4**	**235**	**3**	**0**	**3**	**3**	**10**	**0**	**5**	**5**	**10**	**616**	2,335
5:15 PM		**0**	**30**	**265**	**13**	**1**	**3**	**224**	**4**	**0**	**3**	**7**	**3**	**0**	**11**	**10**	**5**	**579**	**2,372**
5:30 PM		0	25	279	21	0	2	198	7	0	8	4	3	0	8	7	8	570	2,340
5:45 PM		1	21	272	26	0	6	186	6	0	5	3	8	0	9	3	10	556	2,321
6:00 PM		0	12	236	17	0	5	170	3	0	4	6	5	0	8	4	8	478	2,183
Count Total		5	177	2,234	135	2	35	1,585	37	0	38	50	35	0	60	43	82	4,518	0
Peak Hour	**All**	**3**	**97**	**1,182**	**57**	**2**	**20**	**834**	**16**	**0**	**16**	**32**	**18**	**0**	**28**	**26**	**41**	**2,372**	**0**
	HV	**0**	**0**	**17**	**1**	**0**	**0**	**14**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**34**	**0**
	HV%	**0%**	**0%**	**1%**	**2%**	**0%**	**0%**	**2%**	**0%**	**-**	**0%**	**3%**	**0%**	**-**	**0%**	**4%**	**0%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:15 PM	4	4	0	0	*8*	0	0	0	0	*0*	0	1	0	0	*1*
4:30 PM	**3**	**4**	**1**	**0**	*8*	**0**	**0**	**0**	**0**	*0*	**1**	**1**	**1**	**0**	*3*
4:45 PM	**7**	**6**	**0**	**0**	*13*	**0**	**0**	**0**	**0**	*0*	**2**	**0**	**0**	**0**	*2*
5:00 PM	**5**	**3**	**0**	**1**	*9*	**0**	**0**	**0**	**0**	*0*	**0**	**0**	**0**	**0**	*0*
5:15 PM	**3**	**1**	**0**	**0**	*4*	**0**	**0**	**0**	**0**	*0*	**0**	**0**	**0**	**2**	*2*
5:30 PM	1	4	0	0	*5*	1	0	0	0	*1*	0	0	0	2	*2*
5:45 PM	2	2	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
6:00 PM	2	4	0	0	*6*	0	0	0	0	*0*	1	0	1	1	*3*
Count Total	27	28	1	1	*57*	1	0	0	0	*1*	4	2	2	5	*13*
Peak Hour	**18**	**14**	**1**	**1**	*34*	**0**	**0**	**0**	**0**	*0*	**3**	**1**	**1**	**2**	*7*

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Standiford Ave				Standiford Ave				Hahn Dr				Hahn Dr				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM	0	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	8	0
4:30 PM	**0**	**0**	**3**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**8**	0
4:45 PM	**0**	**0**	**7**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**13**	0
5:00 PM	**0**	**0**	**4**	**1**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**9**	38
5:15 PM	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**34**
5:30 PM	0	0	1	0	0	0	4	0	0	0	0	0	0	0	0	0	5	31
5:45 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	4	22
6:00 PM	0	0	2	0	0	0	4	0	0	0	0	0	0	0	0	0	6	19
Count Total	0	0	26	1	0	0	28	0	0	0	1	0	0	0	1	0	57	0
Peak Hour	**0**	**0**	**17**	**1**	**0**	**0**	**14**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**34**	**0**

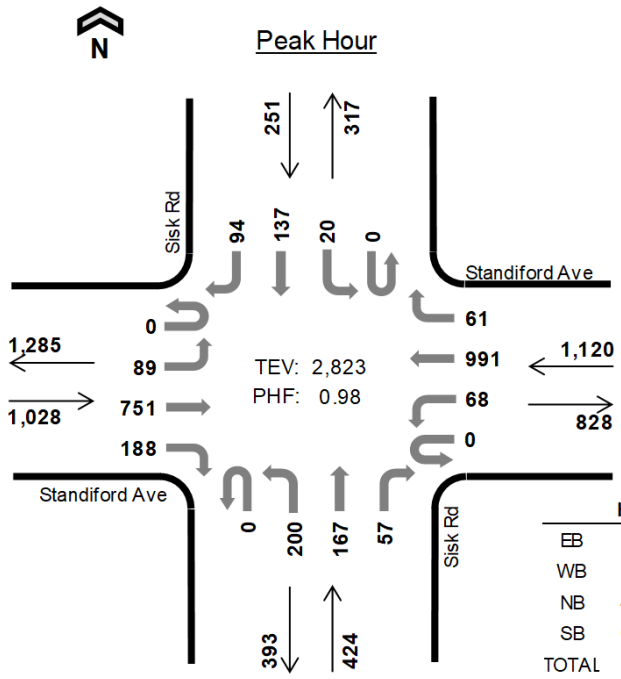
Two-Hour Count Summaries - Bikes

Interval Start	Standiford Ave			Standiford Ave			Hahn Dr			Hahn Dr			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	1	0	0	0	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

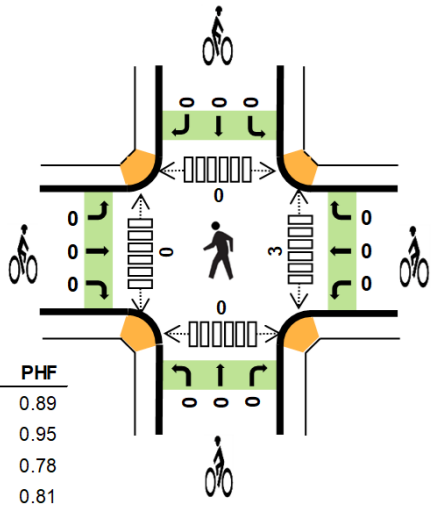
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Sisk Rd
Standiford Ave

Date: 05-07-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM



	HV %:	PHF
EB	1.4%	0.89
WB	1.9%	0.95
NB	4.5%	0.78
SB	0.4%	0.81
TOTAL	1.9%	0.98



Two-Hour Count Summaries

Interval Start	Standiford Ave Eastbound				Standiford Ave Westbound				Sisk Rd Northbound				Sisk Rd Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	21	93	20	0	7	224	9	0	40	32	6	0	1	17	18	488	0
7:15 AM	0	28	156	27	0	18	261	7	0	66	35	15	0	3	28	20	664	0
7:30 AM	**0**	**16**	**172**	**28**	**0**	**9**	**273**	**13**	**0**	**60**	**65**	**11**	**0**	**2**	**38**	**16**	**703**	0
7:45 AM	**0**	**26**	**185**	**40**	**0**	**23**	**256**	**14**	**0**	**50**	**39**	**13**	**0**	**8**	**39**	**30**	**723**	2,578
8:00 AM	**0**	**27**	**197**	**65**	**0**	**12**	**249**	**19**	**0**	**41**	**26**	**16**	**0**	**9**	**30**	**25**	**716**	2,806
8:15 AM	**0**	**20**	**197**	**55**	**0**	**24**	**213**	**15**	**0**	**49**	**37**	**17**	**0**	**1**	**30**	**23**	**681**	**2,823**
8:30 AM	0	33	165	40	0	23	200	15	0	43	38	17	0	11	30	15	630	2,750
8:45 AM	0	48	163	39	0	23	173	28	0	33	44	29	0	6	24	18	628	2,655
Count Total	0	219	1,328	314	0	139	1,849	120	0	382	316	124	0	41	236	165	5,233	0
Peak Hour All	**0**	**89**	**751**	**188**	**0**	**68**	**991**	**61**	**0**	**200**	**167**	**57**	**0**	**20**	**137**	**94**	**2,823**	**0**
Peak Hour HV	**0**	**2**	**7**	**5**	**0**	**3**	**13**	**5**	**0**	**8**	**9**	**2**	**0**	**0**	**1**	**0**	**55**	**0**
Peak Hour HV%	**-**	**2%**	**1%**	**3%**	**-**	**4%**	**1%**	**8%**	**-**	**4%**	**5%**	**4%**	**-**	**0%**	**1%**	**0%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	3	1	3	0	*7*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	4	5	1	0	*10*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	**3**	**5**	**8**	**1**	***17***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:45 AM	**4**	**5**	**1**	**0**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**2**	**5**	**3**	**0**	***10***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	*1*
8:15 AM	**5**	**6**	**7**	**0**	***18***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**0**	***2***
8:30 AM	1	4	3	1	*9*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	3	4	0	2	*9*	0	0	0	0	*0*	1	0	0	0	*1*
Count Total	25	35	26	4	*90*	0	0	0	0	*0*	4	0	0	0	*4*
Peak Hour	**14**	**21**	**19**	**1**	***55***	**0**	**0**	**0**	**0**	***0***	**3**	**0**	**0**	**0**	***3***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Standiford Ave				Standiford Ave				Sisk Rd				Sisk Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	3	0	0	0	0	1	0	1	2	0	0	0	0	0	7	0
7:15 AM	0	1	2	1	0	2	2	1	0	1	0	0	0	0	0	0	10	0
7:30 AM	**0**	**0**	**2**	**1**	**0**	**0**	**4**	**1**	**0**	**2**	**5**	**1**	**0**	**0**	**1**	**0**	**17**	0
7:45 AM	**0**	**1**	**2**	**1**	**0**	**1**	**4**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**10**	44
8:00 AM	**0**	**0**	**1**	**1**	**0**	**0**	**3**	**2**	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**10**	47
8:15 AM	**0**	**1**	**2**	**2**	**0**	**2**	**2**	**2**	**0**	**4**	**3**	**0**	**0**	**0**	**0**	**0**	**18**	**55**
8:30 AM	0	0	1	0	0	0	3	1	0	1	2	0	0	0	1	0	9	47
8:45 AM	0	1	1	1	0	2	1	1	0	0	0	0	0	0	1	1	9	46
Count Total	0	4	14	7	0	7	19	9	0	11	13	2	0	0	3	1	90	0
Peak Hour	**0**	**2**	**7**	**5**	**0**	**3**	**13**	**5**	**0**	**8**	**9**	**2**	**0**	**0**	**1**	**0**	**55**	**0**

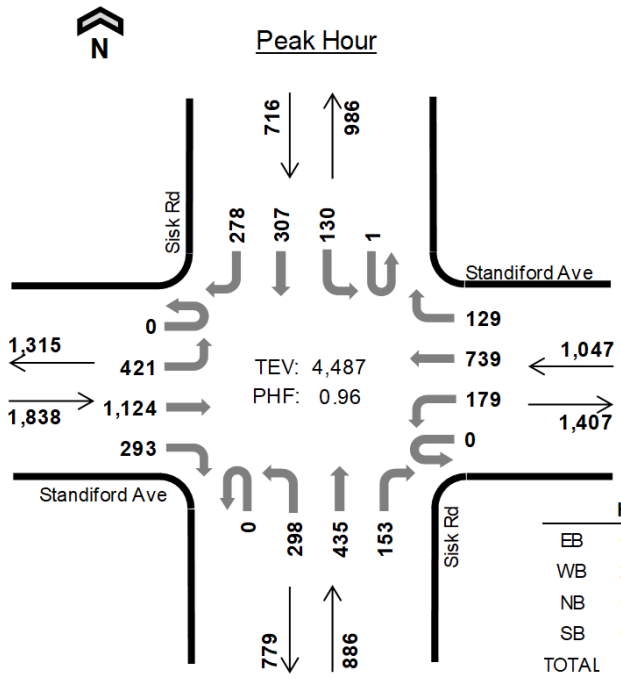
Two-Hour Count Summaries - Bikes

Interval Start	Standiford Ave			Standiford Ave			Sisk Rd			Sisk Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

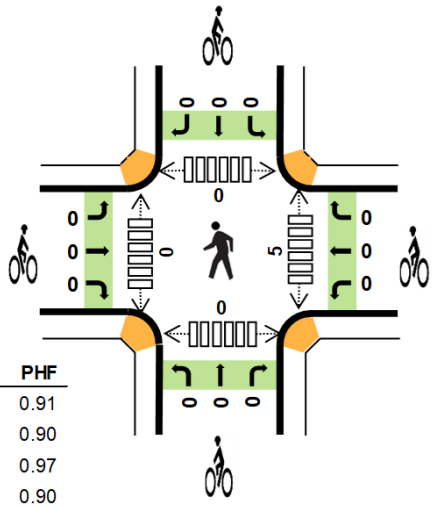
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Sisk Rd
Standiford Ave

Date: 05-07-2019
Count Period: 4:15 PM to 6:15 PM
Peak Hour: 4:30 PM to 5:30 PM



	HV %:	PHF
EB	0.7%	0.91
WB	2.1%	0.90
NB	0.8%	0.97
SB	0.1%	0.90
TOTAL	1.0%	0.96



Two-Hour Count Summaries

Interval Start	Standiford Ave Eastbound				Standiford Ave Westbound				Sisk Rd Northbound				Sisk Rd Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM	0	95	225	71	0	40	177	34	0	63	109	39	0	42	86	75	1,056	0
4:30 PM	**0**	**110**	**309**	**84**	**0**	**38**	**165**	**31**	**0**	**77**	**102**	**35**	**0**	**32**	**66**	**78**	**1,127**	0
4:45 PM	**0**	**101**	**277**	**61**	**0**	**51**	**174**	**32**	**0**	**78**	**106**	**44**	**0**	**35**	**73**	**59**	**1,091**	0
5:00 PM	**0**	**108**	**288**	**89**	**0**	**46**	**213**	**33**	**0**	**72**	**109**	**39**	**1**	**32**	**76**	**65**	**1,171**	4,445
5:15 PM	**0**	**102**	**250**	**59**	**0**	**44**	**187**	**33**	**0**	**71**	**118**	**35**	**0**	**31**	**92**	**76**	**1,098**	**4,487**
5:30 PM	0	105	283	56	0	40	203	36	0	71	111	38	0	39	74	68	1,124	4,484
5:45 PM	0	106	233	72	0	47	159	36	0	54	103	38	0	27	66	85	1,026	4,419
6:00 PM	0	102	231	59	0	36	161	37	0	69	89	27	0	22	83	78	994	4,242
Count Total	0	829	2,096	551	0	342	1,439	272	0	555	847	295	1	260	616	584	8,687	0
Peak Hour All	**0**	**421**	**1,124**	**293**	**0**	**179**	**739**	**129**	**0**	**298**	**435**	**153**	**1**	**130**	**307**	**278**	**4,487**	**0**
Peak Hour HV	**0**	**3**	**9**	**1**	**0**	**3**	**12**	**7**	**0**	**2**	**5**	**0**	**0**	**1**	**0**	**0**	**43**	**0**
Peak Hour HV%	**-**	**1%**	**1%**	**0%**	**-**	**2%**	**2%**	**5%**	**-**	**1%**	**1%**	**0%**	**0%**	**1%**	**0%**	**0%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:15 PM	6	5	0	3	*14*	0	0	0	0	*0*	0	0	2	0	*2*
4:30 PM	**4**	**5**	**4**	**0**	***13***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**0**	*2*
4:45 PM	**4**	**7**	**0**	**0**	***11***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	*1*
5:00 PM	**3**	**5**	**3**	**1**	***12***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**0**	*2*
5:15 PM	**2**	**5**	**0**	**0**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:30 PM	2	6	2	0	*10*	0	0	0	0	*0*	4	0	0	0	*4*
5:45 PM	0	4	0	2	*6*	0	0	0	0	*0*	3	1	2	1	*7*
6:00 PM	4	5	3	0	*12*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	25	42	12	6	*85*	0	0	0	0	*0*	12	1	4	1	*18*
Peak Hour	**13**	**22**	**7**	**1**	***43***	**0**	**0**	**0**	**0**	***0***	**5**	**0**	**0**	**0**	***5***

Two-Hour Count Summaries - Heavy Vehicles

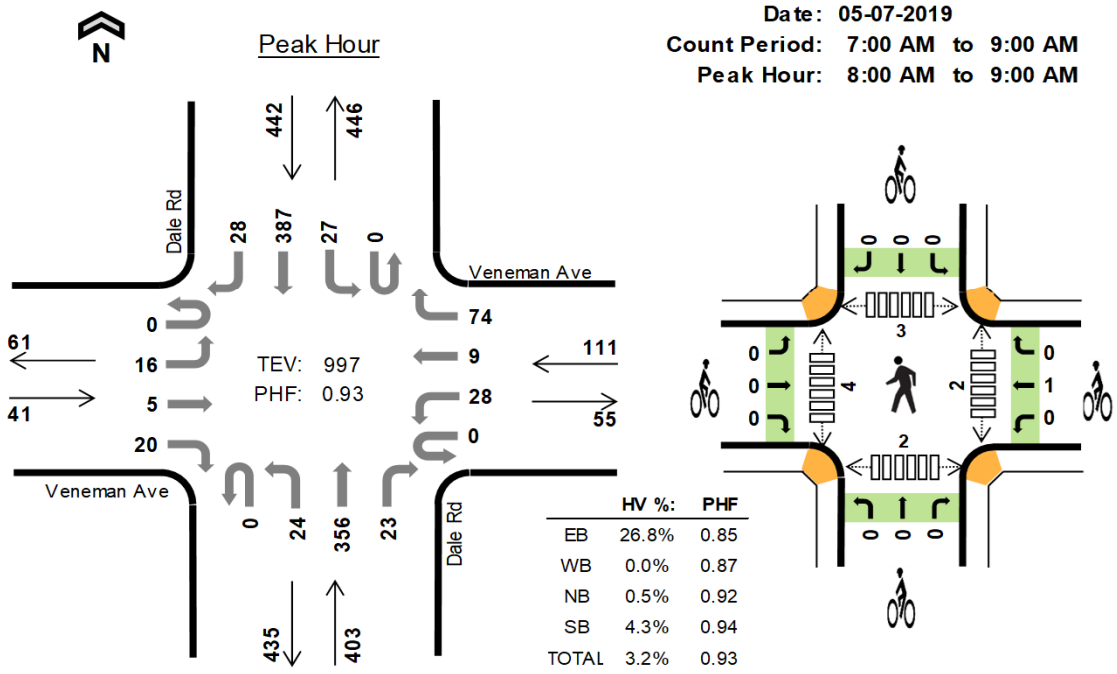
Interval Start	Standiford Ave Eastbound				Standiford Ave Westbound				Sisk Rd Northbound				Sisk Rd Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM	0	2	2	2	0	3	1	1	0	0	0	0	0	1	0	2	14	0
4:30 PM	**0**	**1**	**3**	**0**	**0**	**0**	**2**	**3**	**0**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**13**	0
4:45 PM	**0**	**1**	**3**	**0**	**0**	**1**	**5**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	0
5:00 PM	**0**	**0**	**2**	**1**	**0**	**0**	**2**	**3**	**0**	**1**	**2**	**0**	**0**	**1**	**0**	**0**	**12**	50
5:15 PM	**0**	**1**	**1**	**0**	**0**	**2**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**43**
5:30 PM	0	1	1	0	0	0	4	2	0	0	2	0	0	0	0	0	10	40
5:45 PM	0	0	0	0	0	2	2	0	0	0	0	0	0	0	1	1	6	35
6:00 PM	0	1	1	2	0	0	3	2	0	1	2	0	0	0	0	0	12	35
Count Total	0	7	13	5	0	8	22	12	0	3	9	0	0	2	1	3	85	0
Peak Hour	**0**	**3**	**9**	**1**	**0**	**3**	**12**	**7**	**0**	**2**	**5**	**0**	**0**	**1**	**0**	**0**	**43**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Standiford Ave Eastbound			Standiford Ave Westbound			Sisk Rd Northbound			Sisk Rd Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Dale Rd
Veneman Ave



Two-Hour Count Summaries

Interval Start	Veneman Ave Eastbound				Veneman Ave Westbound				Dale Rd Northbound				Dale Rd Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	2	0	1	0	10	0	12	0	0	62	5	0	2	57	3	154	0
7:15 AM	0	1	0	4	0	4	3	20	0	0	79	3	0	6	80	3	203	0
7:30 AM	0	2	1	3	0	7	1	18	0	1	85	3	0	6	85	0	212	0
7:45 AM	0	0	0	6	0	8	4	22	0	1	79	5	0	11	101	6	243	812
8:00 AM	**0**	**6**	**0**	**3**	**0**	**4**	**3**	**22**	**0**	**3**	**93**	**3**	**0**	**6**	**96**	**5**	**244**	902
8:15 AM	**0**	**5**	**3**	**3**	**0**	**12**	**3**	**15**	**0**	**5**	**97**	**8**	**0**	**2**	**109**	**7**	**269**	968
8:30 AM	**0**	**2**	**0**	**7**	**0**	**10**	**3**	**19**	**0**	**4**	**78**	**4**	**0**	**10**	**90**	**10**	**237**	993
8:45 AM	**0**	**3**	**2**	**7**	**0**	**2**	**0**	**18**	**0**	**12**	**88**	**8**	**0**	**9**	**92**	**6**	**247**	**997**
Count Total	0	21	6	34	0	57	17	146	0	26	661	39	0	52	710	40	1,809	0
Peak Hour All	**0**	**16**	**5**	**20**	**0**	**28**	**9**	**74**	**0**	**24**	**356**	**23**	**0**	**27**	**387**	**28**	**997**	**0**
Peak Hour HV	**0**	**3**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**13**	**6**	**32**	**0**
Peak Hour HV%	**-**	**19%**	**0%**	**40%**	**-**	**0%**	**0%**	**0%**	**-**	**0%**	**1%**	**0%**	**-**	**0%**	**3%**	**21%**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	3	0	3	1	*7*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	2	0	2	5	*9*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	2	0	1	1	*4*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	3	0	2	3	*8*	0	0	0	0	*0*	0	0	0	0	*0*
8:00 AM	**3**	**0**	**0**	**3**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**1**	**1**	*3*
8:15 AM	**3**	**0**	**1**	**4**	***8***	**0**	**0**	**0**	**0**	***0***	**2**	**1**	**2**	**0**	*5*
8:30 AM	**2**	**0**	**0**	**6**	***8***	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	*0*
8:45 AM	**3**	**0**	**1**	**6**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**0**	**1**	***3***
Count Total	21	0	10	29	*60*	0	1	0	0	*1*	2	4	3	2	*11*
Peak Hour	**11**	**0**	**2**	**19**	***32***	**0**	**1**	**0**	**0**	***1***	**2**	**4**	**3**	**2**	***11***

Two-Hour Count Summaries - Heavy Vehicles

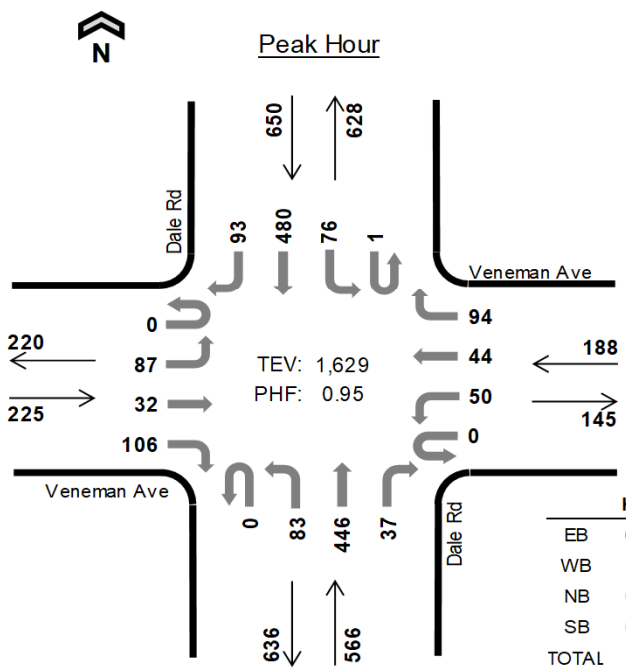
Interval Start	Veneman Ave				Veneman Ave				Dale Rd				Dale Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	2	0	1	0	0	0	0	0	0	3	0	0	0	1	0	7	0
7:15 AM	0	0	0	2	0	0	0	0	0	0	2	0	0	1	3	1	9	0
7:30 AM	0	1	0	1	0	0	0	0	0	0	1	0	0	0	1	0	4	0
7:45 AM	0	0	0	3	0	0	0	0	0	1	1	0	0	0	2	1	8	28
8:00 AM	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**6**	27
8:15 AM	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**2**	**8**	26
8:30 AM	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**1**	**8**	30
8:45 AM	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**4**	**2**	**10**	**32**
Count Total	0	6	0	15	0	0	0	0	0	1	9	0	0	1	20	8	60	0
Peak Hour	**0**	**3**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**13**	**6**	**32**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Veneman Ave			Veneman Ave			Dale Rd			Dale Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	1
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
Count Total	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**

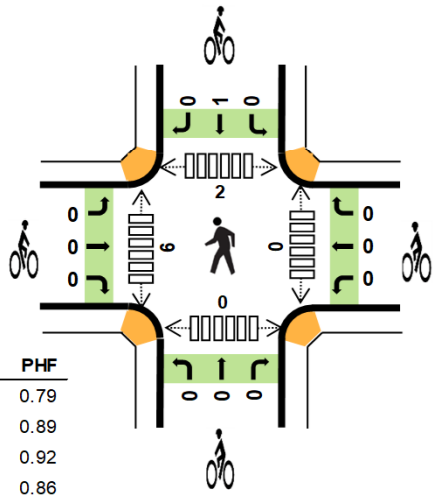
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Dale Rd
Veneman Ave



Date: 05-07-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM

	HV %:	PHF
EB	6.7%	0.79
WB	1.1%	0.89
NB	0.2%	0.92
SB	0.9%	0.86
TOTAL	1.5%	0.95



Two-Hour Count Summaries

Interval Start		Veneman Ave Eastbound				Veneman Ave Westbound				Dale Rd Northbound				Dale Rd Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	24	9	30	0	11	13	17	0	23	95	6	0	24	115	20	387	0
4:15 PM		0	18	6	17	0	11	12	15	0	21	112	11	0	23	126	16	388	0
4:30 PM		0	8	7	28	0	7	12	14	0	16	106	10	0	23	124	24	379	0
4:45 PM		**0**	**15**	**7**	**20**	**0**	**12**	**15**	**26**	**0**	**28**	**114**	**12**	**0**	**14**	**111**	**28**	**402**	1,556
5:00 PM		**0**	**29**	**12**	**30**	**0**	**15**	**9**	**23**	**0**	**11**	**114**	**11**	**0**	**21**	**122**	**12**	**409**	1,578
5:15 PM		**0**	**23**	**9**	**20**	**0**	**12**	**12**	**24**	**0**	**23**	**107**	**8**	**1**	**22**	**132**	**34**	**427**	1,617
5:30 PM		**0**	**20**	**4**	**36**	**0**	**11**	**8**	**21**	**0**	**21**	**111**	**6**	**0**	**19**	**115**	**19**	**391**	**1,629**
5:45 PM		0	15	11	36	0	6	4	20	0	12	94	9	0	23	113	25	368	1,595
Count Total		0	152	65	217	0	85	85	160	0	155	853	73	1	169	958	178	3,151	0
Peak Hour	**All**	**0**	**87**	**32**	**106**	**0**	**50**	**44**	**94**	**0**	**83**	**446**	**37**	**1**	**76**	**480**	**93**	**1,629**	**0**
	HV	**0**	**4**	**1**	**10**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**4**	**24**	**0**
	HV%	**-**	**5%**	**3%**	**9%**	**-**	**0%**	**0%**	**2%**	**-**	**1%**	**0%**	**0%**	**0%**	**0%**	**0%**	**4%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	5	2	3	3	*13*	0	0	0	0	*0*	2	1	1	3	*7*
4:15 PM	3	1	0	1	*5*	0	0	0	0	*0*	3	2	0	3	*8*
4:30 PM	3	0	1	3	*7*	0	0	0	1	*1*	1	4	3	5	*13*
4:45 PM	**3**	**2**	**1**	**4**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	*1*
5:00 PM	**7**	**0**	**0**	**0**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**0**	**0**	*2*
5:15 PM	**2**	**0**	**0**	**2**	***4***	**0**	**0**	**0**	**1**	***1***	**0**	**1**	**0**	**0**	*1*
5:30 PM	**3**	**0**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**2**	**0**	***4***
5:45 PM	4	0	0	3	*7*	0	0	0	0	*0*	0	3	1	0	*4*
Count Total	30	5	5	16	*56*	0	0	0	2	*2*	6	16	7	11	*40*
Peak Hour	**15**	**2**	**1**	**6**	***24***	**0**	**0**	**0**	**1**	***1***	**0**	**6**	**2**	**0**	***8***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Veneman Ave				Veneman Ave				Dale Rd				Dale Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	2	0	3	0	1	0	1	0	1	2	0	0	0	3	0	13	0
4:15 PM	0	0	0	3	0	0	0	1	0	0	0	0	0	0	0	1	5	0
4:30 PM	0	1	0	2	0	0	0	0	0	0	1	0	0	0	3	0	7	0
4:45 PM	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**2**	**10**	35
5:00 PM	**0**	**3**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	29
5:15 PM	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**4**	28
5:30 PM	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**24**
5:45 PM	0	0	0	4	0	0	0	0	0	0	0	0	0	1	0	2	7	21
Count Total	0	7	1	22	0	1	0	4	0	2	3	0	0	1	8	7	56	0
Peak Hour	**0**	**4**	**1**	**10**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**4**	**24**	**0**

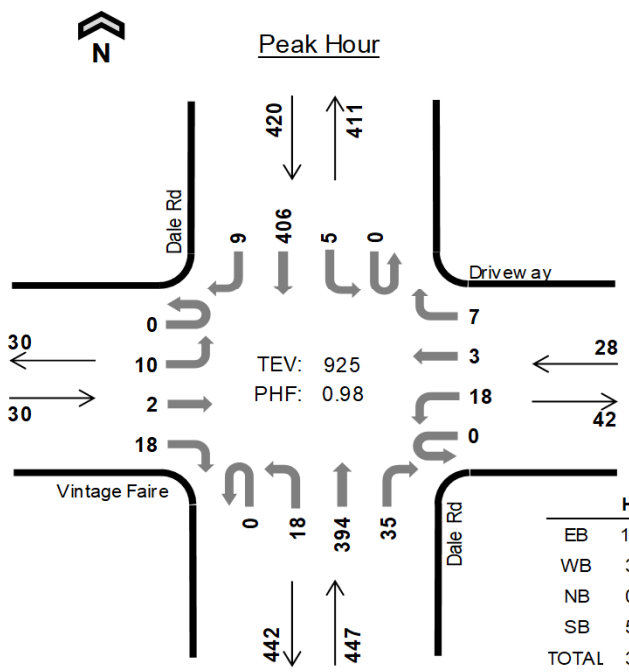
Two-Hour Count Summaries - Bikes

Interval Start	Veneman Ave			Veneman Ave			Dale Rd			Dale Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	2
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	0	0	0	0	0	2	0	2	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**

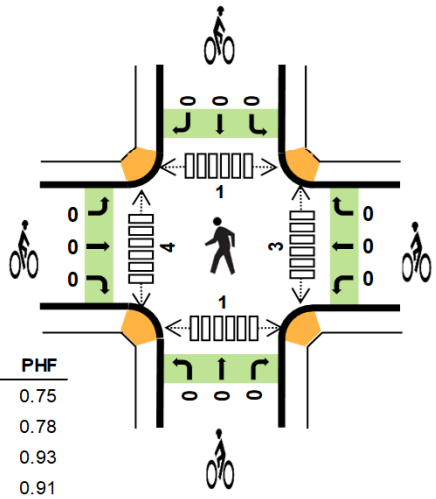
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Dale Rd
Vintage Faire

Date: 05-07-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM



	HV %:	PHF
EB	10.0%	0.75
WB	3.6%	0.78
NB	0.7%	0.93
SB	5.2%	0.91
TOTAL	3.1%	0.98



Two-Hour Count Summaries

Interval Start		Vintage Faire Eastbound				Driveway Westbound				Dale Rd Northbound				Dale Rd Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	2	0	0	0	0	0	0	0	0	59	1	0	0	73	3	138	0
7:15 AM		0	2	0	2	0	0	0	0	0	2	82	0	0	0	93	3	184	0
7:30 AM		0	3	0	2	0	0	0	0	0	3	85	0	0	0	92	2	187	0
7:45 AM		0	1	0	2	0	1	0	0	0	1	70	4	0	2	108	6	195	704
8:00 AM		**0**	**2**	**1**	**3**	**0**	**1**	**1**	**1**	**0**	**1**	**96**	**8**	**0**	**0**	**105**	**1**	**220**	786
8:15 AM		**0**	**3**	**0**	**4**	**0**	**7**	**0**	**2**	**0**	**3**	**93**	**7**	**0**	**1**	**111**	**3**	**234**	836
8:30 AM		**0**	**1**	**0**	**6**	**0**	**4**	**1**	**2**	**0**	**7**	**103**	**10**	**0**	**3**	**96**	**4**	**237**	886
8:45 AM		**0**	**4**	**1**	**5**	**0**	**6**	**1**	**2**	**0**	**7**	**102**	**10**	**0**	**1**	**94**	**1**	**234**	**925**
Count Total		0	18	2	24	0	19	3	7	0	24	690	40	0	7	772	23	1,629	0
Peak Hour	**All**	**0**	**10**	**2**	**18**	**0**	**18**	**3**	**7**	**0**	**18**	**394**	**35**	**0**	**5**	**406**	**9**	**925**	**0**
	HV	**0**	**0**	**1**	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**22**	**0**	**29**	**0**
	HV%	**-**	**0%**	**50%**	**11%**	**-**	**6%**	**0%**	**0%**	**-**	**0%**	**1%**	**3%**	**-**	**0%**	**5%**	**0%**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	2	2	*4*	0	0	0	0	*0*	0	0	0	2	*2*
7:15 AM	0	0	2	5	*7*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	1	0	1	2	*4*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	0	0	2	5	*7*	0	0	0	0	*0*	0	1	0	0	*1*
8:00 AM	**1**	**0**	**0**	**3**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	*1*
8:15 AM	**0**	**1**	**2**	**5**	***8***	**0**	**0**	**0**	**0**	***0***	**3**	**1**	**1**	**1**	*6*
8:30 AM	**1**	**0**	**0**	**6**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:45 AM	**1**	**0**	**1**	**8**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**0**	**0**	***2***
Count Total	4	1	10	36	*51*	0	0	0	0	*0*	3	5	1	3	*12*
Peak Hour	**3**	**1**	**3**	**22**	***29***	**0**	**0**	**0**	**0**	***0***	**3**	**4**	**1**	**1**	***9***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Vintage Faire				Driveway				Dale Rd				Dale Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	5	0	7	0
7:30 AM	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2	0	4	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	5	0	7	22
8:00 AM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**4**	22
8:15 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**5**	**0**	**8**	23
8:30 AM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**7**	26
8:45 AM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**8**	**0**	**10**	**29**
Count Total	0	0	1	3	0	1	0	0	0	0	9	1	0	0	36	0	51	0
Peak Hour	**0**	**0**	**1**	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**22**	**0**	**29**	**0**

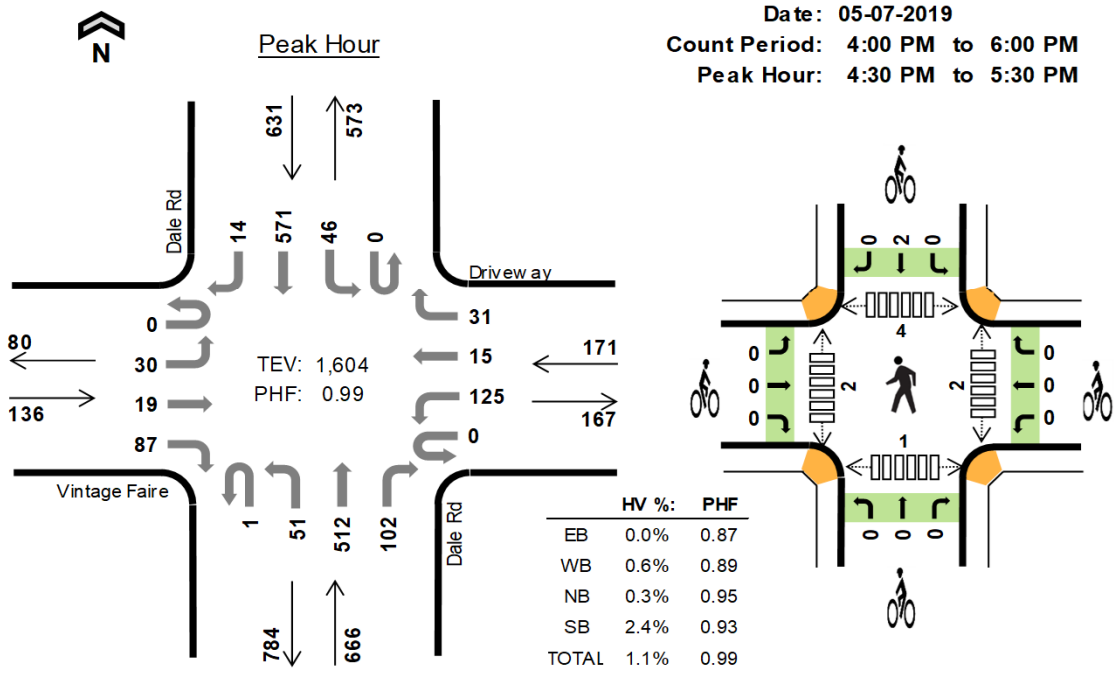
Two-Hour Count Summaries - Bikes

Interval Start	Vintage Faire			Driveway			Dale Rd			Dale Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Dale Rd
Vintage Faire

Date: 05-07-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM



Two-Hour Count Summaries

Interval Start		Vintage Faire Eastbound				Driveway Westbound				Dale Rd Northbound				Dale Rd Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	12	4	21	0	22	5	7	3	16	103	20	0	6	141	6	366	0
4:15 PM		0	11	3	22	0	18	2	4	0	16	130	23	0	10	147	2	388	0
4:30 PM		**0**	**9**	**7**	**17**	**0**	**36**	**2**	**6**	**0**	**17**	**123**	**30**	**0**	**11**	**144**	**2**	**404**	0
4:45 PM		**0**	**9**	**2**	**24**	**0**	**34**	**7**	**7**	**1**	**16**	**132**	**26**	**0**	**8**	**135**	**3**	**404**	1,562
5:00 PM		**0**	**4**	**4**	**21**	**0**	**24**	**3**	**9**	**0**	**12**	**129**	**24**	**0**	**15**	**150**	**5**	**400**	1,596
5:15 PM		**0**	**8**	**6**	**25**	**0**	**31**	**3**	**9**	**0**	**6**	**128**	**22**	**0**	**12**	**142**	**4**	**396**	**1,604**
5:30 PM		0	7	3	18	0	28	4	5	0	9	122	33	0	7	158	3	397	1,597
5:45 PM		0	4	4	19	0	23	1	5	0	17	98	15	0	12	134	1	333	1,526
Count Total		0	64	33	167	0	216	27	52	4	109	965	193	0	81	1,151	26	3,088	0
Peak Hour	**All**	**0**	**30**	**19**	**87**	**0**	**125**	**15**	**31**	**1**	**51**	**512**	**102**	**0**	**46**	**571**	**14**	**1,604**	**0**
	HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**15**	**0**	**18**	**0**
	HV%	**-**	**0%**	**0%**	**0%**	**-**	**0%**	**0%**	**3%**	**0%**	**0%**	**0%**	**0%**	**-**	**0%**	**3%**	**0%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	2	0	1	5	*8*	0	0	0	0	*0*	2	0	3	0	*5*
4:15 PM	0	0	1	4	*5*	0	0	0	0	*0*	0	1	1	0	*2*
4:30 PM	**0**	**1**	**0**	**3**	***4***	**0**	**0**	**0**	**1**	***1***	**1**	**1**	**0**	**0**	*2*
4:45 PM	**0**	**0**	**1**	**6**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**1**	**1**	*3*
5:00 PM	**0**	**0**	**1**	**3**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**3**	**0**	*3*
5:15 PM	**0**	**0**	**0**	**3**	***3***	**0**	**0**	**0**	**1**	***1***	**1**	**0**	**0**	**0**	***1***
5:30 PM	1	0	0	2	*3*	0	0	0	0	*0*	0	0	1	0	*1*
5:45 PM	0	0	0	3	*3*	0	0	0	0	*0*	0	2	0	0	*2*
Count Total	3	1	4	29	*37*	0	0	0	2	*2*	4	5	9	1	*19*
Peak Hour	**0**	**1**	**2**	**15**	***18***	**0**	**0**	**0**	**2**	***2***	**2**	**2**	**4**	**1**	***9***

Two-Hour Count Summaries - Heavy Vehicles

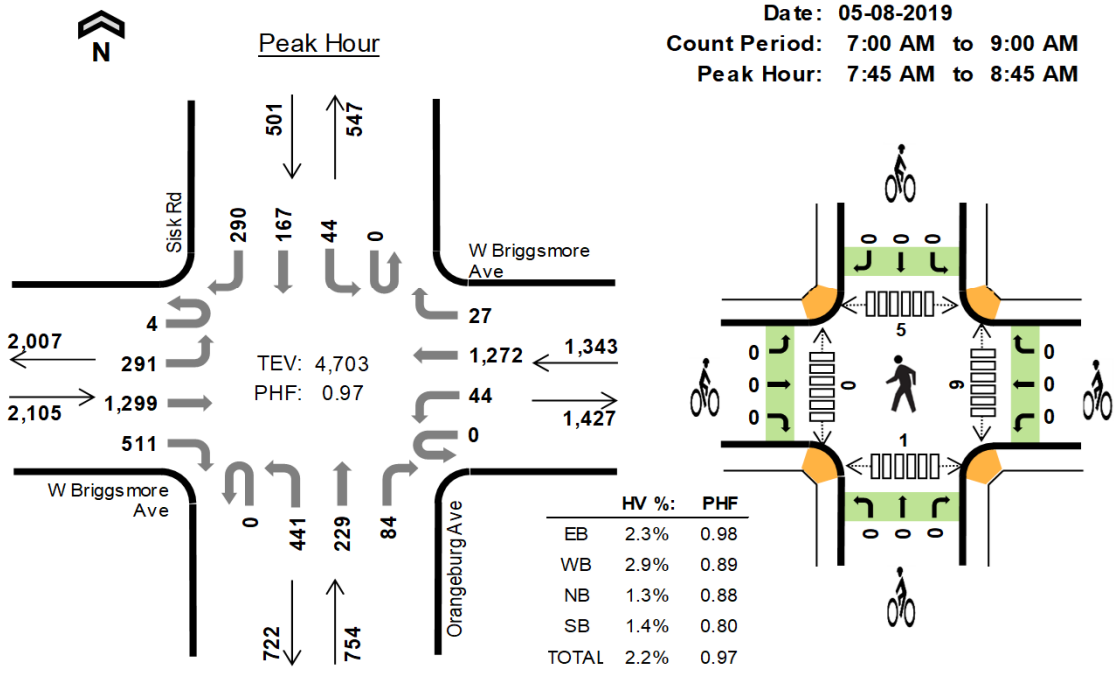
Interval Start	Vintage Faire				Driveway				Dale Rd				Dale Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	2	0	0	0	0	0	0	0	0	1	0	0	0	5	0	8	0
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	4	0	5	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**4**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**6**	**0**	**7**	24
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**4**	20
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**3**	**18**
5:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	3	17
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	13
Count Total	0	2	0	1	0	0	0	1	0	1	3	0	0	0	29	0	37	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**15**	**0**	**18**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Vintage Faire			Driveway			Dale Rd			Dale Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**2**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	0	0	0	0	0	2	0	2	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Orangeburg Ave
W Briggsmore Ave



Two-Hour Count Summaries

Interval Start	W Briggsmore Ave Eastbound				W Briggsmore Ave Westbound				Orangeburg Ave Northbound				Sisk Rd Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	41	228	61	0	12	282	9	1	102	27	12	0	5	23	39	842	0
7:15 AM	0	76	288	104	0	10	338	9	0	103	50	22	0	13	26	49	1,088	0
7:30 AM	2	58	332	118	0	14	317	15	0	100	64	7	0	9	42	85	1,163	0
7:45 AM	**0**	**71**	**343**	**123**	**0**	**7**	**296**	**6**	**0**	**106**	**87**	**20**	**0**	**12**	**50**	**94**	**1,215**	4,308
8:00 AM	**0**	**82**	**326**	**96**	**0**	**5**	**288**	**6**	**0**	**114**	**52**	**12**	**0**	**6**	**35**	**77**	**1,099**	4,565
8:15 AM	**1**	**53**	**334**	**146**	**0**	**10**	**360**	**9**	**0**	**98**	**49**	**21**	**0**	**17**	**39**	**71**	**1,208**	4,685
8:30 AM	**3**	**85**	**296**	**146**	**0**	**22**	**328**	**6**	**0**	**123**	**41**	**31**	**0**	**9**	**43**	**48**	**1,181**	**4,703**
8:45 AM	1	92	303	120	0	21	233	27	0	110	57	26	0	10	39	53	1,092	4,580
Count Total	7	558	2,450	914	0	101	2,442	87	1	856	427	151	0	81	297	516	8,888	0
Peak Hour All	**4**	**291**	**1,299**	**511**	**0**	**44**	**1,272**	**27**	**0**	**441**	**229**	**84**	**0**	**44**	**167**	**290**	**4,703**	**0**
Peak Hour HV	**0**	**5**	**32**	**11**	**0**	**2**	**36**	**1**	**0**	**7**	**3**	**0**	**0**	**0**	**4**	**3**	**104**	**0**
Peak Hour HV%	**0%**	**2%**	**2%**	**2%**	**-**	**5%**	**3%**	**4%**	**-**	**2%**	**1%**	**0%**	**-**	**0%**	**2%**	**1%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	18	3	5	1	*27*	0	0	0	0	*0*	3	0	0	2	*5*
7:15 AM	10	3	6	3	*22*	0	0	0	0	*0*	2	0	1	0	*3*
7:30 AM	10	2	3	3	*18*	1	0	0	0	*1*	0	0	1	2	*3*
7:45 AM	**11**	**10**	**2**	**3**	***26***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**0**	*1*
8:00 AM	**12**	**5**	**3**	**1**	***21***	**0**	**0**	**0**	**0**	***0***	**4**	**0**	**1**	**0**	*5*
8:15 AM	**12**	**10**	**3**	**2**	***27***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**2**	**0**	*4*
8:30 AM	**13**	**14**	**2**	**1**	***30***	**0**	**0**	**0**	**0**	***0***	**3**	**0**	**1**	**1**	***5***
8:45 AM	12	3	8	4	*27*	0	0	0	0	*0*	2	1	1	0	*4*
Count Total	98	50	32	18	*198*	1	0	0	0	*1*	16	1	8	5	*30*
Peak Hour	**48**	**39**	**10**	**7**	***104***	**0**	**0**	**0**	**0**	***0***	**9**	**0**	**5**	**1**	***15***

Two-Hour Count Summaries - Heavy Vehicles

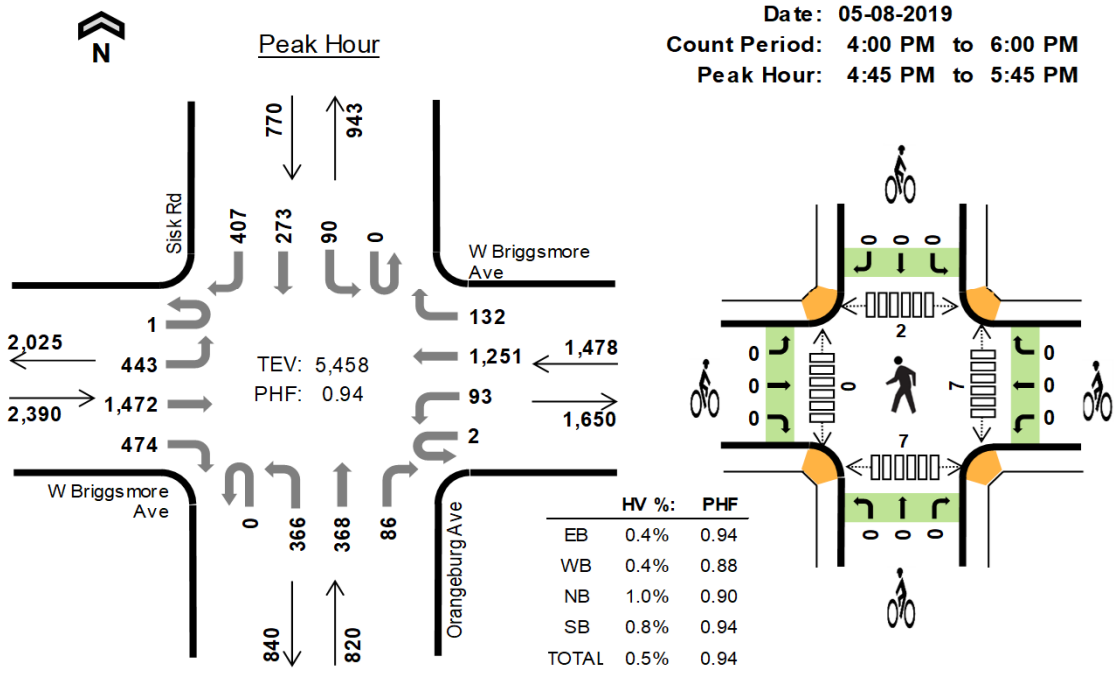
Interval Start	W Briggsmore Ave				W Briggsmore Ave				Orangeburg Ave				Sisk Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	14	4	0	0	3	0	0	2	1	2	0	0	1	0	27	0
7:15 AM	0	4	4	2	0	0	3	0	0	2	3	1	0	0	1	2	22	0
7:30 AM	0	1	8	1	0	0	2	0	0	3	0	0	0	0	0	3	18	0
7:45 AM	**0**	**0**	**7**	**4**	**0**	**1**	**8**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**1**	**2**	**26**	93
8:00 AM	**0**	**1**	**10**	**1**	**0**	**1**	**4**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**1**	**0**	**21**	87
8:15 AM	**0**	**2**	**8**	**2**	**0**	**0**	**10**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**1**	**1**	**27**	92
8:30 AM	**0**	**2**	**7**	**4**	**0**	**0**	**14**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**0**	**30**	**104**
8:45 AM	0	3	7	2	0	0	3	0	0	7	1	0	0	1	1	2	27	105
Count Total	0	13	65	20	0	2	47	1	0	21	8	3	0	1	7	10	198	0
Peak Hour	**0**	**5**	**32**	**11**	**0**	**2**	**36**	**1**	**0**	**7**	**3**	**0**	**0**	**0**	**4**	**3**	**104**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	W Briggsmore Ave			W Briggsmore Ave			Orangeburg Ave			Sisk Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	1	0	0	0	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Orangeburg Ave
W Briggsmore Ave



Date: 05-08-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM

Two-Hour Count Summaries

Interval Start		W Briggsmore Ave Eastbound				W Briggsmore Ave Westbound				Orangeburg Ave Northbound				Sisk Rd Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		1	124	345	114	1	35	301	26	0	80	75	23	0	23	57	96	1,301	0
4:15 PM		0	117	325	117	0	34	318	33	0	86	93	27	0	15	85	113	1,363	0
4:30 PM		1	103	379	99	2	23	338	31	0	77	84	24	0	23	56	95	1,335	0
4:45 PM		**0**	**106**	**345**	**106**	**0**	**23**	**289**	**28**	**0**	**95**	**82**	**18**	**0**	**14**	**76**	**110**	**1,292**	5,291
5:00 PM		**1**	**119**	**386**	**132**	**0**	**25**	**359**	**37**	**0**	**92**	**104**	**20**	**0**	**29**	**65**	**84**	**1,453**	5,443
5:15 PM		**0**	**120**	**344**	**119**	**1**	**23**	**278**	**27**	**0**	**94**	**102**	**31**	**0**	**23**	**73**	**109**	**1,344**	5,424
5:30 PM		**0**	**98**	**397**	**117**	**1**	**22**	**325**	**40**	**0**	**85**	**80**	**17**	**0**	**24**	**59**	**104**	**1,369**	**5,458**
5:45 PM		0	83	344	100	0	41	284	29	0	97	72	16	0	25	67	85	1,243	5,409
Count Total		3	870	2,865	904	5	226	2,492	251	0	706	692	176	0	176	538	796	10,700	0
Peak Hour	**All**	**1**	**443**	**1,472**	**474**	**2**	**93**	**1,251**	**132**	**0**	**366**	**368**	**86**	**0**	**90**	**273**	**407**	**5,458**	**0**
	HV	**0**	**2**	**5**	**2**	**0**	**0**	**6**	**0**	**0**	**3**	**5**	**0**	**0**	**0**	**4**	**2**	**29**	**0**
	HV%	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**-**	**1%**	**1%**	**0%**	**-**	**0%**	**1%**	**0%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	5	8	3	4	*20*	0	0	0	0	*0*	2	0	1	3	*6*
4:15 PM	2	7	2	3	*14*	1	0	0	0	*1*	4	0	2	0	*6*
4:30 PM	5	2	3	1	*11*	0	0	0	0	*0*	1	0	2	0	*3*
4:45 PM	**3**	**2**	**1**	**1**	***7***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**1**	*3*
5:00 PM	**2**	**2**	**3**	**2**	***9***	**0**	**0**	**0**	**0**	***0***	**4**	**0**	**2**	**1**	*7*
5:15 PM	**1**	**0**	**2**	**2**	***5***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**3**	*4*
5:30 PM	**3**	**2**	**2**	**1**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**2**	***2***
5:45 PM	4	2	2	2	*10*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	25	25	18	16	*84*	1	0	0	0	*1*	14	0	7	10	*31*
Peak Hour	**9**	**6**	**8**	**6**	***29***	**0**	**0**	**0**	**0**	***0***	**7**	**0**	**2**	**7**	***16***

Two-Hour Count Summaries - Heavy Vehicles

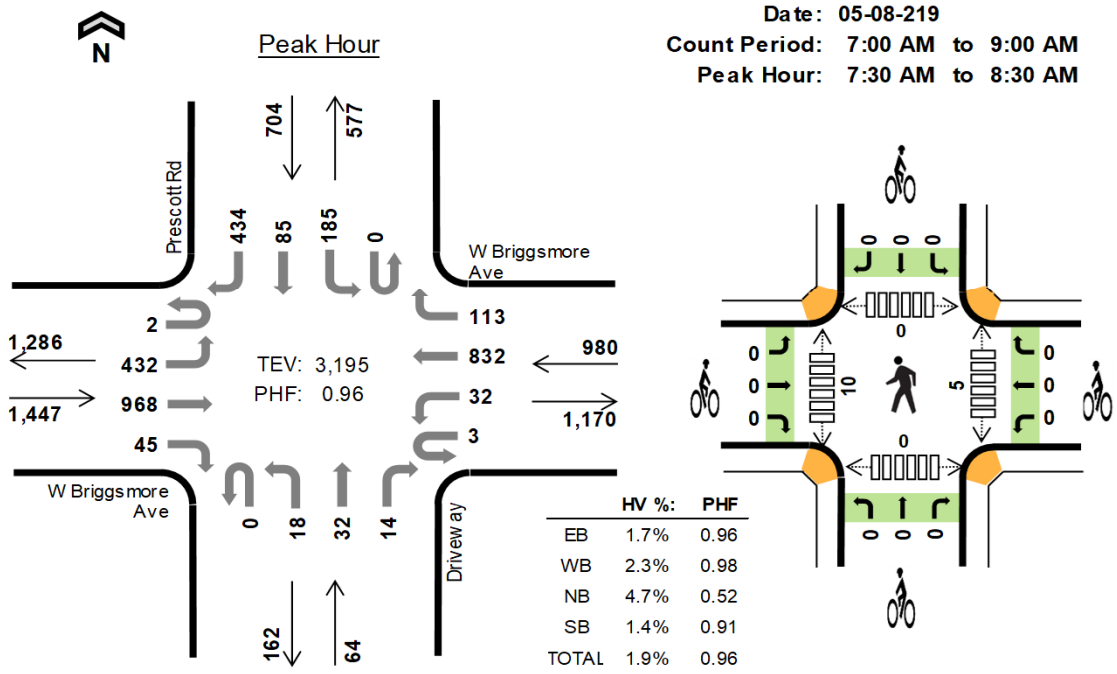
Interval Start	W Briggsmore Ave				W Briggsmore Ave				Orangeburg Ave				Sisk Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	3	2	0	0	8	0	0	0	3	0	0	0	1	3	20	0
4:15 PM	0	1	1	0	0	0	7	0	0	2	0	0	0	0	1	2	14	0
4:30 PM	0	0	5	0	0	0	2	0	0	2	1	0	0	0	0	1	11	0
4:45 PM	**0**	**2**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**7**	52
5:00 PM	**0**	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**1**	**1**	**9**	41
5:15 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**1**	**5**	32
5:30 PM	**0**	**0**	**2**	**1**	**0**	**0**	**2**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**0**	**8**	**29**
5:45 PM	0	1	3	0	0	1	1	0	0	1	1	0	0	0	2	0	10	32
Count Total	0	4	17	4	0	1	24	0	0	8	10	0	0	0	8	8	84	0
Peak Hour	**0**	**2**	**5**	**2**	**0**	**0**	**6**	**0**	**0**	**3**	**5**	**0**	**0**	**0**	**4**	**2**	**29**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	W Briggsmore Ave			W Briggsmore Ave			Orangeburg Ave			Sisk Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	1	0	0	0	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Prescott Rd
W Briggsmore Ave



Two-Hour Count Summaries

Interval Start	W Briggsmore Ave Eastbound				W Briggsmore Ave Westbound				Driveway Northbound				Prescott Rd Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	2	70	163	4	0	1	191	16	0	3	2	2	0	25	4	84	567	0
7:15 AM	4	96	202	1	0	3	251	10	0	3	5	4	0	28	4	113	724	0
7:30 AM	**1**	**100**	**237**	**11**	**1**	**7**	**216**	**22**	**0**	**3**	**4**	**1**	**0**	**48**	**6**	**140**	**797**	0
7:45 AM	**1**	**99**	**269**	**8**	**1**	**6**	**208**	**36**	**0**	**4**	**5**	**4**	**0**	**54**	**33**	**88**	**816**	2,904
8:00 AM	**0**	**111**	**218**	**15**	**1**	**12**	**192**	**33**	**0**	**3**	**7**	**2**	**0**	**41**	**28**	**89**	**752**	3,089
8:15 AM	**0**	**122**	**244**	**11**	**0**	**7**	**216**	**22**	**0**	**8**	**16**	**7**	**0**	**42**	**18**	**117**	**830**	**3,195**
8:30 AM	0	109	217	15	2	6	196	22	0	6	6	8	0	37	10	113	747	3,145
8:45 AM	2	107	217	12	0	8	159	22	0	4	12	1	0	47	13	116	720	3,049
Count Total	10	814	1,767	77	5	50	1,629	183	0	34	57	29	0	322	116	860	5,953	0
Peak Hour All	**2**	**432**	**968**	**45**	**3**	**32**	**832**	**113**	**0**	**18**	**32**	**14**	**0**	**185**	**85**	**434**	**3,195**	**0**
Peak Hour HV	**0**	**5**	**19**	**1**	**0**	**0**	**22**	**1**	**0**	**2**	**1**	**0**	**0**	**4**	**1**	**5**	**61**	**0**
Peak Hour HV%	**0%**	**1%**	**2%**	**2%**	**0%**	**0%**	**3%**	**1%**	**-**	**11%**	**3%**	**0%**	**-**	**2%**	**1%**	**1%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	18	1	0	3	*22*	0	0	1	0	*1*	3	0	0	0	*3*
7:15 AM	5	2	0	1	*8*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	**4**	**5**	**1**	**3**	***13***	**0**	**0**	**0**	**0**	***0***	**1**	**2**	**0**	**0**	*3*
7:45 AM	**7**	**6**	**1**	**2**	***16***	**0**	**0**	**0**	**0**	***0***	**1**	**1**	**0**	**0**	*2*
8:00 AM	**8**	**4**	**1**	**3**	***16***	**0**	**0**	**0**	**0**	***0***	**1**	**1**	**0**	**0**	*2*
8:15 AM	**6**	**8**	**0**	**2**	***16***	**0**	**0**	**0**	**0**	***0***	**2**	**6**	**0**	**0**	***8***
8:30 AM	7	10	0	5	*22*	0	0	1	0	*1*	5	1	0	0	*6*
8:45 AM	8	4	0	1	*13*	0	0	0	0	*0*	0	1	0	0	*1*
Count Total	63	40	3	20	*126*	0	0	2	0	*2*	13	12	0	0	*25*
Peak Hour	**25**	**23**	**3**	**10**	***61***	**0**	**0**	**0**	**0**	***0***	**5**	**10**	**0**	**0**	***15***

Two-Hour Count Summaries - Heavy Vehicles

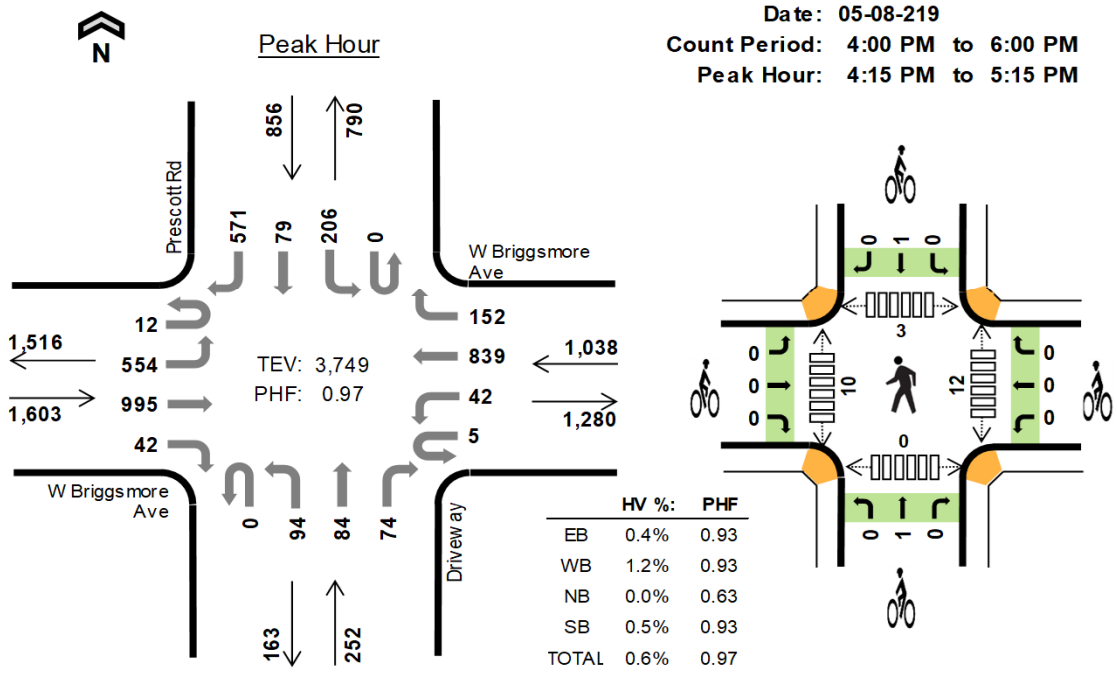
Interval Start	W Briggsmore Ave				W Briggsmore Ave				Driveway				Prescott Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	5	12	1	0	0	1	0	0	0	0	0	0	1	0	2	22	0
7:15 AM	0	1	4	0	0	0	2	0	0	0	0	0	0	1	0	0	8	0
7:30 AM	**0**	**1**	**3**	**0**	**0**	**0**	**4**	**1**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**1**	**13**	0
7:45 AM	**0**	**1**	**6**	**0**	**0**	**0**	**6**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**1**	**16**	59
8:00 AM	**0**	**2**	**6**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**1**	**1**	**16**	53
8:15 AM	**0**	**1**	**4**	**1**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**16**	**61**
8:30 AM	0	0	6	1	0	0	9	1	0	0	0	0	0	1	0	4	22	70
8:45 AM	0	2	6	0	0	0	3	1	0	0	0	0	0	0	1	0	13	67
Count Total	0	13	47	3	0	0	37	3	0	2	1	0	0	7	2	11	126	0
Peak Hour	**0**	**5**	**19**	**1**	**0**	**0**	**22**	**1**	**0**	**2**	**1**	**0**	**0**	**4**	**1**	**5**	**61**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	W Briggsmore Ave			W Briggsmore Ave			Driveway			Prescott Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	1	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	1	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	0	0	1	1	0	0	0	2	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Prescott Rd
W Briggsmore Ave



Two-Hour Count Summaries

Interval Start		W Briggsmore Ave Eastbound				W Briggsmore Ave Westbound				Driveway Northbound				Prescott Rd Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		5	125	251	9	0	7	181	37	0	18	23	15	0	61	13	139	884	0
4:15 PM		**1**	**116**	**219**	**12**	**1**	**6**	**188**	**43**	**0**	**49**	**25**	**26**	**0**	**54**	**23**	**145**	**908**	0
4:30 PM		**4**	**148**	**269**	**12**	**2**	**9**	**233**	**32**	**0**	**13**	**22**	**14**	**0**	**50**	**14**	**135**	**957**	0
4:45 PM		**3**	**148**	**234**	**7**	**2**	**18**	**188**	**37**	**0**	**16**	**19**	**16**	**0**	**60**	**27**	**144**	**919**	3,668
5:00 PM		**4**	**142**	**273**	**11**	**0**	**9**	**230**	**40**	**0**	**16**	**18**	**18**	**0**	**42**	**15**	**147**	**965**	**3,749**
5:15 PM		1	143	243	7	1	8	201	50	0	15	13	13	0	51	23	128	897	3,738
5:30 PM		3	154	280	5	0	11	205	30	0	13	27	12	0	55	17	150	962	3,743
5:45 PM		4	132	246	16	0	14	192	30	0	10	18	11	0	60	19	163	915	3,739
Count Total		25	1,108	2,015	79	6	82	1,618	299	0	150	165	125	0	433	151	1,151	7,407	0
Peak Hour	**All**	**12**	**554**	**995**	**42**	**5**	**42**	**839**	**152**	**0**	**94**	**84**	**74**	**0**	**206**	**79**	**571**	**3,749**	**0**
	HV	**0**	**3**	**3**	**0**	**0**	**1**	**10**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**2**	**22**	**0**
	HV%	**0%**	**1%**	**0%**	**0%**	**0%**	**2%**	**1%**	**1%**	**-**	**0%**	**0%**	**0%**	**-**	**0%**	**1%**	**0%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	3	5	0	1	*9*	0	0	1	0	*1*	2	3	2	1	*8*
4:15 PM	**1**	**6**	**0**	**1**	*8*	**0**	**0**	**1**	**0**	*1*	**4**	**3**	**0**	**0**	*7*
4:30 PM	**3**	**0**	**0**	**2**	*5*	**0**	**0**	**0**	**1**	*1*	**2**	**4**	**0**	**0**	*6*
4:45 PM	**0**	**3**	**0**	**1**	*4*	**0**	**0**	**0**	**0**	*0*	**4**	**2**	**0**	**0**	*6*
5:00 PM	**2**	**3**	**0**	**0**	*5*	**0**	**0**	**0**	**0**	*0*	**2**	**1**	**3**	**0**	*6*
5:15 PM	1	0	1	2	*4*	0	0	0	0	*0*	0	3	0	0	*3*
5:30 PM	1	2	0	1	*4*	0	0	0	0	*0*	0	1	0	0	*1*
5:45 PM	3	1	0	2	*6*	0	0	0	0	*0*	1	0	0	0	*1*
Count Total	14	20	1	10	*45*	0	0	2	1	*3*	15	17	5	1	*38*
Peak Hour	**6**	**12**	**0**	**4**	*22*	**0**	**0**	**1**	**1**	*2*	**12**	**10**	**3**	**0**	*25*

Two-Hour Count Summaries - Heavy Vehicles

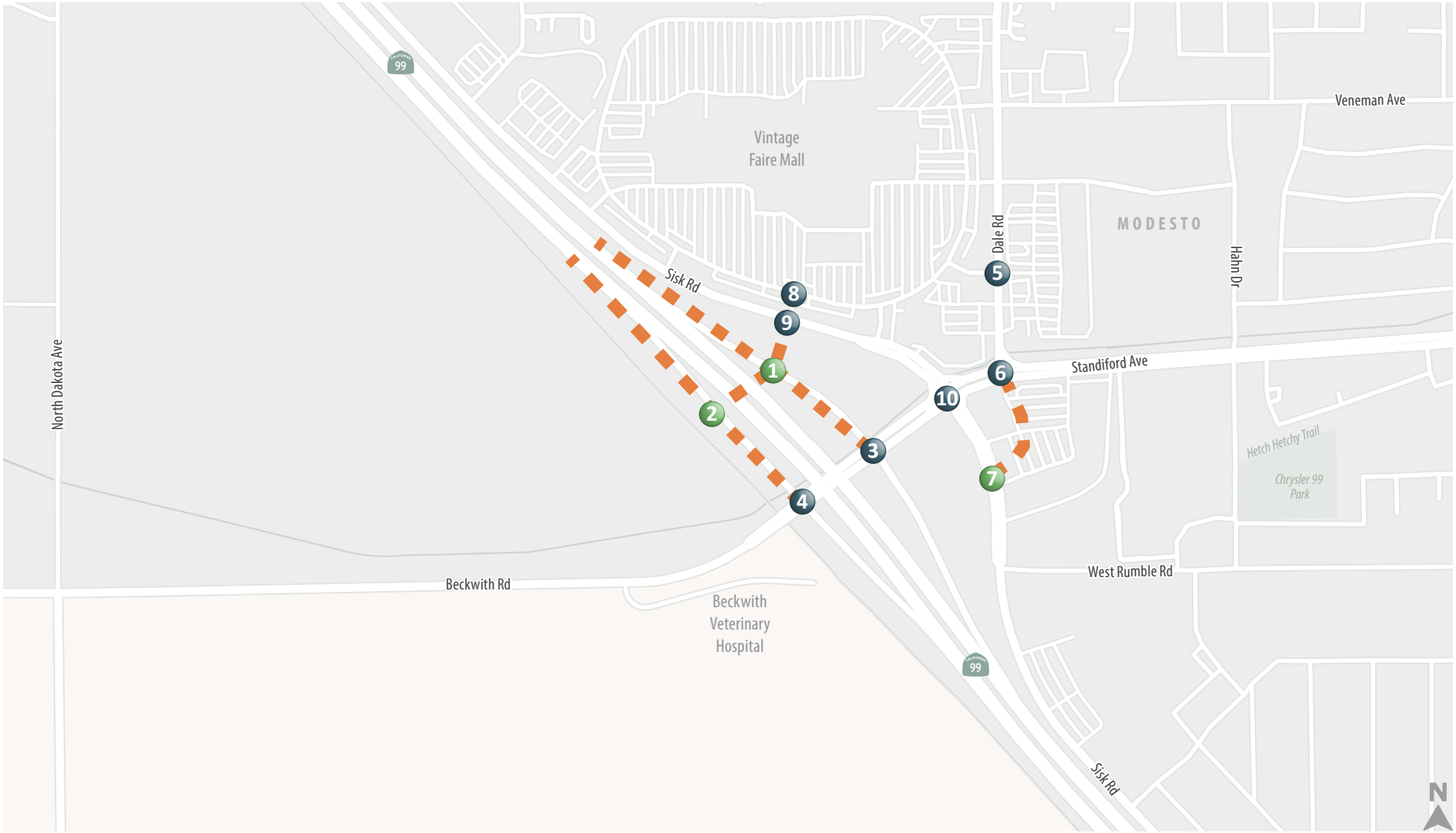
Interval Start	W Briggsmore Ave				W Briggsmore Ave				Driveway				Prescott Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	2	0	0	0	5	0	0	0	0	0	0	0	0	1	9	0
4:15 PM	**0**	**0**	**1**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**8**	0
4:30 PM	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**5**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**4**	26
5:00 PM	**0**	**2**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**22**
5:15 PM	0	0	1	0	0	0	0	0	0	0	1	0	0	1	1	0	4	18
5:30 PM	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	1	4	17
5:45 PM	0	0	2	1	0	0	0	1	0	0	0	0	0	0	0	2	6	19
Count Total	0	4	9	1	0	1	16	3	0	0	1	0	0	2	2	6	45	0
Peak Hour	**0**	**3**	**3**	**0**	**0**	**1**	**10**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**2**	**22**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	W Briggsmore Ave			W Briggsmore Ave			Driveway			Prescott Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	1	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	2	0	0	1	0	3	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**2**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Appendix C – Study Intersection Locations



Study Intersection

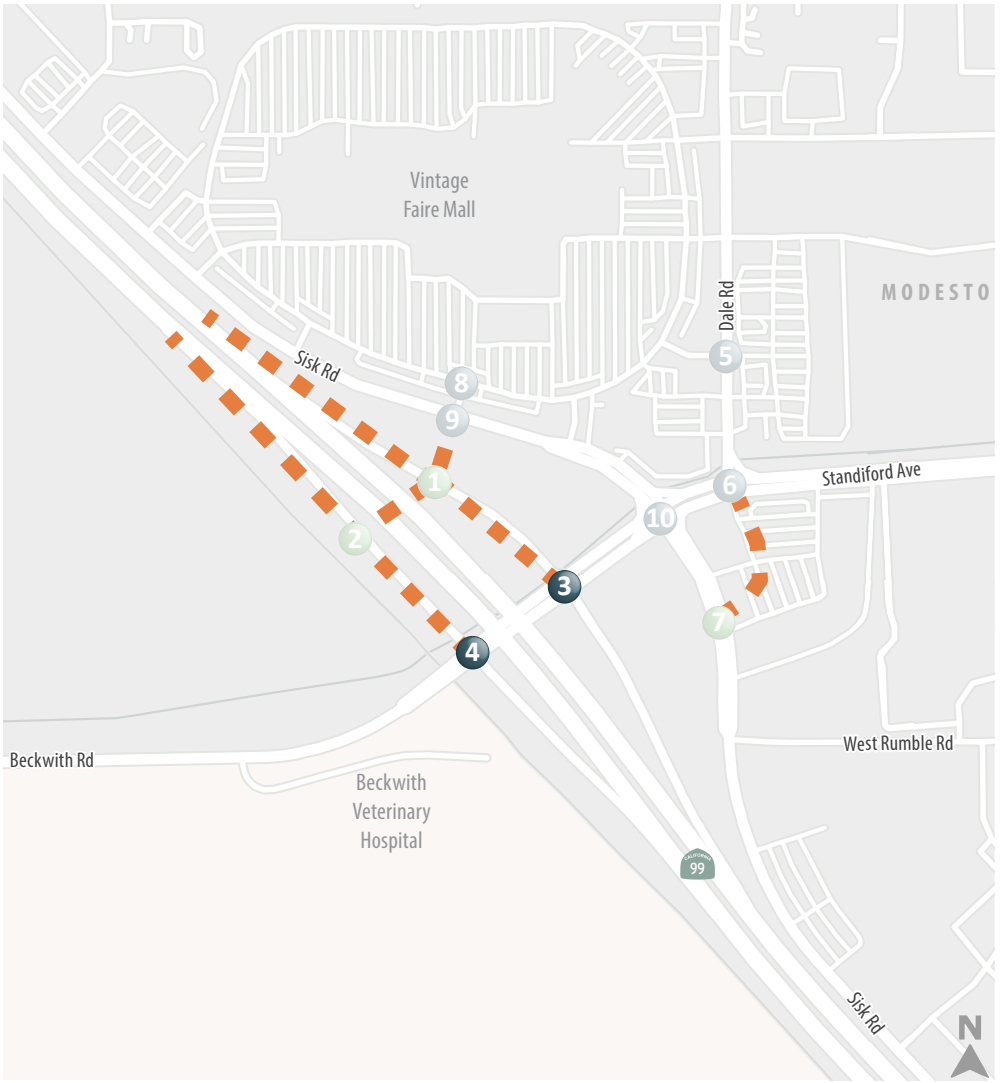
Study Intersection with Project

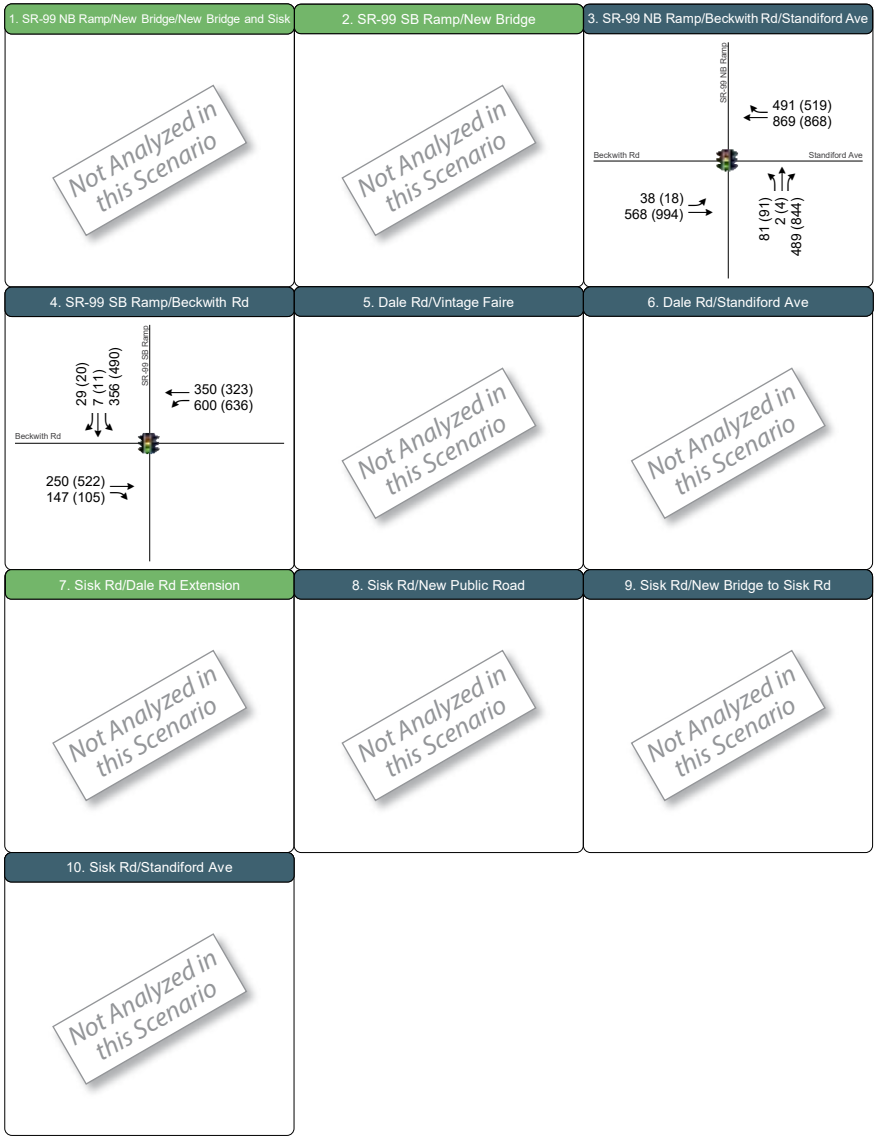
Proposed Roadway

Appendix C

TEPA Study Area

Appendix D – Traffic Volumes





XX (YY) AM (PM) Peak Hour Traffic Volumes

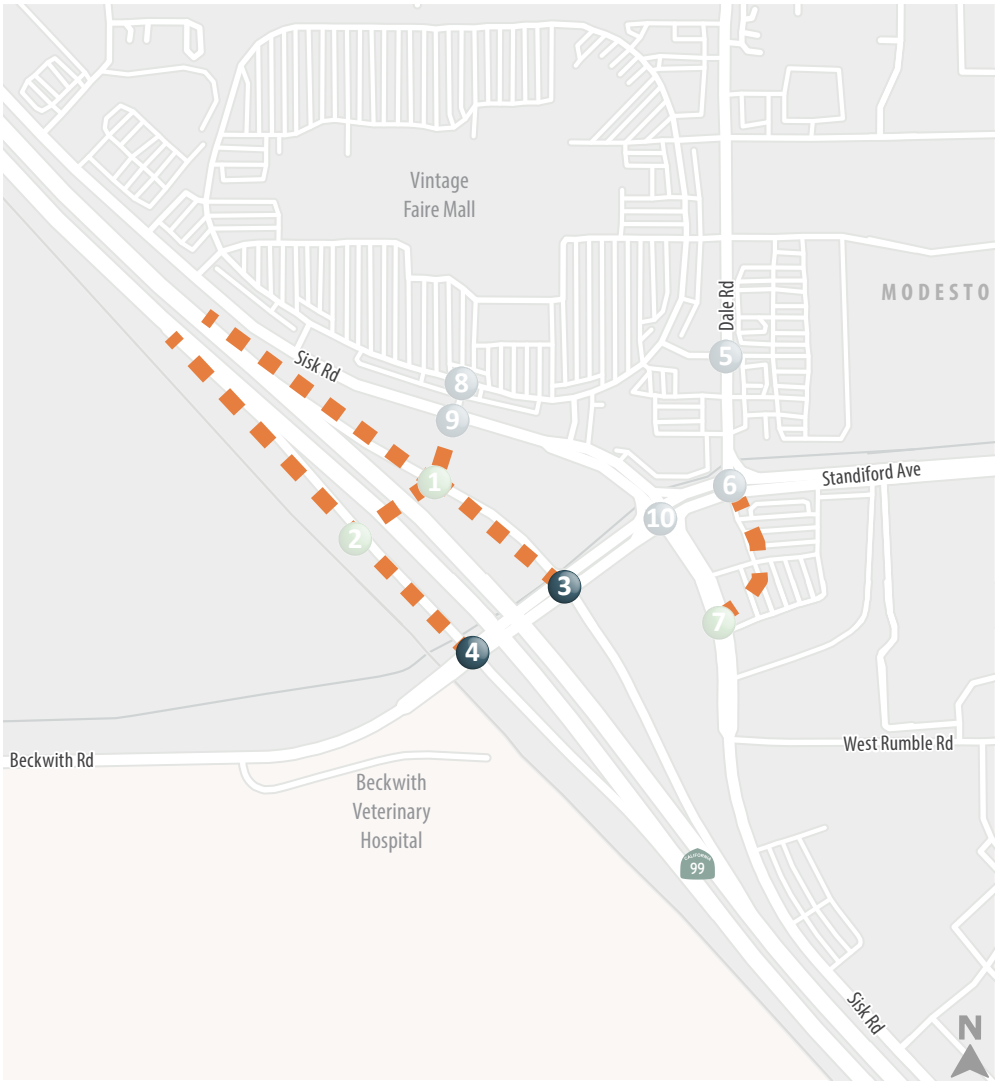
Signalized Intersection

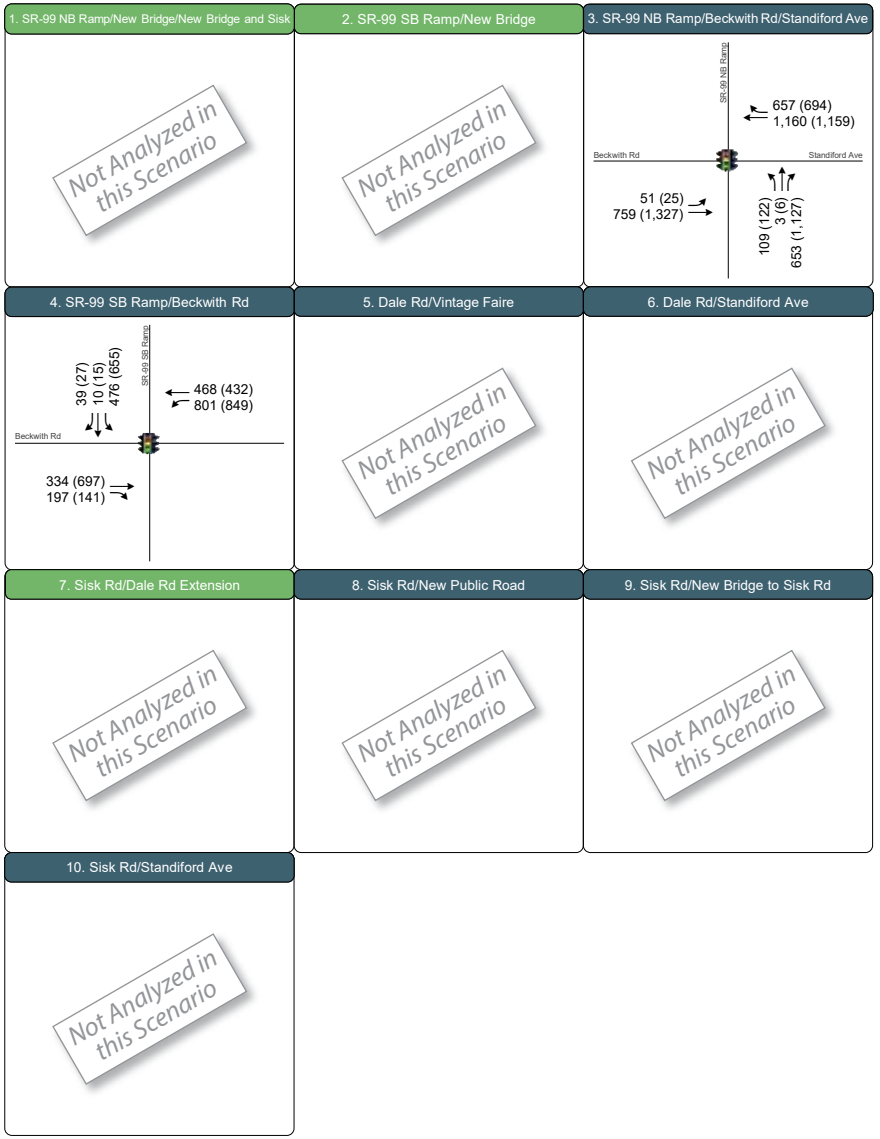
Study Intersection

Study Intersection with Project

Proposed Roadway

Peak Hour Traffic Volumes for Scenario B Existing





XX (YY) AM (PM) Peak Hour Traffic Volumes

Signalized Intersection

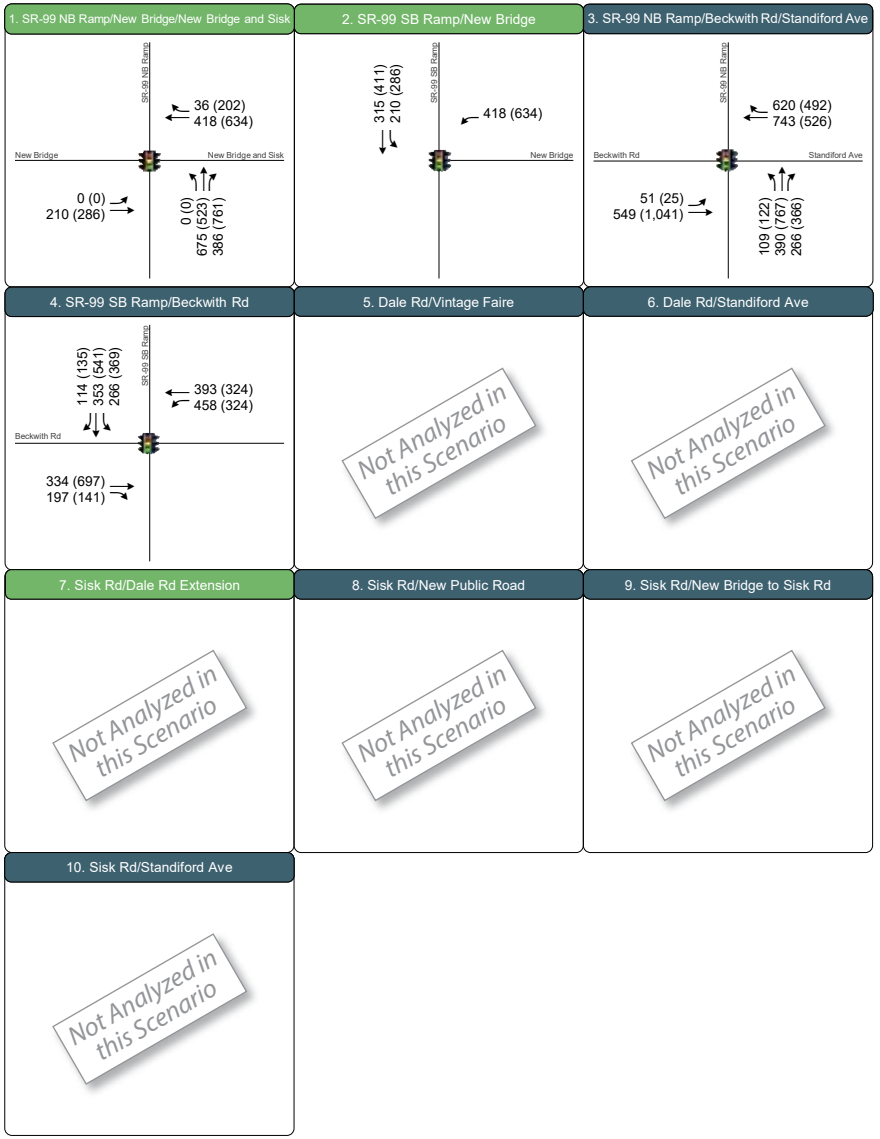
Study Intersection

Study Intersection with Project

Proposed Roadway

Peak Hour Traffic Volumes for Scenario B No Build





XX (YY) AM (PM) Peak Hour Traffic Volumes

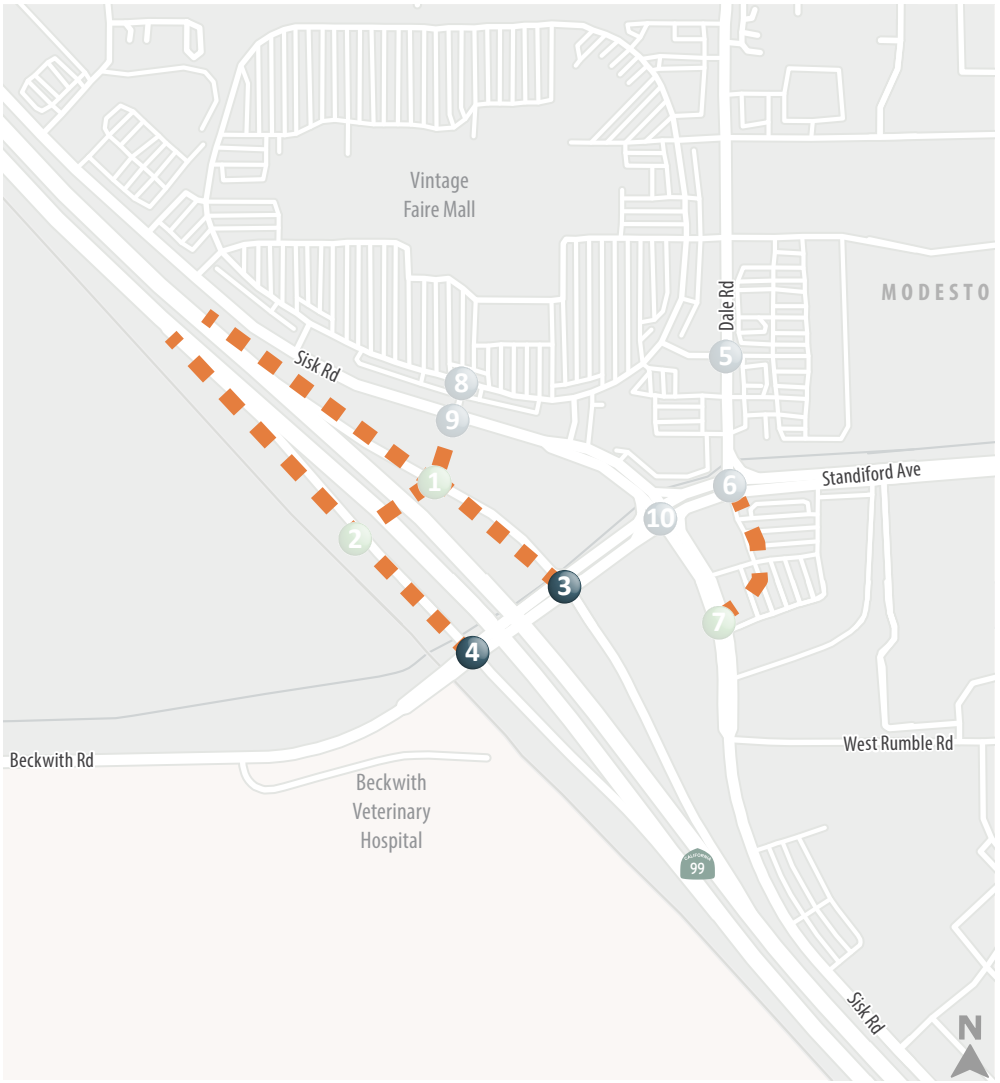
Signalized Intersection

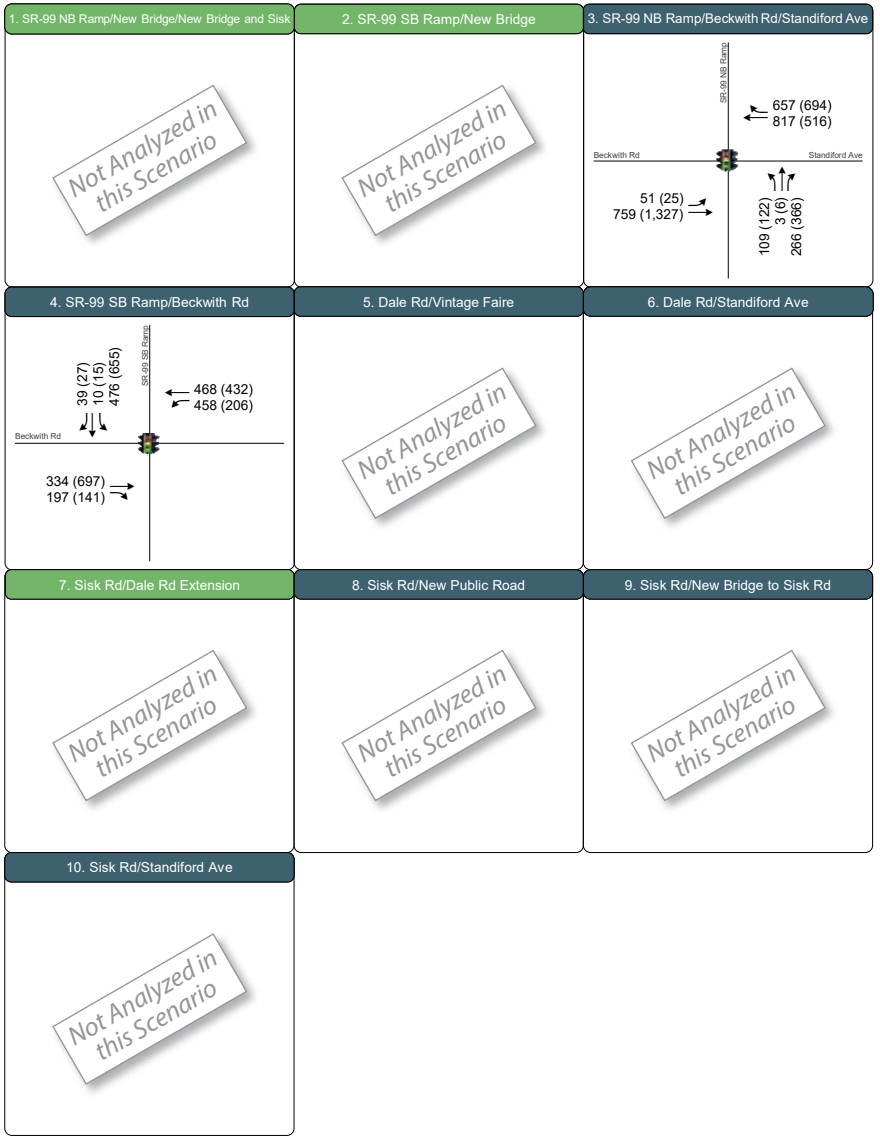
Study Intersection

Study Intersection with Project

Proposed Roadway

Peak Hour Traffic Volumes for Scenario B1





XX (YY) AM (PM) Peak Hour Traffic Volumes

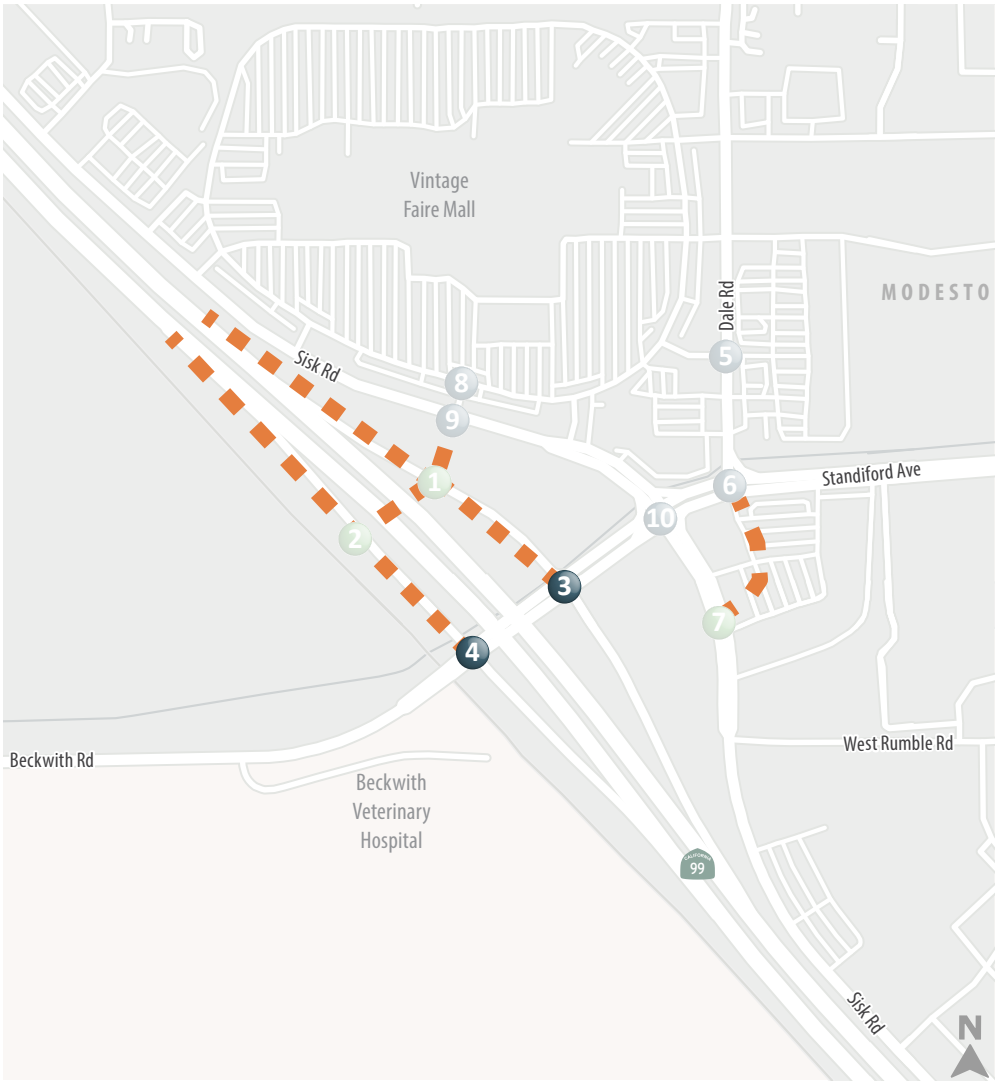
Signalized Intersection

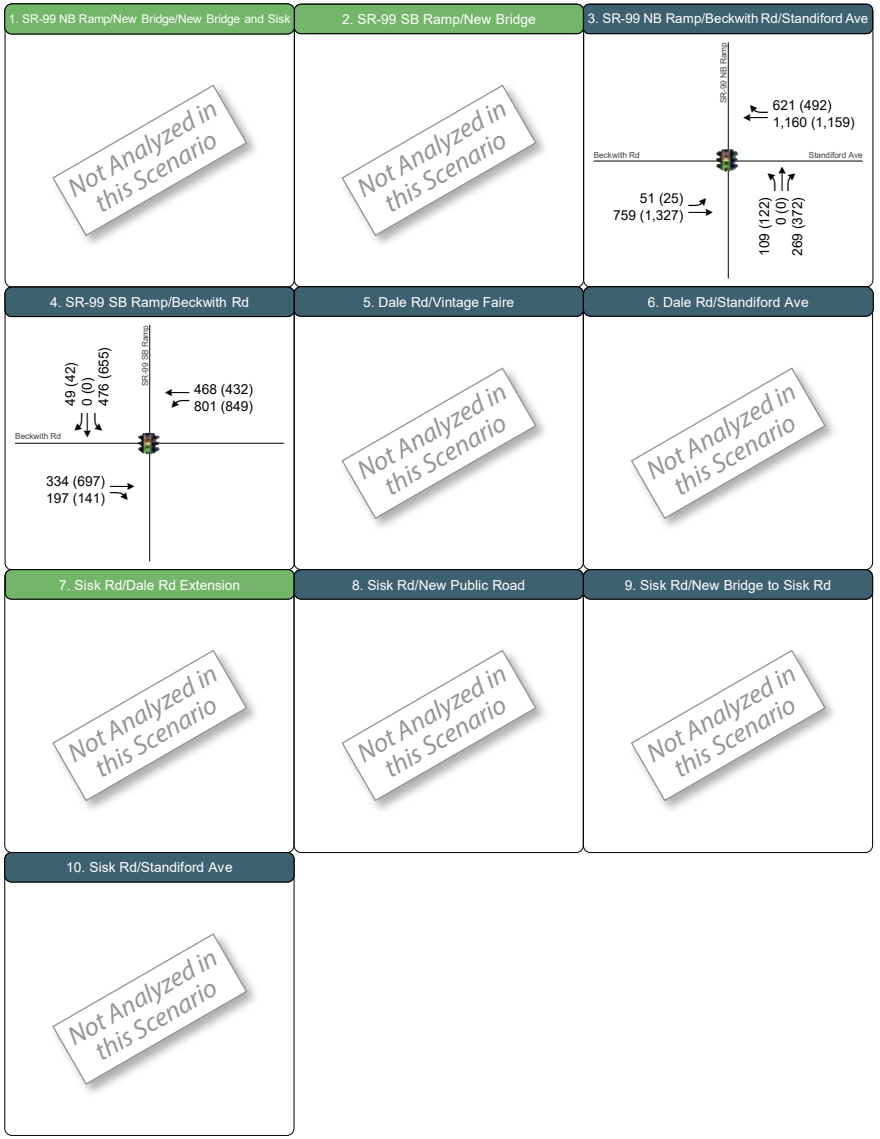
Study Intersection

Study Intersection with Project

Proposed Roadway

Peak Hour Traffic Volumes for Scenario B5





XX (YY) AM (PM) Peak Hour Traffic Volumes

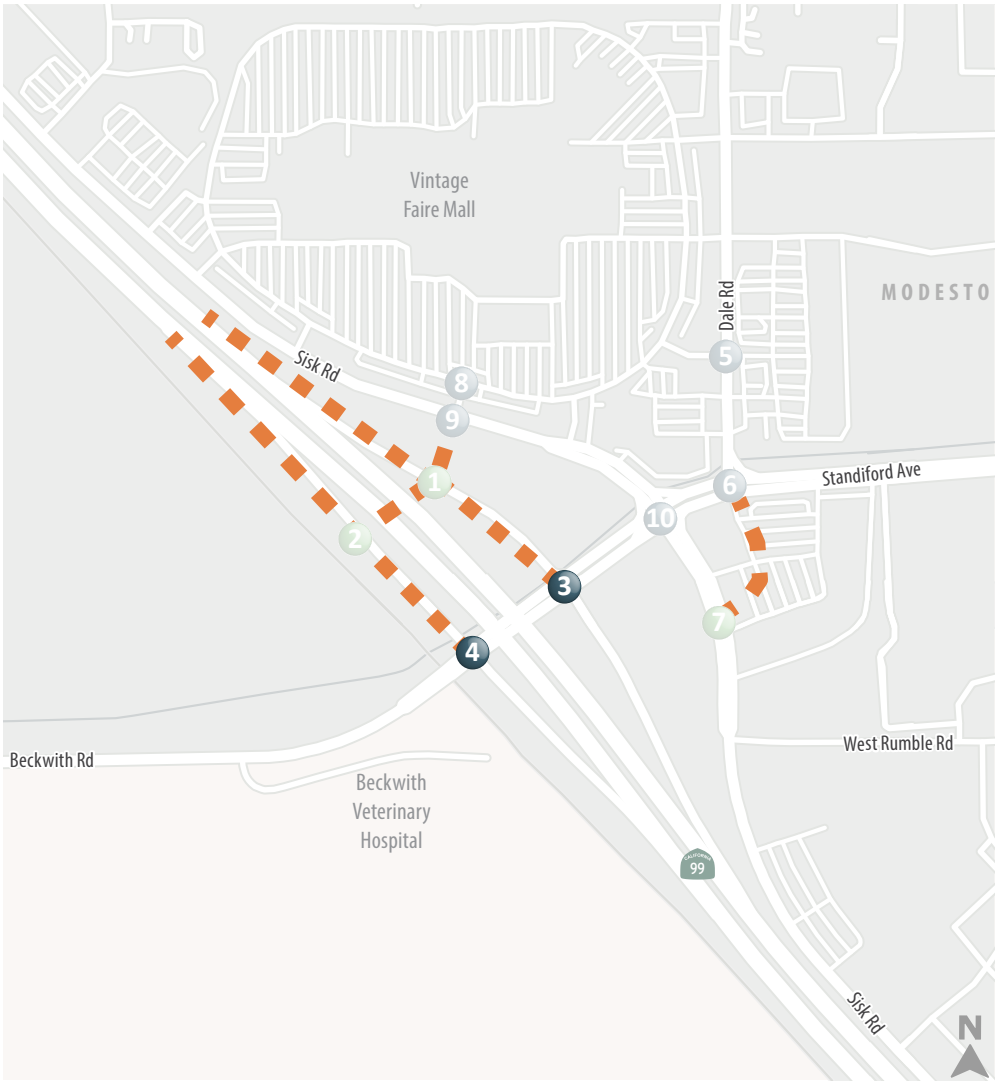
Signalized Intersection

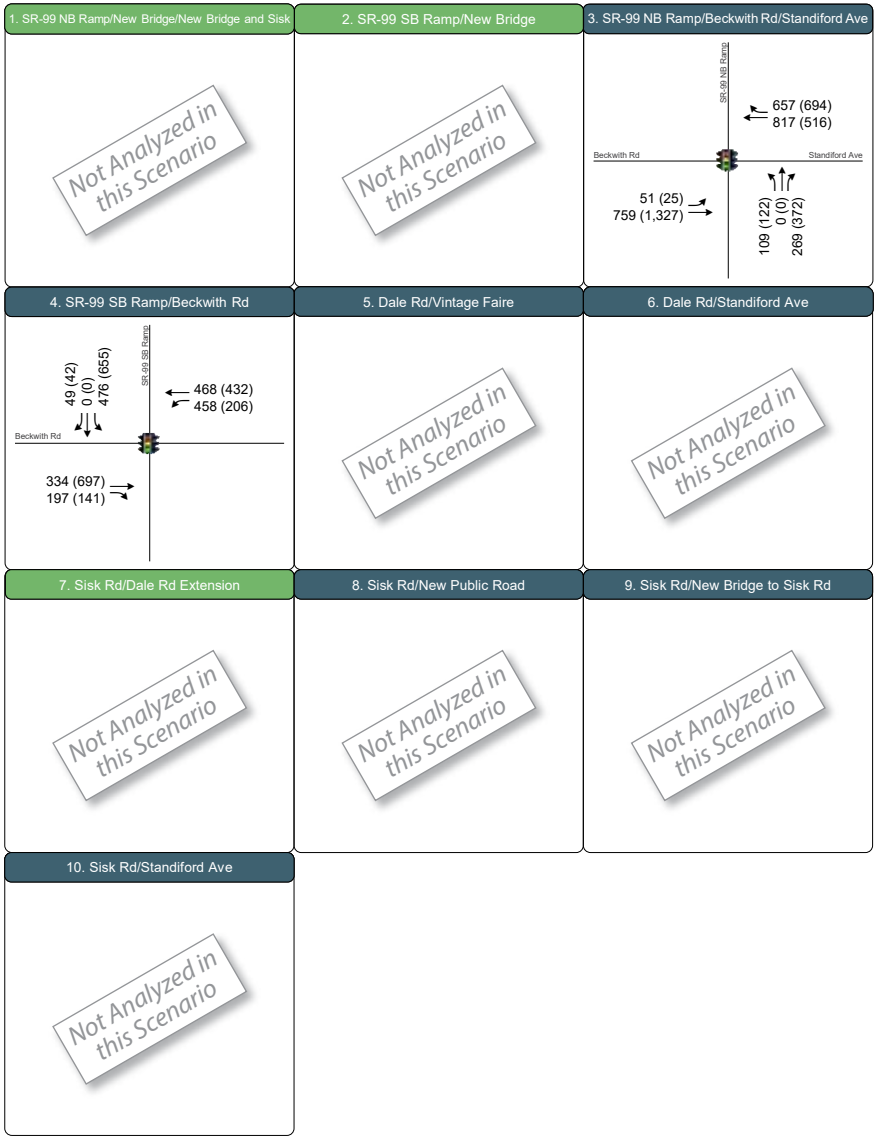
Study Intersection

Study Intersection with Project

Proposed Roadway

Peak Hour Traffic Volumes for Scenario B7

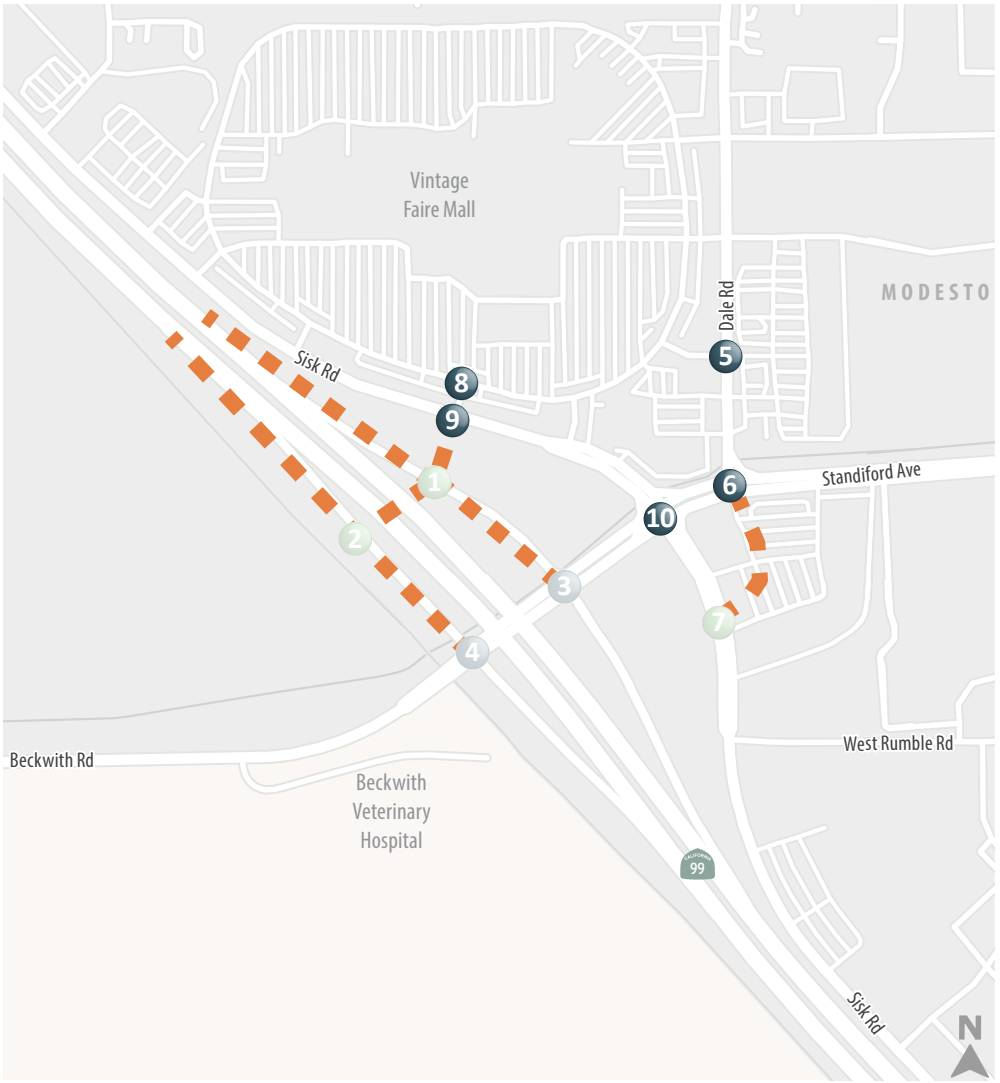


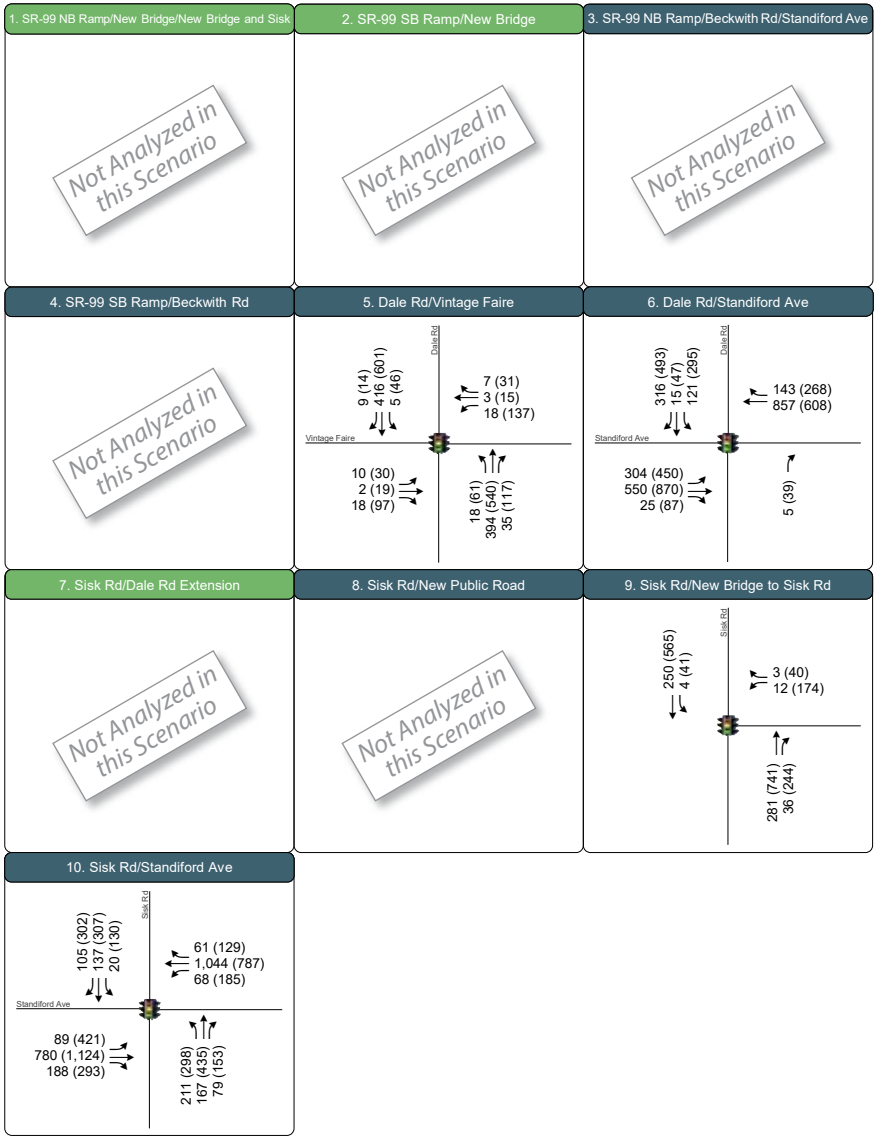


XX (YY) AM (PM) Peak Hour Traffic Volumes Signalized Intersection

Study Intersection # Study Intersection with Project Proposed Roadway

Peak Hour Traffic Volumes for Scenario B8

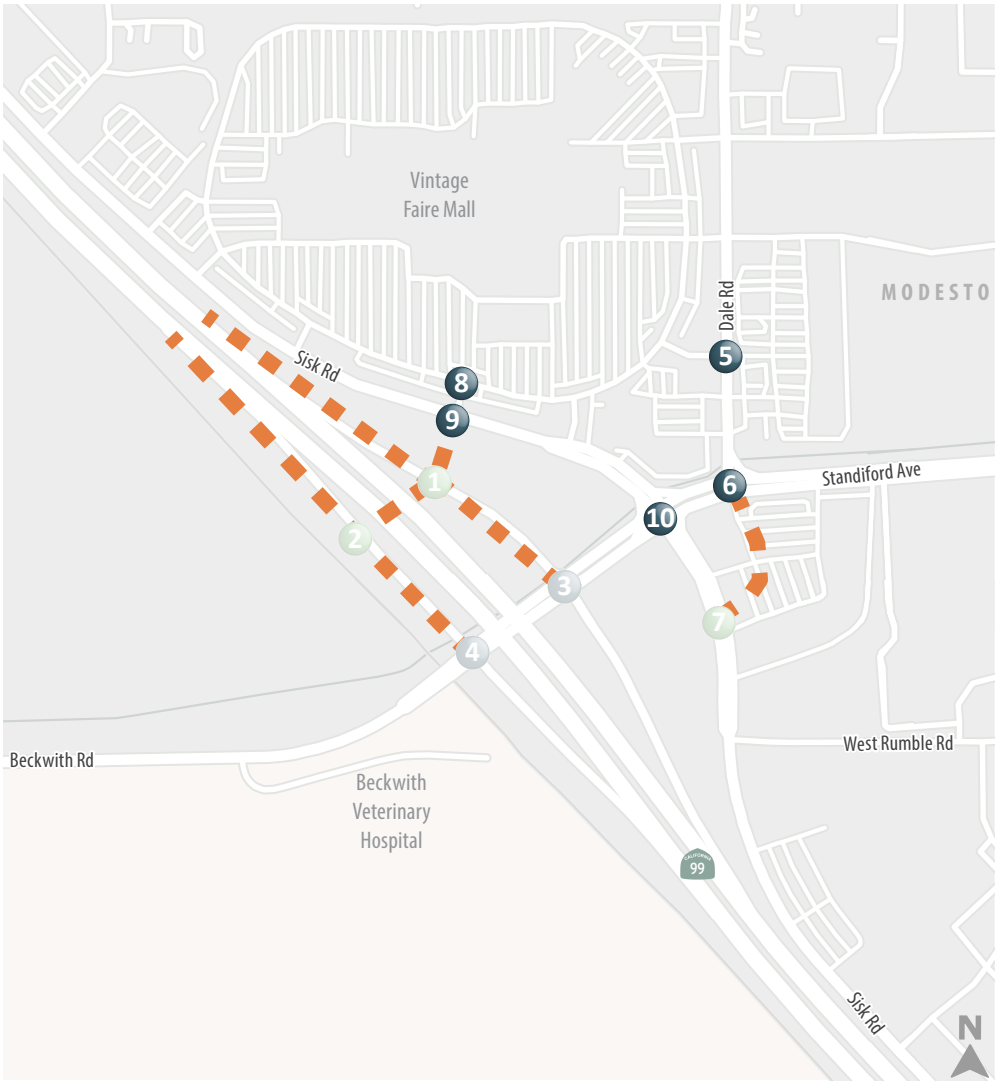


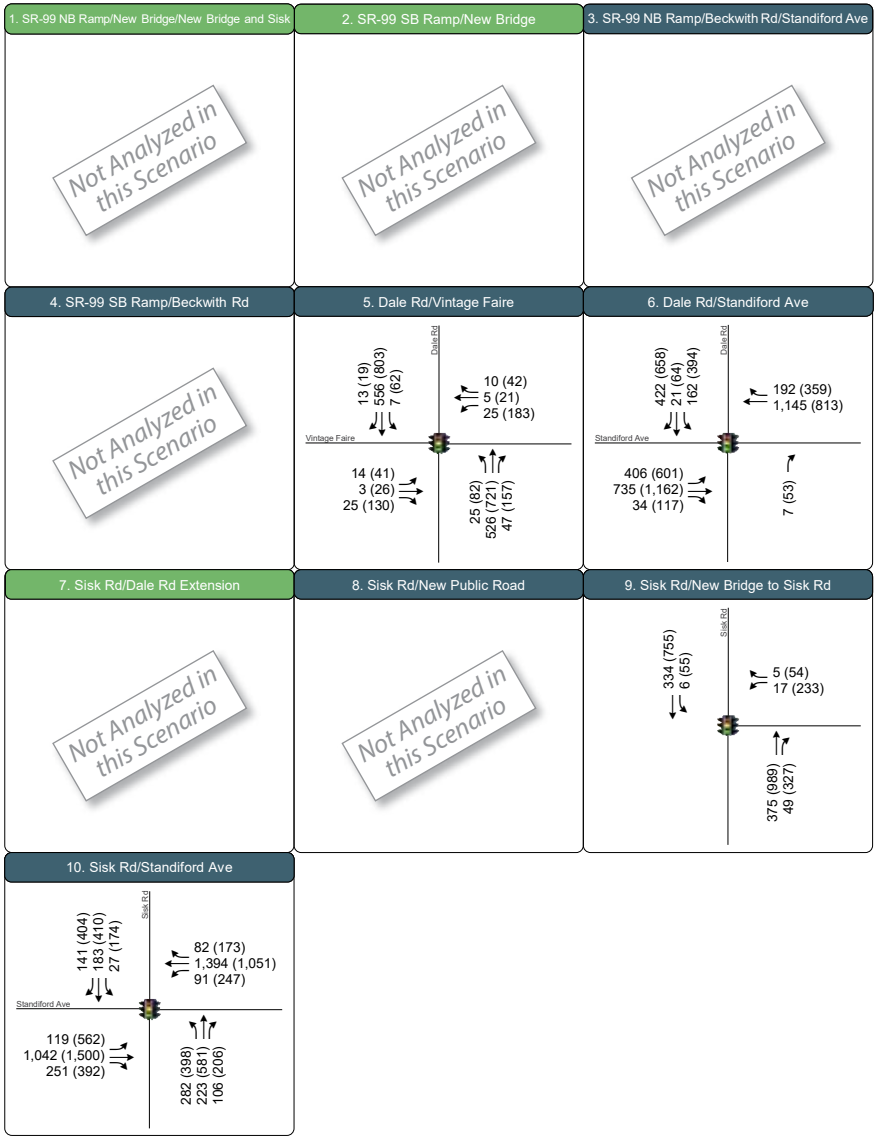


XX (YY) AM (PM) Peak Hour Traffic Volumes | Signalized Intersection | Stop Sign

Study Intersection | # Study Intersection with Project | Proposed Roadway

Peak Hour Traffic Volumes for Scenario M Existing

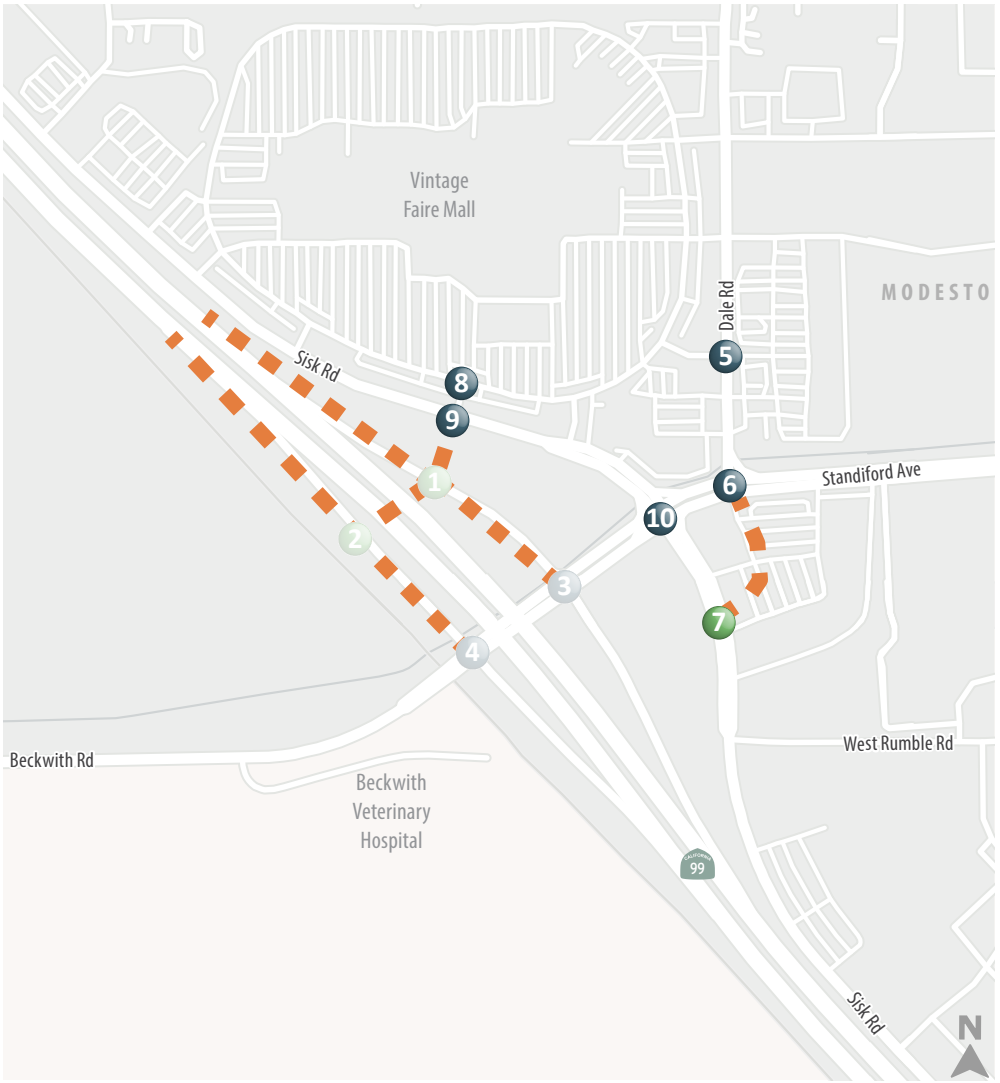


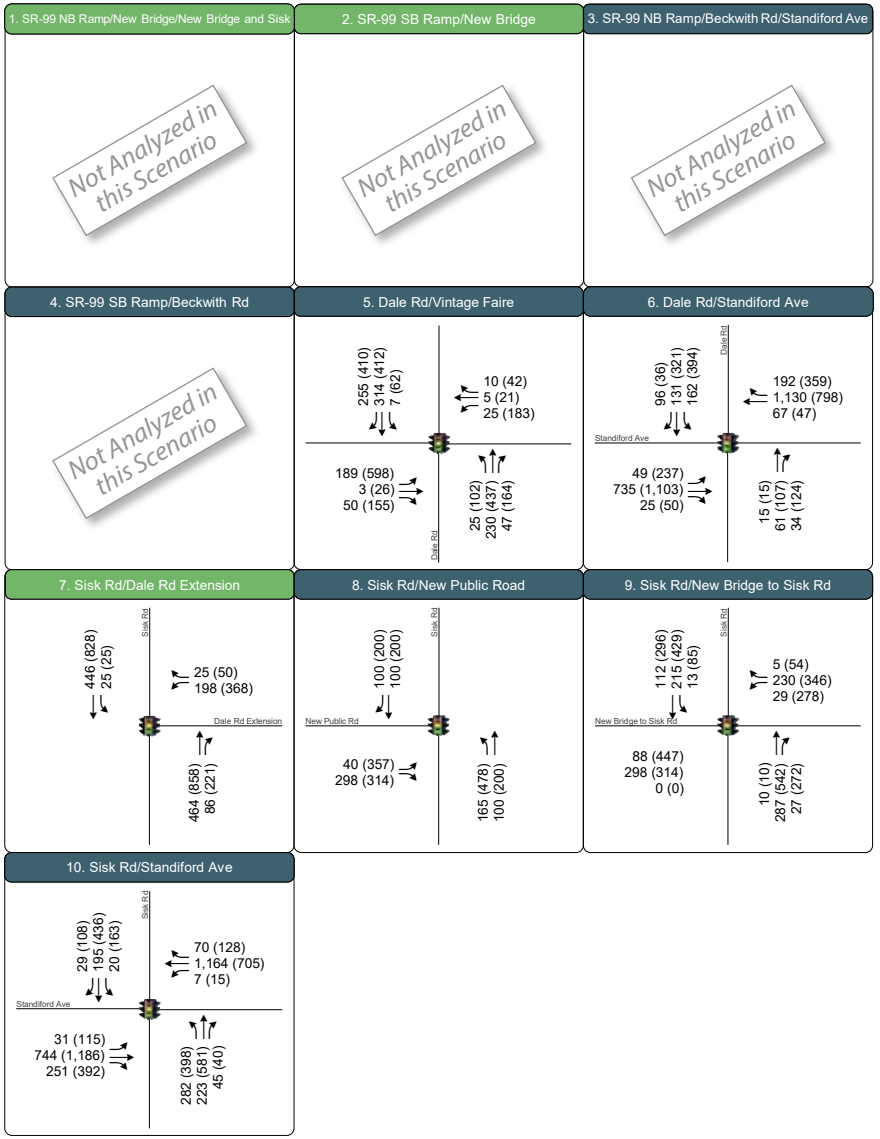


XX (YY) AM (PM) Peak Hour Traffic Volumes | Signalized Intersection | Stop Sign

Study Intersection | # Study Intersection with Project | Proposed Roadway

Peak Hour Traffic Volumes for Scenario M No Build





XX (YY) AM (PM) Peak Hour Traffic Volumes

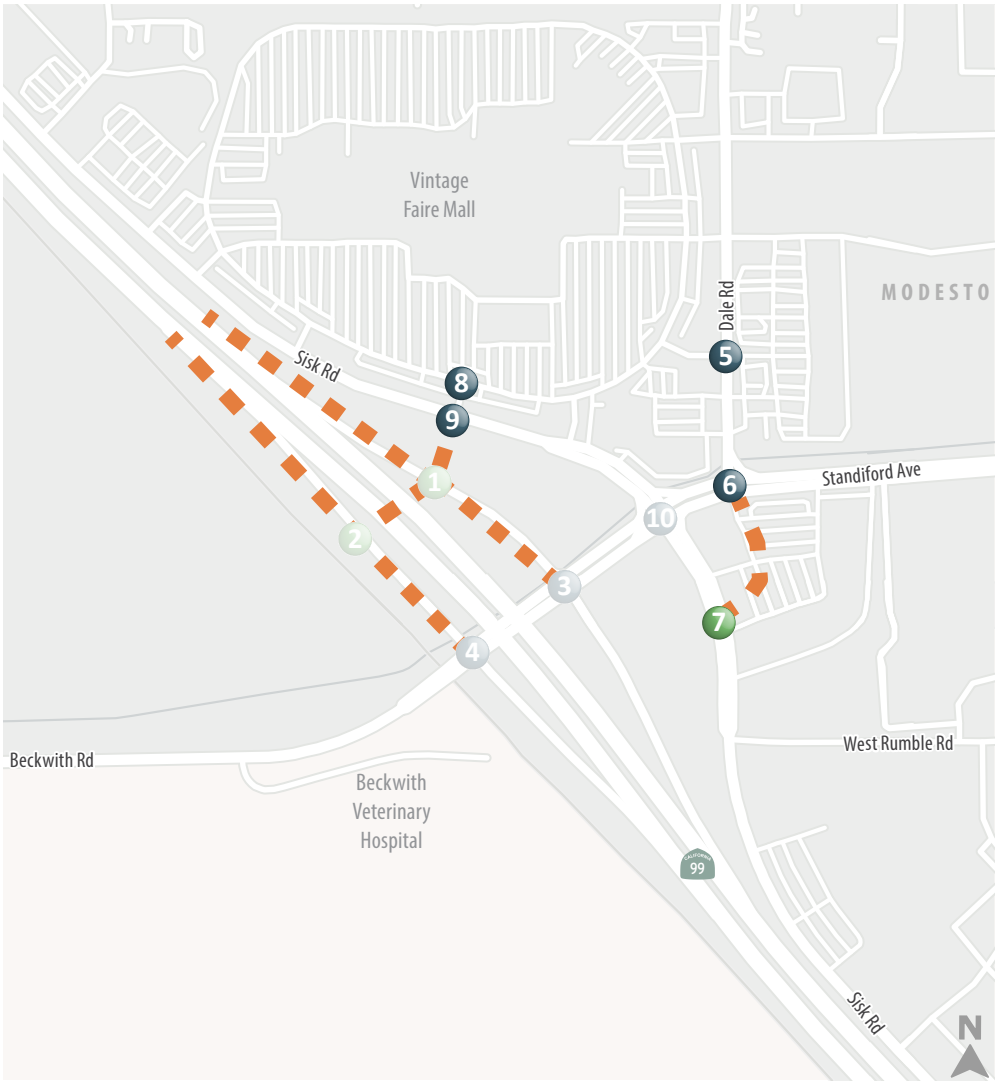
Signalized Intersection

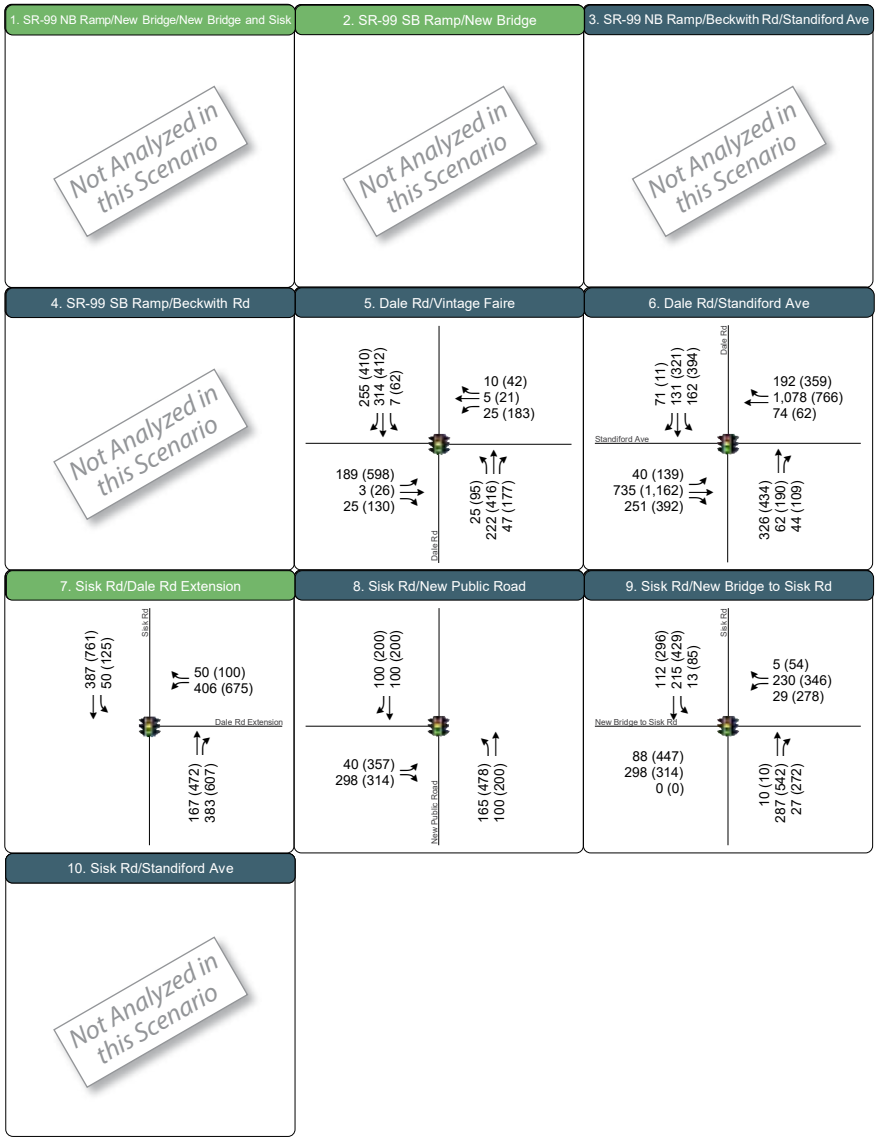
Study Intersection

Study Intersection with Project

Proposed Roadway

Peak Hour Traffic Volumes for Scenario M2





XX (YY) AM (PM) Peak Hour Traffic Volumes

Signalized Intersection

Study Intersection

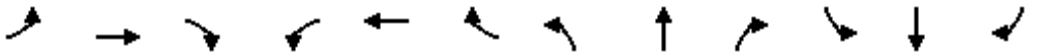
Study Intersection with Project

Proposed Roadway

Peak Hour Traffic Volumes for Scenario M3

Appendix E – Existing Conditions Intersection Analysis Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	568	0	0	869	491	81	2	489	0	0	0
Future Volume (veh/h)	38	568	0	0	869	491	81	2	489	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	1856	1856	0	0	1856	1856	1856	1856	1856			
Adj Flow Rate, veh/h	40	598	0	0	915	480	85	2	70			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	57	2934	0	0	1705	880	125	3	201			
Arrive On Green	0.03	0.83	0.00	0.00	0.76	0.76	0.07	0.07	0.07			
Sat Flow, veh/h	1767	3618	0	0	2342	1160	1728	41	2768			
Grp Volume(v), veh/h	40	598	0	0	714	681	87	0	70			
Grp Sat Flow(s),veh/h/ln	1767	1763	0	0	1763	1647	1769	0	1384			
Q Serve(g_s), s	2.5	3.8	0.0	0.0	18.1	18.8	5.3	0.0	2.6			
Cycle Q Clear(g_c), s	2.5	3.8	0.0	0.0	18.1	18.8	5.3	0.0	2.6			
Prop In Lane	1.00		0.00	0.00		0.70	0.98		1.00			
Lane Grp Cap(c), veh/h	57	2934	0	0	1337	1249	128	0	201			
V/C Ratio(X)	0.71	0.20	0.00	0.00	0.53	0.55	0.68	0.00	0.35			
Avail Cap(c_a), veh/h	177	2934	0	0	1337	1249	579	0	906			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.67	0.67	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	52.7	1.9	0.0	0.0	5.4	5.5	49.8	0.0	48.5			
Incr Delay (d2), s/veh	10.2	0.1	0.0	0.0	1.5	1.7	6.9	0.0	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			
%ile BackOfQ(50%),veh/ln	1.2	0.6	0.0	0.0	5.1	5.0	2.5	0.0	0.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.0	2.0	0.0	0.0	6.9	7.2	56.7	0.0	49.7			
LnGrp LOS	E	A	A	A	A	A	E	A	D			
Approach Vol, veh/h		638			1395			157				
Approach Delay, s/veh		5.8			7.1			53.6				
Approach LOS		A			A			D				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		97.3			8.1	89.2		12.7				
Change Period (Y+Rc), s		5.8			4.6	5.8		4.7				
Max Green Setting (Gmax), s		63.5			11.0	47.9		36.0				
Max Q Clear Time (g_c+I1), s		5.8			4.5	20.8		7.3				
Green Ext Time (p_c), s		6.9			0.0	16.2		0.8				
Intersection Summary												
HCM 6th Ctrl Delay			10.0									
HCM 6th LOS			B									



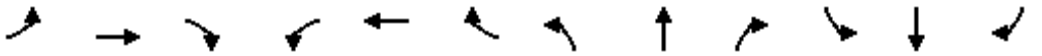
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	250	147	600	350	0	0	0	0	356	7	29
Future Volume (veh/h)	0	250	147	600	350	0	0	0	0	356	7	29
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1856	1856	1856	1856	0				1856	1856	1856
Adj Flow Rate, veh/h	0	281	74	674	393	0				400	8	30
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89				0.89	0.89	0.89
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	996	258	758	2219	0				441	9	33
Arrive On Green	0.00	0.36	0.36	0.22	0.63	0.00				0.28	0.28	0.28
Sat Flow, veh/h	0	2865	717	3428	3618	0				1602	32	120
Grp Volume(v), veh/h	0	177	178	674	393	0				438	0	0
Grp Sat Flow(s),veh/h/ln	0	1763	1726	1714	1763	0				1754	0	0
Q Serve(g_s), s	0.0	7.9	8.1	21.0	5.1	0.0				26.5	0.0	0.0
Cycle Q Clear(g_c), s	0.0	7.9	8.1	21.0	5.1	0.0				26.5	0.0	0.0
Prop In Lane	0.00		0.42	1.00		0.00				0.91		0.07
Lane Grp Cap(c), veh/h	0	633	620	758	2219	0				483	0	0
V/C Ratio(X)	0.00	0.28	0.29	0.89	0.18	0.00				0.91	0.00	0.00
Avail Cap(c_a), veh/h	0	633	620	838	2219	0				574	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.78	0.78	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	25.1	25.2	41.5	8.5	0.0				38.5	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.4	0.4	9.1	0.1	0.0				16.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.2	3.2	9.4	1.8	0.0				13.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	25.5	25.6	50.6	8.6	0.0				55.4	0.0	0.0
LnGrp LOS	A	C	C	D	A	A				E	A	A
Approach Vol, veh/h		355			1067						438	
Approach Delay, s/veh		25.5			35.1						55.4	
Approach LOS		C			D						E	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	29.7	44.9		35.4		74.6
Change Period (Y+Rc), s	5.4	* 5.4		5.1		5.4
Max Green Setting (Gmax), s	26.9	* 32		36.0		63.5
Max Q Clear Time (g_c+I1), s	23.0	10.1		28.5		7.1
Green Ext Time (p_c), s	1.4	2.8		1.7		3.4

Intersection Summary		
HCM 6th Ctrl Delay		38.1
HCM 6th LOS		D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	2	18	18	3	7	18	394	35	5	416	9
Future Volume (veh/h)	10	2	18	18	3	7	18	394	35	5	416	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	10	2	10	18	3	0	18	402	24	5	424	6
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	954	145	726	91	96	0	161	1026	61	23	660	9
Arrive On Green	0.54	0.54	0.54	0.05	0.05	0.00	0.18	0.42	0.42	0.01	0.13	0.13
Sat Flow, veh/h	1767	269	1344	1767	1856	0	1767	4889	289	1767	5146	73
Grp Volume(v), veh/h	10	0	12	18	3	0	18	276	150	5	278	152
Grp Sat Flow(s),veh/h/ln	1767	0	1613	1767	1856	0	1767	1689	1801	1767	1689	1842
Q Serve(g_s), s	0.3	0.0	0.4	1.1	0.2	0.0	0.9	6.2	6.4	0.3	8.6	8.6
Cycle Q Clear(g_c), s	0.3	0.0	0.4	1.1	0.2	0.0	0.9	6.2	6.4	0.3	8.6	8.6
Prop In Lane	1.00		0.83	1.00		0.00	1.00		0.16	1.00		0.04
Lane Grp Cap(c), veh/h	954	0	871	91	96	0	161	709	378	23	433	236
V/C Ratio(X)	0.01	0.00	0.01	0.20	0.03	0.00	0.11	0.39	0.40	0.22	0.64	0.64
Avail Cap(c_a), veh/h	954	0	871	289	304	0	289	1032	550	161	786	429
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	0.83	0.83	0.83	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.7	0.0	11.7	50.0	49.5	0.0	41.3	27.0	27.1	53.7	45.5	45.6
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.5	0.2	0.0	0.3	0.3	0.6	4.7	1.6	2.9
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	0.1	0.0	0.1	0.5	0.1	0.0	0.4	2.3	2.5	0.2	3.7	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.7	0.0	11.8	51.5	49.7	0.0	41.5	27.3	27.6	58.5	47.1	48.5
LnGrp LOS	B	A	B	D	D	A	D	C	C	E	D	D
Approach Vol, veh/h		22			21			444			435	
Approach Delay, s/veh		11.7			51.2			28.0			47.7	
Approach LOS		B			D			C			D	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		64.4	15.4	19.5		10.7	6.4	28.5				
Change Period (Y+Rc), s		5.0	5.4	* 5.4		5.0	5.0	5.4				
Max Green Setting (Gmax), s		28.0	18.0	* 26		18.0	10.0	33.6				
Max Q Clear Time (g_c+I1), s		2.4	2.9	10.6		3.1	2.3	8.4				
Green Ext Time (p_c), s		0.0	0.0	2.2		0.0	0.0	2.6				

Intersection Summary	
HCM 6th Ctrl Delay	37.4
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	304	550	25	0	857	143	0	0	5	121	15	316
Future Volume (veh/h)	304	550	25	0	857	143	0	0	5	121	15	316
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	0	1856	1856	0	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	320	579	0	0	902	0	0	0	0	138	0	35
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, %	3	3	3	0	3	3	0	3	3	3	3	3
Cap, veh/h	383	2819		0	3254		0	2		336	0	298
Arrive On Green	0.22	1.00	0.00	0.00	0.64	0.00	0.00	0.00	0.00	0.09	0.00	0.09
Sat Flow, veh/h	3428	3618	0	0	5233	1572	0	-55666	1572	3534	0	3135
Grp Volume(v), veh/h	320	579	0	0	902	0	0	0	0	138	0	35
Grp Sat Flow(s),veh/h/ln	1714	1763	0	0	1689	1572	0	1856	1572	1767	0	1568
Q Serve(g_s), s	9.8	0.0	0.0	0.0	8.5	0.0	0.0	0.0	0.0	4.0	0.0	1.1
Cycle Q Clear(g_c), s	9.8	0.0	0.0	0.0	8.5	0.0	0.0	0.0	0.0	4.0	0.0	1.1
Prop In Lane	1.00		0.00	0.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	383	2819		0	3254		0	2		336	0	298
V/C Ratio(X)	0.83	0.21		0.00	0.28		0.00	0.00		0.41	0.00	0.12
Avail Cap(c_a), veh/h	467	2819		0	3254		0	34		1349	0	1197
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.80	0.00	0.80
Uniform Delay (d), s/veh	41.7	0.0	0.0	0.0	8.6	0.0	0.0	0.0	0.0	46.9	0.0	45.6
Incr Delay (d2), s/veh	10.7	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.6	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.1	0.0	0.0	2.8	0.0	0.0	0.0	0.0	1.8	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.5	0.2	0.0	0.0	8.8	0.0	0.0	0.0	0.0	47.5	0.0	45.7
LnGrp LOS	D	A		A	A		A	A		D	A	D
Approach Vol, veh/h		899	A		902	A		0	A		173	
Approach Delay, s/veh		18.8			8.8			0.0			47.2	
Approach LOS		B			A						D	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		94.2		15.8	17.3	76.9		0.0				
Change Period (Y+Rc), s		6.2		5.4	5.0	6.2		3.0				
Max Green Setting (Gmax), s		51.4		42.0	15.0	31.4		2.0				
Max Q Clear Time (g_c+I1), s		2.0		6.0	11.8	10.5		0.0				
Green Ext Time (p_c), s		5.9		0.6	0.5	7.9		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	16.7	
HCM 6th LOS	B	

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	12	3	281	36	4	250
Future Volume (veh/h)	12	3	281	36	4	250
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	13	2	309	0	4	275
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	196	175	464		11	682
Arrive On Green	0.11	0.11	0.13	0.00	0.01	0.19
Sat Flow, veh/h	1767	1572	3618	1572	1767	3618
Grp Volume(v), veh/h	13	2	309	0	4	275
Grp Sat Flow(s),veh/h/ln	1767	1572	1763	1572	1767	1763
Q Serve(g_s), s	0.6	0.1	7.5	0.0	0.2	6.1
Cycle Q Clear(g_c), s	0.6	0.1	7.5	0.0	0.2	6.1
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	196	175	464		11	682
V/C Ratio(X)	0.07	0.01	0.67		0.36	0.40
Avail Cap(c_a), veh/h	353	314	1606		275	2350
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.96	0.00	1.00	1.00
Uniform Delay (d), s/veh	35.8	35.6	37.2	0.0	44.5	31.7
Incr Delay (d2), s/veh	0.6	0.1	1.9	0.0	21.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.1	3.2	0.0	0.2	2.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	36.5	35.7	39.1	0.0	66.1	32.2
LnGrp LOS	D	D	D		E	C
Approach Vol, veh/h	15		309	A		279
Approach Delay, s/veh	36.4		39.1			32.7
Approach LOS	D		D			C

Timer - Assigned Phs		4		6	7	8
Phs Duration (G+Y+Rc), s		23.4		16.0	5.6	17.9
Change Period (Y+Rc), s		6.0		6.0	5.0	6.0
Max Green Setting (Gmax), s		60.0		18.0	14.0	41.0
Max Q Clear Time (g_c+I1), s		8.1		2.6	2.2	9.5
Green Ext Time (p_c), s		2.2		0.0	0.0	2.3

Intersection Summary	
HCM 6th Ctrl Delay	36.1
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	780	188	68	1044	61	211	167	79	20	137	105
Future Volume (veh/h)	89	780	188	68	1044	61	211	167	79	20	137	105
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	91	796	162	69	1065	0	215	170	0	20	140	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	175	1050	212	1229	1969		218	503		86	360	
Arrive On Green	0.05	0.25	0.25	0.72	1.00	0.00	0.06	0.14	0.00	0.02	0.10	0.00
Sat Flow, veh/h	3428	4226	853	3428	3526	1572	3428	3618	0	3428	3526	1572
Grp Volume(v), veh/h	91	635	323	69	1065	0	215	170	0	20	140	0
Grp Sat Flow(s),veh/h/ln	1714	1689	1702	1714	1763	1572	1714	1763	0	1714	1763	1572
Q Serve(g_s), s	2.8	19.1	19.4	0.7	0.0	0.0	6.9	4.8	0.0	0.6	4.1	0.0
Cycle Q Clear(g_c), s	2.8	19.1	19.4	0.7	0.0	0.0	6.9	4.8	0.0	0.6	4.1	0.0
Prop In Lane	1.00		0.50	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	175	839	423	1229	1969		218	503		86	360	
V/C Ratio(X)	0.52	0.76	0.76	0.06	0.54		0.99	0.34		0.23	0.39	
Avail Cap(c_a), veh/h	218	1028	518	1229	1969		218	1218		187	1186	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.94	0.94	0.00	1.00	1.00	0.00	0.92	0.92	0.00
Uniform Delay (d), s/veh	50.9	38.3	38.3	10.1	0.0	0.0	51.4	42.5	0.0	52.6	46.2	0.0
Incr Delay (d2), s/veh	0.9	6.3	12.3	0.0	1.0	0.0	56.5	0.4	0.0	0.5	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	8.3	9.2	0.2	0.3	0.0	4.6	2.1	0.0	0.3	1.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.8	44.6	50.7	10.1	1.0	0.0	107.9	42.9	0.0	53.1	46.8	0.0
LnGrp LOS	D	D	D	B	A		F	D		D	D	
Approach Vol, veh/h		1049			1134	A		385	A		160	A
Approach Delay, s/veh		47.1			1.6			79.2			47.6	
Approach LOS		D			A			E			D	

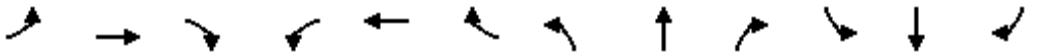
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	45.7	33.6	13.2	17.4	11.6	67.7	8.7	21.9
Change Period (Y+Rc), s	6.3	* 6.3	6.2	* 6.2	6.0	6.3	6.0	6.2
Max Green Setting (Gmax), s	8.0	* 34	7.0	* 37	7.0	34.5	6.0	38.0
Max Q Clear Time (g_c+I1), s	2.7	21.4	8.9	6.1	4.8	2.0	2.6	6.8
Green Ext Time (p_c), s	0.0	6.0	0.0	0.8	0.0	11.9	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	32.7
HCM 6th LOS	C

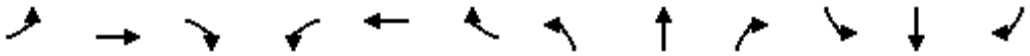
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	994	0	0	868	519	91	4	844	0	0	0
Future Volume (veh/h)	18	994	0	0	868	519	91	4	844	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	19	1025	0	0	895	472	94	4	732			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	35	2211	0	0	1276	663	497	21	799			
Arrive On Green	0.02	0.62	0.00	0.00	0.56	0.56	0.29	0.29	0.29			
Sat Flow, veh/h	1781	3647	0	0	2354	1175	1712	73	2752			
Grp Volume(v), veh/h	19	1025	0	0	701	666	98	0	732			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	1659	1785	0	1376			
Q Serve(g_s), s	1.3	18.4	0.0	0.0	34.0	35.1	4.9	0.0	30.9			
Cycle Q Clear(g_c), s	1.3	18.4	0.0	0.0	34.0	35.1	4.9	0.0	30.9			
Prop In Lane	1.00		0.00	0.00		0.71	0.96		1.00			
Lane Grp Cap(c), veh/h	35	2211	0	0	1003	936	518	0	799			
V/C Ratio(X)	0.55	0.46	0.00	0.00	0.70	0.71	0.19	0.00	0.92			
Avail Cap(c_a), veh/h	148	2211	0	0	1003	936	565	0	871			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.56	0.56	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	58.3	12.0	0.0	0.0	18.8	19.0	32.0	0.0	41.2			
Incr Delay (d2), s/veh	7.3	0.4	0.0	0.0	4.0	4.6	0.2	0.0	13.7			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.6	6.6	0.0	0.0	13.8	13.4	2.1	0.0	11.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.6	12.4	0.0	0.0	22.8	23.6	32.2	0.0	54.9			
LnGrp LOS	E	B	A	A	C	C	C	A	D			
Approach Vol, veh/h		1044			1367			830				
Approach Delay, s/veh		13.4			23.2			52.2				
Approach LOS		B			C			D				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		80.5			6.9	73.5		39.5				
Change Period (Y+Rc), s		5.8			4.6	5.8		4.7				
Max Green Setting (Gmax), s		71.5			10.0	56.9		38.0				
Max Q Clear Time (g_c+I1), s		20.4			3.3	37.1		32.9				
Green Ext Time (p_c), s		14.3			0.0	12.8		2.0				
Intersection Summary												
HCM 6th Ctrl Delay			27.5									
HCM 6th LOS			C									



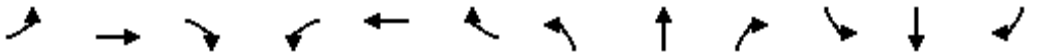
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	522	105	636	323	0	0	0	0	490	11	20
Future Volume (veh/h)	0	522	105	636	323	0	0	0	0	490	11	20
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	555	97	677	344	0				521	12	20
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	963	168	756	2068	0				553	13	21
Arrive On Green	0.00	0.32	0.32	0.22	0.58	0.00				0.33	0.33	0.33
Sat Flow, veh/h	0	3119	527	3456	3647	0				1672	39	64
Grp Volume(v), veh/h	0	325	327	677	344	0				553	0	0
Grp Sat Flow(s),veh/h/ln	0	1777	1775	1728	1777	0				1775	0	0
Q Serve(g_s), s	0.0	18.3	18.5	22.8	5.4	0.0				36.4	0.0	0.0
Cycle Q Clear(g_c), s	0.0	18.3	18.5	22.8	5.4	0.0				36.4	0.0	0.0
Prop In Lane	0.00		0.30	1.00		0.00				0.94		0.04
Lane Grp Cap(c), veh/h	0	566	565	756	2068	0				587	0	0
V/C Ratio(X)	0.00	0.57	0.58	0.90	0.17	0.00				0.94	0.00	0.00
Avail Cap(c_a), veh/h	0	566	565	832	2068	0				621	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.62	0.62	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	34.1	34.2	45.6	11.6	0.0				39.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.8	1.9	8.0	0.1	0.0				22.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.9	8.0	10.3	2.0	0.0				18.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	36.0	36.0	53.5	11.7	0.0				61.6	0.0	0.0
LnGrp LOS	A	D	D	D	B	A				E	A	A
Approach Vol, veh/h		652			1021						553	
Approach Delay, s/veh		36.0			39.5						61.6	
Approach LOS		D			D						E	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	31.6	43.6		44.8		75.2
Change Period (Y+Rc), s	5.4	* 5.4		5.1		5.4
Max Green Setting (Gmax), s	28.9	* 34		42.0		67.5
Max Q Clear Time (g_c+I1), s	24.8	20.5		38.4		7.4
Green Ext Time (p_c), s	1.4	4.4		1.3		2.9

Intersection Summary		
HCM 6th Ctrl Delay		43.9
HCM 6th LOS		D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	19	97	137	15	31	61	540	117	46	601	14
Future Volume (veh/h)	30	19	97	137	15	31	61	540	117	46	601	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	30	19	40	138	15	4	62	545	83	46	607	12
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	823	248	522	193	154	41	138	788	118	122	843	17
Arrive On Green	0.46	0.46	0.46	0.11	0.11	0.11	0.15	0.35	0.35	0.07	0.16	0.16
Sat Flow, veh/h	1781	537	1130	1781	1419	378	1781	4478	671	1781	5154	102
Grp Volume(v), veh/h	30	0	59	138	0	19	62	412	216	46	400	219
Grp Sat Flow(s),veh/h/ln	1781	0	1666	1781	0	1797	1781	1702	1745	1781	1702	1852
Q Serve(g_s), s	1.0	0.0	2.2	8.2	0.0	1.0	3.5	11.4	11.7	2.7	12.3	12.3
Cycle Q Clear(g_c), s	1.0	0.0	2.2	8.2	0.0	1.0	3.5	11.4	11.7	2.7	12.3	12.3
Prop In Lane	1.00		0.68	1.00		0.21	1.00		0.38	1.00		0.05
Lane Grp Cap(c), veh/h	823	0	770	193	0	194	138	599	307	122	557	303
V/C Ratio(X)	0.04	0.00	0.08	0.72	0.00	0.10	0.45	0.69	0.70	0.38	0.72	0.72
Avail Cap(c_a), veh/h	823	0	770	356	0	359	227	978	501	211	947	515
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.66	0.66	0.66	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.2	0.0	16.5	47.4	0.0	44.2	44.4	33.1	33.2	49.0	43.6	43.6
Incr Delay (d2), s/veh	0.1	0.0	0.2	6.9	0.0	0.3	1.5	0.9	2.0	1.9	1.8	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.9	4.0	0.0	0.5	1.5	4.0	4.3	1.3	5.2	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.3	0.0	16.7	54.3	0.0	44.5	45.9	34.0	35.1	50.9	45.4	46.9
LnGrp LOS	B	A	B	D	A	D	D	C	D	D	D	D
Approach Vol, veh/h		89			157			690			665	
Approach Delay, s/veh		16.6			53.1			35.4			46.2	
Approach LOS		B			D			D			D	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		55.8	13.9	23.4		16.9	12.5	24.7				
Change Period (Y+Rc), s		5.0	5.4	* 5.4		5.0	5.0	5.4				
Max Green Setting (Gmax), s		23.0	14.0	* 31		22.0	13.0	31.6				
Max Q Clear Time (g_c+I1), s		4.2	5.5	14.3		10.2	4.7	13.7				
Green Ext Time (p_c), s		0.3	0.1	3.5		0.5	0.0	3.7				

Intersection Summary												
HCM 6th Ctrl Delay			40.6									
HCM 6th LOS			D									

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	450	870	87	0	608	268	0	0	39	295	47	493
Future Volume (veh/h)	450	870	87	0	608	268	0	0	39	295	47	493
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
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	0	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	464	897	0	0	627	0	0	0	0	338	0	103
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	0	2	2	0	2	2	2	2	2
Cap, veh/h	503	2650		0	2832		0	2		531	0	466
Arrive On Green	0.29	1.00	0.00	0.00	0.55	0.00	0.00	0.00	0.00	0.15	0.00	0.15
Sat Flow, veh/h	3456	3647	0	0	5274	1585	0	-56111	1585	3563	0	3125
Grp Volume(v), veh/h	464	897	0	0	627	0	0	0	0	338	0	103
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1702	1585	0	1870	1585	1781	0	1563
Q Serve(g_s), s	14.3	0.0	0.0	0.0	6.9	0.0	0.0	0.0	0.0	9.8	0.0	3.2
Cycle Q Clear(g_c), s	14.3	0.0	0.0	0.0	6.9	0.0	0.0	0.0	0.0	9.8	0.0	3.2
Prop In Lane	1.00		0.00	0.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	503	2650		0	2832		0	2		531	0	466
V/C Ratio(X)	0.92	0.34		0.00	0.22		0.00	0.00		0.64	0.00	0.22
Avail Cap(c_a), veh/h	503	2650		0	2832		0	34		1360	0	1193
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.64	0.64	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.71	0.00	0.71
Uniform Delay (d), s/veh	38.4	0.0	0.0	0.0	12.4	0.0	0.0	0.0	0.0	44.0	0.0	41.2
Incr Delay (d2), s/veh	16.6	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.9	0.0	0.2
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	6.0	0.1	0.0	0.0	2.4	0.0	0.0	0.0	0.0	4.3	0.0	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.0	0.2	0.0	0.0	12.6	0.0	0.0	0.0	0.0	44.9	0.0	41.4
LnGrp LOS	E	A		A	B		A	A		D	A	D
Approach Vol, veh/h		1361	A		627	A		0	A		441	
Approach Delay, s/veh		18.9			12.6			0.0			44.1	
Approach LOS		B			B						D	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		88.2		21.8	21.0	67.2		0.0				
Change Period (Y+Rc), s		6.2		5.4	5.0	6.2		3.0				
Max Green Setting (Gmax), s		51.4		42.0	16.0	30.4		2.0				
Max Q Clear Time (g_c+I1), s		2.0		11.8	16.3	8.9		0.0				
Green Ext Time (p_c), s		10.5		1.6	0.0	5.4		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	21.9	
HCM 6th LOS	C	

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	174	40	741	244	41	565
Future Volume (veh/h)	174	40	741	244	41	565
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	181	18	772	0	43	589
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	220	195	1023		78	1377
Arrive On Green	0.12	0.12	0.29	0.00	0.04	0.39
Sat Flow, veh/h	1781	1585	3647	1585	1781	3647
Grp Volume(v), veh/h	181	18	772	0	43	589
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1585	1781	1777
Q Serve(g_s), s	8.9	0.9	17.8	0.0	2.1	11.0
Cycle Q Clear(g_c), s	8.9	0.9	17.8	0.0	2.1	11.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	220	195	1023		78	1377
V/C Ratio(X)	0.82	0.09	0.75		0.55	0.43
Avail Cap(c_a), veh/h	257	229	1658		356	2567
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.09	0.00	1.00	1.00
Uniform Delay (d), s/veh	38.5	35.0	29.2	0.0	42.2	20.2
Incr Delay (d2), s/veh	28.3	0.9	0.1	0.0	7.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.9	7.1	0.0	1.1	4.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	66.8	35.9	29.3	0.0	49.2	20.5
LnGrp LOS	E	D	C		D	C
Approach Vol, veh/h	199		772	A		632
Approach Delay, s/veh	64.0		29.3			22.5
Approach LOS	E		C			C

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	40.9	17.1	9.0	31.9
Change Period (Y+Rc), s	6.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	65.0	13.0	18.0	42.0
Max Q Clear Time (g_c+I1), s	13.0	10.9	4.1	19.8
Green Ext Time (p_c), s	5.2	0.2	0.1	6.1

Intersection Summary	
HCM 6th Ctrl Delay	30.9
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	421	1124	293	185	787	129	298	435	153	130	307	302
Future Volume (veh/h)	421	1124	293	185	787	129	298	435	153	130	307	302
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	439	1171	269	193	820	0	310	453	0	135	320	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	220	1256	289	836	1718		314	624		188	488	
Arrive On Green	0.06	0.30	0.30	0.48	0.97	0.00	0.09	0.18	0.00	0.05	0.14	0.00
Sat Flow, veh/h	3456	4150	953	3456	3554	1585	3456	3647	0	3456	3554	1585
Grp Volume(v), veh/h	439	961	479	193	820	0	310	453	0	135	320	0
Grp Sat Flow(s),veh/h/ln	1728	1702	1699	1728	1777	1585	1728	1777	0	1728	1777	1585
Q Serve(g_s), s	7.0	30.2	30.2	3.6	1.5	0.0	9.9	13.2	0.0	4.2	9.4	0.0
Cycle Q Clear(g_c), s	7.0	30.2	30.2	3.6	1.5	0.0	9.9	13.2	0.0	4.2	9.4	0.0
Prop In Lane	1.00		0.56	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	220	1030	514	836	1718		314	624		188	488	
V/C Ratio(X)	2.00	0.93	0.93	0.23	0.48		0.99	0.73		0.72	0.66	
Avail Cap(c_a), veh/h	220	1037	517	836	1718		314	1228		188	1195	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.94	0.94	0.00	1.00	1.00	0.00	0.94	0.94	0.00
Uniform Delay (d), s/veh	51.5	37.3	37.3	22.5	1.0	0.0	49.9	42.8	0.0	51.2	45.0	0.0
Incr Delay (d2), s/veh	464.2	15.8	26.0	0.0	0.9	0.0	46.7	1.6	0.0	10.0	1.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.1	14.2	15.6	1.3	0.5	0.0	6.2	5.8	0.0	2.1	4.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	515.7	53.1	63.3	22.5	1.9	0.0	96.6	44.5	0.0	61.2	46.4	0.0
LnGrp LOS	F	D	E	C	A		F	D		E	D	
Approach Vol, veh/h		1879			1013	A		763	A		455	A
Approach Delay, s/veh		163.8			5.8			65.7			50.8	
Approach LOS		F			A			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.9	39.6	16.2	21.3	13.0	59.5	12.0	25.5
Change Period (Y+Rc), s	6.3	* 6.3	6.2	* 6.2	6.0	6.3	6.0	6.2
Max Green Setting (Gmax), s	8.0	* 34	7.0	* 37	7.0	34.5	6.0	38.0
Max Q Clear Time (g_c+I1), s	5.6	32.2	11.9	11.4	9.0	3.5	6.2	15.2
Green Ext Time (p_c), s	0.1	1.1	0.0	1.9	0.0	8.4	0.0	2.8

Intersection Summary	
HCM 6th Ctrl Delay	94.1
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



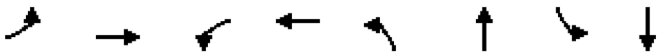
Lane Group	EBL	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	40	598	1432	87	515
v/c Ratio	0.32	0.21	0.59	0.46	0.69
Control Delay (s/veh)	70.6	0.7	9.6	52.7	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	70.6	0.7	9.6	52.7	10.0
Queue Length 50th (ft)	30	3	240	58	5
Queue Length 95th (ft)	67	15	384	105	56
Internal Link Dist (ft)		408	505	1354	
Turn Bay Length (ft)	140				
Base Capacity (vph)	175	2791	2426	575	1238
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.23	0.21	0.59	0.15	0.42

Intersection Summary



Lane Group	EBT	WBL	WBT	SBT
Lane Group Flow (vph)	446	674	393	441
v/c Ratio	0.69	0.49	0.18	0.87
Control Delay (s/veh)	37.3	20.8	10.6	54.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	37.3	20.8	10.6	54.7
Queue Length 50th (ft)	118	170	51	287
Queue Length 95th (ft)	160	231	53	395
Internal Link Dist (ft)	371		408	1244
Turn Bay Length (ft)		280		
Base Capacity (vph)	1040	1374	2157	574
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.43	0.49	0.18	0.77

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	10	20	18	10	18	438	5	433
v/c Ratio	0.01	0.02	0.09	0.05	0.11	0.50	0.03	0.59
Control Delay (s/veh)	17.1	8.8	45.6	29.3	59.8	44.1	46.2	46.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	17.1	8.8	45.6	29.3	59.8	44.1	46.2	46.2
Queue Length 50th (ft)	3	1	12	2	13	115	3	106
Queue Length 95th (ft)	16	17	34	19	m26	149	15	127
Internal Link Dist (ft)		206		308		483		447
Turn Bay Length (ft)					160		145	
Base Capacity (vph)	1071	971	286	273	286	1526	159	1170
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.02	0.06	0.04	0.06	0.29	0.03	0.37

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBT	WBR	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	320	605	902	151	5	71	72	333
v/c Ratio	0.72	0.22	0.30	0.15	0.01	0.40	0.40	0.57
Control Delay (s/veh)	80.4	1.3	11.5	2.4	0.0	31.1	31.1	22.6
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	80.4	1.5	11.5	2.4	0.0	31.1	31.1	22.6
Queue Length 50th (ft)	123	22	99	0	0	56	56	116
Queue Length 95th (ft)	170	24	160	31	0	103	104	155
Internal Link Dist (ft)		226	293				483	
Turn Bay Length (ft)						270		
Base Capacity (vph)	463	2713	3031	1004	472	635	644	1245
Starvation Cap Reductn	0	1135	0	0	0	0	0	0
Spillback Cap Reductn	0	0	229	0	0	0	0	14
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.38	0.32	0.15	0.01	0.11	0.11	0.27

Intersection Summary



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	13	3	309	40	4	275
v/c Ratio	0.01	0.00	0.57	0.14	0.03	0.43
Control Delay (s/veh)	7.3	5.7	38.9	11.3	39.5	33.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	7.3	5.7	38.9	11.3	39.5	33.4
Queue Length 50th (ft)	2	0	86	0	2	76
Queue Length 95th (ft)	12	4	121	26	13	88
Internal Link Dist (ft)	72		940			1206
Turn Bay Length (ft)				240	280	
Base Capacity (vph)	1198	1074	1596	736	272	2336
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.00	0.19	0.05	0.01	0.12

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	91	988	69	1065	62	215	251	20	140	107
v/c Ratio	0.44	0.42	0.17	0.57	0.07	0.61	0.33	0.11	0.41	0.31
Control Delay (s/veh)	56.8	20.2	42.0	18.5	0.1	53.3	25.7	50.9	50.4	2.3
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	56.8	20.2	42.0	18.7	0.1	53.3	25.7	50.9	50.4	2.3
Queue Length 50th (ft)	32	154	22	280	0	79	53	7	50	0
Queue Length 95th (ft)	59	247	47	#498	0	94	77	20	81	0
Internal Link Dist (ft)		471		226			1023		940	
Turn Bay Length (ft)	260					200		300		260
Base Capacity (vph)	216	2375	411	1881	940	354	1198	185	1178	670
Starvation Cap Reductn	0	0	0	205	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.42	0.17	0.64	0.07	0.61	0.21	0.11	0.12	0.16

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	19	1025	1430	98	870
v/c Ratio	0.19	0.47	0.73	0.19	0.91
Control Delay (s/veh)	99.7	12.3	21.1	31.5	45.3
Queue Delay	0.0	1.5	0.0	0.0	0.0
Total Delay (s/veh)	99.7	13.7	21.1	31.5	45.3
Queue Length 50th (ft)	16	225	345	55	288
Queue Length 95th (ft)	m23	m322	562	98	#399
Internal Link Dist (ft)		408	505	1354	
Turn Bay Length (ft)	140				
Base Capacity (vph)	147	2176	1972	562	1005
Starvation Cap Reductn	0	898	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.13	0.80	0.73	0.17	0.87

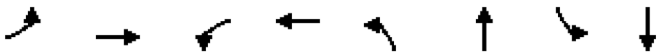
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBT	WBL	WBT	SBT
Lane Group Flow (vph)	667	677	344	554
v/c Ratio	0.76	0.68	0.17	0.93
Control Delay (s/veh)	46.5	25.5	13.1	62.6
Queue Delay	0.3	0.0	0.0	0.0
Total Delay (s/veh)	46.8	25.5	13.1	62.6
Queue Length 50th (ft)	244	236	50	402
Queue Length 95th (ft)	301	254	74	#611
Internal Link Dist (ft)	371		408	1244
Turn Bay Length (ft)		280		
Base Capacity (vph)	992	998	2044	620
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	56	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.71	0.68	0.17	0.89

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	30	117	138	46	62	663	46	621
v/c Ratio	0.04	0.16	0.56	0.18	0.35	0.69	0.28	0.67
Control Delay (s/veh)	24.5	8.1	52.8	20.9	60.7	51.8	51.0	45.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.5	8.1	52.8	20.9	60.7	51.8	51.0	45.3
Queue Length 50th (ft)	13	8	93	9	45	167	31	151
Queue Length 95th (ft)	39	53	150	41	m65	m192	68	181
Internal Link Dist (ft)		206		308		483		447
Turn Bay Length (ft)					160		145	
Base Capacity (vph)	748	737	354	355	225	1445	209	1411
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.16	0.39	0.13	0.28	0.46	0.22	0.44

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBT	WBR	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	464	987	627	276	40	176	176	508
v/c Ratio	0.93	0.41	0.25	0.30	0.17	0.52	0.51	0.53
Control Delay (s/veh)	80.3	5.0	17.9	3.8	1.7	25.0	24.6	10.4
Queue Delay	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	80.3	5.3	17.9	3.8	1.7	25.0	24.6	10.4
Queue Length 50th (ft)	180	54	84	0	0	138	138	134
Queue Length 95th (ft)	#255	203	160	58	0	200	200	173
Internal Link Dist (ft)		226	293				483	
Turn Bay Length (ft)						270		
Base Capacity (vph)	499	2412	2548	921	229	641	652	1359
Starvation Cap Reductn	0	774	0	0	0	0	0	0
Spillback Cap Reductn	0	0	87	0	0	0	0	8
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.60	0.25	0.30	0.17	0.27	0.27	0.38

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	181	42	772	254	43	589
v/c Ratio	0.23	0.06	0.66	0.37	0.27	0.39
Control Delay (s/veh)	20.8	8.0	28.3	4.1	41.6	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	20.8	8.0	28.3	4.1	41.6	17.7
Queue Length 50th (ft)	68	0	195	0	23	106
Queue Length 95th (ft)	142	24	221	43	54	107
Internal Link Dist (ft)	72		940			1206
Turn Bay Length (ft)				240	280	
Base Capacity (vph)	783	724	1651	863	354	2555
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.06	0.47	0.29	0.12	0.23

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	439	1476	193	820	134	310	612	135	320	315
v/c Ratio	2.01	0.70	0.78	0.54	0.17	0.70	0.74	0.72	0.57	0.73
Control Delay (s/veh)	499.7	28.5	69.8	25.2	2.0	55.1	41.2	73.1	46.2	24.0
Queue Delay	0.0	0.1	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	499.7	28.6	69.8	25.7	2.0	55.1	41.2	73.1	46.2	24.0
Queue Length 50th (ft)	~250	293	70	239	5	108	197	49	113	64
Queue Length 95th (ft)	#351	410	#128	191	17	156	230	#95	142	150
Internal Link Dist (ft)		471		226			1023		940	
Turn Bay Length (ft)	260					200		300		260
Base Capacity (vph)	218	2097	249	1510	797	442	1202	187	1190	675
Starvation Cap Reductn	0	0	0	299	0	0	0	0	0	0
Spillback Cap Reductn	0	48	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.01	0.72	0.78	0.68	0.17	0.70	0.51	0.72	0.27	0.47

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Appendix F – Existing Conditions Freeway Analysis Worksheets

HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	3/7/2024
Agency		Analysis Year	2021
Jurisdiction		Time Analyzed	AM Peak Hour
Project Description	SR-99/Standiford Improvement (SR-99 NB)	Units	U.S. Customary
Segment Number	1	Segment Name	Briggsmore Avenue On-Ramp to Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	3340	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4821	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.87	Flow Rate (V_p), pc/h/ln	2097
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	34.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	55.6
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	61.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	885
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4821	572
Peak Hour Factor (PHF)	0.87	0.87
Total Trucks, %	13.50	13.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	0.881
Flow Rate (vi),pc/h	6290	746
Capacity (c), pc/h	6210	1785
Volume-to-Capacity Ratio (v/c)	0.93	0.42

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.365
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2111
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	54.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.581	Outer Lanes Freeway Speed (SO), mi/h	62.6
Flow in Lanes 1 and 2 (v12), pc/h	3672	Ramp Junction Speed (S), mi/h	56.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	33.9
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	27.9

HCS7 Basic Freeway Report

Project Information

Segment Number	3	Segment Name	Beckwith Road Off-Ramp to Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2665	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4249	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.87	Flow Rate (V_p), pc/h/ln	1679
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.81
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	57.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	29.4
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Basic Freeway Report

Project Information

Segment Number	4	Segment Name	Beckwith Road On-Ramp to Pelandale Avenue Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	5630	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4780	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.87	Flow Rate (V_p), pc/h/ln	1432
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.69
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	60.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	23.7
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	3/7/2024
Agency		Analysis Year	2021
Jurisdiction		Time Analyzed	AM Peak
Project Description	SR-99/Standiford Improvement (SR-99 SB)	Units	U.S. Customary
Segment Number	1	Segment Name	Pelandale Avenue Off-Ramp to Pelandale Avenue On-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2450	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4583	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.90	Flow Rate (V_p), pc/h/ln	1927
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	51.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	37.6
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Basic Freeway Report

Project Information

Segment Number	2	Segment Name	Pelandale Avenue On-Ramp to Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	5250	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4807	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.90	Flow Rate (V_p), pc/h/ln	1409
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.68
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	60.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	23.3
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Basic Freeway Report

Project Information

Segment Number	3	Segment Name	Beckwith Road Off-Ramp to Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2510	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4415	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.90	Flow Rate (V_p), pc/h/ln	1856
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.79
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	24.1
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	67.7
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Freeway Merge Report

Project Information

Segment Number	4	Segment Name	Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4415	754
Peak Hour Factor (PHF)	0.90	0.90
Total Trucks, %	13.50	13.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	0.881
Flow Rate (vi),pc/h	5568	951
Capacity (c), pc/h	6345	1785
Volume-to-Capacity Ratio (v/c)	0.92	0.53

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	2012.5	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.505
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	2116
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	53.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.620	Outer Lanes Freeway Speed (SO), mi/h	59.2
Flow in Lanes 1 and 2 (v12), pc/h	3452	Ramp Junction Speed (S), mi/h	34.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	4403	Average Density (D), pc/mi/ln	56.9
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	30.0

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	Beckwith Road On-Ramp to Briggsmore Avenue Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	3390	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5169	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.90	Flow Rate (V_p), pc/h/ln	1936
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	50.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	38.0
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	3/7/2024
Agency		Analysis Year	2021
Jurisdiction		Time Analyzed	PM Peak Hour
Project Description	SR-99/Standiford Improvement (SR-99 NB)	Units	U.S. Customary
Segment Number	1	Segment Name	Briggsmore Avenue On-Ramp to Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	3340	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4761	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1916
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.92
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	51.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	37.2
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	61.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	885
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4761	939
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	13.50	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	1.000
Flow Rate (vi),pc/h	5749	999
Capacity (c), pc/h	6210	1785
Volume-to-Capacity Ratio (v/c)	0.93	0.56

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.388
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2043
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	53.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.570	Outer Lanes Freeway Speed (SO), mi/h	62.8
Flow in Lanes 1 and 2 (v12), pc/h	3706	Ramp Junction Speed (S), mi/h	56.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	33.9
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	28.2

HCS7 Basic Freeway Report

Project Information

Segment Number	3	Segment Name	Beckwith Road Off-Ramp to Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2665	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	3822	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1538
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.74
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	59.3
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	25.9
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Basic Freeway Report

Project Information

Segment Number	4	Segment Name	Beckwith Road On-Ramp to Pelandale Avenue Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	5630	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4363	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1317
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.63
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	60.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	21.6
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	3/7/2024
Agency		Analysis Year	2021
Jurisdiction		Time Analyzed	PM Peak Hour
Project Description	SR-99/Standiford Improvement (SR-99 SB)	Units	U.S. Customary
Segment Number	1	Segment Name	Pelandale Avenue Off-Ramp to Pelandale Avenue On-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2450	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4405	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1773
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.85
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	55.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	32.1
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Freeway Weaving Report

Project Information

Segment Number	2	Segment Name	Pelandale Avenue On-Ramp to Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes (N), ln	4	Segment Type	Freeway
Segment Length (L_S), ft	4250	Number of Maneuver Lanes (N_{WL}), ln	2
Weaving Configuration	One-Sided	Ramp-to-Freeway Lane Changes (LC_{RF}), lc	1
Terrain Type	Level	Freeway-to-Ramp Lane Changes (LC_{FR}), lc	1
Percent Grade, %	-	Ramp-to-Ramp Lane Changes (LC_{RR}), lc	0
Interchange Density (ID), int/mi	0.67	Cross Weaving Managed Lane	No

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

	FF	RF	RR	FR
Demand Volume (V_i), veh/h	3913	546	29	492
Peak Hour Factor (PHF)	0.94	0.94	0.94	0.94
Total Trucks, %	13.50	13.50	13.50	13.50
Heavy Vehicle Adjustment Factor (f_{HV})	0.881	0.881	0.881	0.881
Flow Rate (v_i), pc/h	4496	659	35	565

Weaving Flow Rate (v_W), pc/h	1224	Freeway Max Capacity (c_{IFL}), pc/h/ln	2310
Non-Weaving Flow Rate (v_{NW}), pc/h	4531	Density-Based Capacity (c_{IWL}), pc/h/ln	2282
Total Flow Rate (v), pc/h	5755	Demand Flow-Based Capacity (c_{IW}), pc/h	11538
Volume Ratio (VR)	0.208	Weaving Segment Capacity (c_W), veh/h	8042
Minimum Lane Change Rate (LC_{MIN}), lc/h	1224	Adjusted Weaving Area Capacity, pc/h	8216
Maximum Weaving Length (L_{MAX}), ft	4618	Volume-to-Capacity Ratio (v/c)	0.70

Speed and Density

Non-Weaving Vehicle Index (I_{NW})	1290	Average Weaving Speed (S_W), mi/h	52.5
Non-Weaving Lane Change Rate (LC_{NW}), lc/h	2466	Average Non-Weaving Speed (S_{NW}), mi/h	45.3
Weaving Lane Change Rate (LC_W), lc/h	1815	Average Speed (S), mi/h	46.7
Weaving Lane Change Rate (LC_{All}), lc/h	4281	Density (D), pc/mi/ln	30.8
Weaving Intensity Factor (W)	0.227	Level of Service (LOS)	D

HCS7 Basic Freeway Report

Project Information

Segment Number	3	Segment Name	Beckwith Road Off-Ramp to Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2510	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4459	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1795
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.78
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	24.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	65.9
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Freeway Merge Report

Project Information

Segment Number	4	Segment Name	Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	61.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4459	752
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	13.50	13.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	0.881
Flow Rate (vi),pc/h	5384	908
Capacity (c), pc/h	6210	1785
Volume-to-Capacity Ratio (v/c)	0.93	0.51

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.385
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1853
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	53.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.620	Outer Lanes Freeway Speed (SO), mi/h	56.1
Flow in Lanes 1 and 2 (v12), pc/h	3022	Ramp Junction Speed (S), mi/h	54.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	3930	Average Density (D), pc/mi/ln	35.4
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	26.4

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	Beckwith Road On-Ramp to Briggsmore Avenue Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	3390	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5211	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1928
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	51.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	37.6
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

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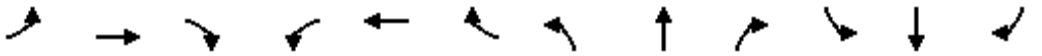
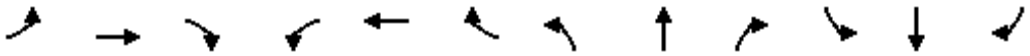
Appendix G – Year 2050 No Build Conditions Intersection Analysis Worksheets



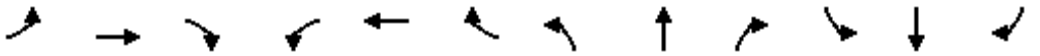
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	759	0	0	1160	657	109	3	653	0	0	0
Future Volume (veh/h)	51	759	0	0	1160	657	109	3	653	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	1856	1856	0	0	1856	1856	1856	1856	1856			
Adj Flow Rate, veh/h	55	825	0	0	1261	661	118	3	456			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	71	2526	0	0	1471	710	338	9	542			
Arrive On Green	0.04	0.72	0.00	0.00	0.64	0.64	0.20	0.20	0.20			
Sat Flow, veh/h	1767	3618	0	0	2398	1113	1725	44	2768			
Grp Volume(v), veh/h	55	825	0	0	939	983	121	0	456			
Grp Sat Flow(s),veh/h/ln	1767	1763	0	0	1763	1655	1769	0	1384			
Q Serve(g_s), s	3.7	10.4	0.0	0.0	49.5	63.5	7.1	0.0	19.0			
Cycle Q Clear(g_c), s	3.7	10.4	0.0	0.0	49.5	63.5	7.1	0.0	19.0			
Prop In Lane	1.00		0.00	0.00		0.67	0.98		1.00			
Lane Grp Cap(c), veh/h	71	2526	0	0	1125	1056	347	0	542			
V/C Ratio(X)	0.78	0.33	0.00	0.00	0.83	0.93	0.35	0.00	0.84			
Avail Cap(c_a), veh/h	80	2526	0	0	1125	1056	535	0	837			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.40	0.40	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	57.1	6.3	0.0	0.0	16.8	19.3	41.6	0.0	46.4			
Incr Delay (d2), s/veh	16.1	0.1	0.0	0.0	7.4	15.3	0.7	0.0	5.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.9	3.2	0.0	0.0	19.4	25.1	3.1	0.0	6.7			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.1	6.4	0.0	0.0	24.2	34.6	42.3	0.0	51.5			
LnGrp LOS	E	A	A	A	C	C	D	A	D			
Approach Vol, veh/h		880			1922			577				
Approach Delay, s/veh		10.6			29.5			49.6				
Approach LOS		B			C			D				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		91.8			9.4	82.4		28.2				
Change Period (Y+Rc), s		5.8			4.6	5.8		4.7				
Max Green Setting (Gmax), s		73.2			5.4	63.2		36.3				
Max Q Clear Time (g_c+I1), s		12.4			5.7	65.5		21.0				
Green Ext Time (p_c), s		10.7			0.0	0.0		2.5				
Intersection Summary												
HCM 6th Ctrl Delay			28.0									
HCM 6th LOS			C									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	334	197	801	468	0	0	0	0	476	10	39
Future Volume (veh/h)	0	334	197	801	468	0	0	0	0	476	10	39
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1856	1856	1856	1856	0				1856	1856	1856
Adj Flow Rate, veh/h	0	363	142	871	509	0				517	11	39
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	425	164	1228	2001	0				552	12	42
Arrive On Green	0.00	0.17	0.17	0.36	0.57	0.00				0.35	0.35	0.35
Sat Flow, veh/h	0	2580	958	3428	3618	0				1599	34	121
Grp Volume(v), veh/h	0	256	249	871	509	0				567	0	0
Grp Sat Flow(s),veh/h/ln	0	1763	1683	1714	1763	0				1754	0	0
Q Serve(g_s), s	0.0	16.9	17.3	26.2	8.8	0.0				37.5	0.0	0.0
Cycle Q Clear(g_c), s	0.0	16.9	17.3	26.2	8.8	0.0				37.5	0.0	0.0
Prop In Lane	0.00		0.57	1.00		0.00				0.91		0.07
Lane Grp Cap(c), veh/h	0	301	287	1228	2001	0				605	0	0
V/C Ratio(X)	0.00	0.85	0.87	0.71	0.25	0.00				0.94	0.00	0.00
Avail Cap(c_a), veh/h	0	332	317	1228	2001	0				656	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.25	0.25	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	48.2	48.4	33.1	13.1	0.0				38.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	18.3	21.5	0.5	0.1	0.0				20.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	8.7	8.8	10.5	3.3	0.0				18.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	66.6	70.0	33.6	13.2	0.0				58.5	0.0	0.0
LnGrp LOS	A	E	E	C	B	A				E	A	A
Approach Vol, veh/h		505			1380						567	
Approach Delay, s/veh		68.2			26.1						58.5	
Approach LOS		E			C						E	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	47.6	25.9		46.5		73.5
Change Period (Y+Rc), s	4.6	5.4		5.1		5.4
Max Green Setting (Gmax), s	37.4	22.6		44.9		64.6
Max Q Clear Time (g_c+I1), s	28.2	19.3		39.5		10.8
Green Ext Time (p_c), s	3.3	1.2		1.9		4.5

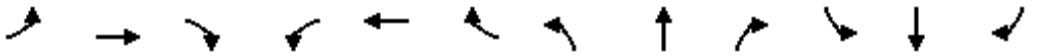
Intersection Summary		
HCM 6th Ctrl Delay		42.3
HCM 6th LOS		D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	3	25	25	5	10	25	526	47	7	556	13
Future Volume (veh/h)	14	3	25	25	5	10	25	526	47	7	556	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	15	3	13	27	5	1	27	572	40	8	604	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	867	149	645	122	104	21	161	1137	79	35	838	17
Arrive On Green	0.49	0.49	0.49	0.07	0.07	0.07	0.18	0.47	0.47	0.02	0.16	0.16
Sat Flow, veh/h	1767	303	1315	1767	1500	300	1767	4834	335	1767	5112	101
Grp Volume(v), veh/h	15	0	16	27	0	6	27	398	214	8	399	217
Grp Sat Flow(s),veh/h/ln	1767	0	1618	1767	0	1801	1767	1689	1793	1767	1689	1836
Q Serve(g_s), s	0.5	0.0	0.6	1.6	0.0	0.3	1.4	9.0	9.1	0.5	12.3	12.4
Cycle Q Clear(g_c), s	0.5	0.0	0.6	1.6	0.0	0.3	1.4	9.0	9.1	0.5	12.3	12.4
Prop In Lane	1.00		0.81	1.00		0.17	1.00		0.19	1.00		0.06
Lane Grp Cap(c), veh/h	867	0	793	122	0	125	161	794	422	35	554	301
V/C Ratio(X)	0.02	0.00	0.02	0.22	0.00	0.05	0.17	0.50	0.51	0.23	0.72	0.72
Avail Cap(c_a), veh/h	867	0	793	289	0	295	289	1032	548	161	786	427
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.56	0.56	0.56	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.4	0.0	14.4	48.4	0.0	47.8	41.5	24.7	24.7	53.1	43.6	43.6
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.3	0.0	0.2	0.3	0.3	0.5	3.3	1.9	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.2	0.7	0.0	0.2	0.6	3.1	3.3	0.2	5.2	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.4	0.0	14.5	49.7	0.0	48.0	41.8	24.9	25.2	56.4	45.4	47.1
LnGrp LOS	B	A	B	D	A	D	D	C	C	E	D	D
Approach Vol, veh/h		31			33			639			624	
Approach Delay, s/veh		14.5			49.4			25.7			46.2	
Approach LOS		B			D			C			D	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		58.9	15.0	23.4		12.6	7.2	31.3				
Change Period (Y+Rc), s		5.0	5.0	5.4		5.0	5.0	5.4				
Max Green Setting (Gmax), s		28.0	18.0	25.6		18.0	10.0	33.6				
Max Q Clear Time (g_c+I1), s		2.6	3.4	14.4		3.6	2.5	11.1				
Green Ext Time (p_c), s		0.1	0.0	2.9		0.1	0.0	3.9				

Intersection Summary												
HCM 6th Ctrl Delay			35.7									
HCM 6th LOS			D									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	406	735	34	0	1145	192	0	0	7	162	21	422
Future Volume (veh/h)	406	735	34	0	1145	192	0	0	7	162	21	422
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	0	1856	1856	0	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	441	799	0	0	1245	0	0	0	0	192	0	58
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	0	3	3	0	3	3	3	3	3
Cap, veh/h	436	2818		0	3173		0	2		337	0	299
Arrive On Green	0.25	1.00	0.00	0.00	0.63	0.00	0.00	0.00	0.00	0.10	0.00	0.10
Sat Flow, veh/h	3428	3618	0	0	5233	1572	0	-55666	1572	3534	0	3135
Grp Volume(v), veh/h	441	799	0	0	1245	0	0	0	0	192	0	58
Grp Sat Flow(s),veh/h/ln	1714	1763	0	0	1689	1572	0	1856	1572	1767	0	1568
Q Serve(g_s), s	14.0	0.0	0.0	0.0	13.4	0.0	0.0	0.0	0.0	5.7	0.0	1.9
Cycle Q Clear(g_c), s	14.0	0.0	0.0	0.0	13.4	0.0	0.0	0.0	0.0	5.7	0.0	1.9
Prop In Lane	1.00		0.00	0.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	436	2818		0	3173		0	2		337	0	299
V/C Ratio(X)	1.01	0.28		0.00	0.39		0.00	0.00		0.57	0.00	0.19
Avail Cap(c_a), veh/h	436	2818		0	3173		0	34		1349	0	1197
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.80	0.80	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.70	0.00	0.70
Uniform Delay (d), s/veh	41.0	0.0	0.0	0.0	10.2	0.0	0.0	0.0	0.0	47.6	0.0	45.9
Incr Delay (d2), s/veh	41.2	0.2	0.0	0.0	0.4	0.0	0.0	0.0	0.0	1.1	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	0.1	0.0	0.0	4.4	0.0	0.0	0.0	0.0	2.5	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	82.2	0.2	0.0	0.0	10.5	0.0	0.0	0.0	0.0	48.7	0.0	46.1
LnGrp LOS	F	A		A	B		A	A		D	A	D
Approach Vol, veh/h		1240	A		1245	A		0	A		250	
Approach Delay, s/veh		29.4			10.5			0.0			48.1	
Approach LOS		C			B						D	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		94.1		15.9	19.0	75.1		0.0				
Change Period (Y+Rc), s		6.2		5.4	5.0	6.2		3.0				
Max Green Setting (Gmax), s		51.4		42.0	14.0	32.4		2.0				
Max Q Clear Time (g_c+I1), s		2.0		7.7	16.0	15.4		0.0				
Green Ext Time (p_c), s		8.9		0.9	0.0	9.8		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			22.5									
HCM 6th LOS			C									

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	17	5	375	49	6	334
Future Volume (veh/h)	17	5	375	49	6	334
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	18	3	408	0	7	363
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	161	143	539		19	737
Arrive On Green	0.09	0.09	0.31	0.00	0.01	0.21
Sat Flow, veh/h	1767	1572	3618	1572	1767	3618
Grp Volume(v), veh/h	18	3	408	0	7	363
Grp Sat Flow(s),veh/h/ln	1767	1572	1763	1572	1767	1763
Q Serve(g_s), s	1.0	0.2	11.5	0.0	0.4	10.0
Cycle Q Clear(g_c), s	1.0	0.2	11.5	0.0	0.4	10.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	161	143	539		19	737
V/C Ratio(X)	0.11	0.02	0.76		0.38	0.49
Avail Cap(c_a), veh/h	353	314	1763		257	2436
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.89	0.00	1.00	1.00
Uniform Delay (d), s/veh	45.9	45.5	36.3	0.0	54.1	38.4
Incr Delay (d2), s/veh	1.4	0.3	2.4	0.0	14.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.2	4.3	0.0	0.3	4.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	47.3	45.8	38.7	0.0	68.6	39.0
LnGrp LOS	D	D	D		E	D
Approach Vol, veh/h	21		408	A		370
Approach Delay, s/veh	47.1		38.7			39.5
Approach LOS	D		D			D

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	29.0	16.0	6.2	22.8
Change Period (Y+Rc), s	6.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	76.0	22.0	16.0	55.0
Max Q Clear Time (g_c+I1), s	12.0	3.0	2.4	13.5
Green Ext Time (p_c), s	3.0	0.0	0.0	3.3

Intersection Summary	
HCM 6th Ctrl Delay	39.3
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	1042	251	91	1394	82	282	223	106	27	183	141
Future Volume (veh/h)	119	1042	251	91	1394	82	282	223	106	27	183	141
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	129	1133	245	99	1515	0	307	242	0	29	199	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	1052	1250	270	1069	1074		218	378		194	360	
Arrive On Green	0.31	0.30	0.30	0.62	0.61	0.00	0.06	0.11	0.00	0.06	0.10	0.00
Sat Flow, veh/h	3428	4169	901	3428	3526	1572	3428	3618	0	3428	3526	1572
Grp Volume(v), veh/h	129	918	460	99	1515	0	307	242	0	29	199	0
Grp Sat Flow(s),veh/h/ln	1714	1689	1693	1714	1763	1572	1714	1763	0	1714	1763	1572
Q Serve(g_s), s	3.0	28.7	28.8	1.3	33.5	0.0	7.0	7.2	0.0	0.9	5.9	0.0
Cycle Q Clear(g_c), s	3.0	28.7	28.8	1.3	33.5	0.0	7.0	7.2	0.0	0.9	5.9	0.0
Prop In Lane	1.00		0.53	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	1052	1012	508	1069	1074		218	378		194	360	
V/C Ratio(X)	0.12	0.91	0.91	0.09	1.41		1.41	0.64		0.15	0.55	
Avail Cap(c_a), veh/h	1052	1028	516	1069	1074		218	1218		218	1218	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.88	0.88	0.00	1.00	1.00	0.00	0.86	0.86	0.00
Uniform Delay (d), s/veh	27.4	37.0	37.0	14.5	21.5	0.0	51.5	47.1	0.0	49.4	47.0	0.0
Incr Delay (d2), s/veh	0.0	13.1	22.5	0.0	189.9	0.0	208.3	1.8	0.0	0.1	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	13.1	14.5	0.5	34.9	0.0	9.3	3.2	0.0	0.4	2.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.5	50.2	59.5	14.5	211.4	0.0	259.8	48.9	0.0	49.5	48.1	0.0
LnGrp LOS	C	D	E	B	F		F	D		D	D	
Approach Vol, veh/h		1507			1614	A		549	A		228	A
Approach Delay, s/veh		51.1			199.3			166.8			48.3	
Approach LOS		D			F			F			D	

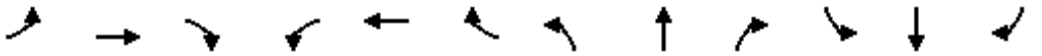
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	40.3	39.3	13.0	17.4	39.8	39.8	12.4	18.0
Change Period (Y+Rc), s	6.0	6.3	6.0	6.2	6.0	6.3	6.2	* 6.2
Max Green Setting (Gmax), s	7.0	33.5	7.0	38.0	7.0	33.5	7.0	* 38
Max Q Clear Time (g_c+I1), s	3.3	30.8	9.0	7.9	5.0	35.5	2.9	9.2
Green Ext Time (p_c), s	0.0	2.2	0.0	1.2	0.0	0.0	0.0	1.5

Intersection Summary	
HCM 6th Ctrl Delay	128.6
HCM 6th LOS	F

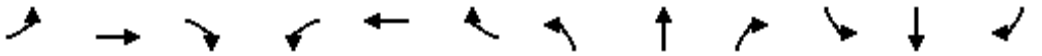
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	1327	0	0	1159	694	122	6	1127	0	0	0
Future Volume (veh/h)	25	1327	0	0	1159	694	122	6	1127	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	27	1442	0	0	1260	683	133	7	1182			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	44	1990	0	0	1143	567	598	31	970			
Arrive On Green	0.02	0.56	0.00	0.00	0.50	0.50	0.35	0.35	0.35			
Sat Flow, veh/h	1781	3647	0	0	2394	1142	1696	89	2753			
Grp Volume(v), veh/h	27	1442	0	0	947	996	140	0	1182			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	1665	1786	0	1376			
Q Serve(g_s), s	1.8	36.1	0.0	0.0	59.6	59.6	6.6	0.0	42.3			
Cycle Q Clear(g_c), s	1.8	36.1	0.0	0.0	59.6	59.6	6.6	0.0	42.3			
Prop In Lane	1.00		0.00	0.00		0.69	0.95		1.00			
Lane Grp Cap(c), veh/h	44	1990	0	0	883	827	629	0	970			
V/C Ratio(X)	0.61	0.72	0.00	0.00	1.07	1.20	0.22	0.00	1.22			
Avail Cap(c_a), veh/h	74	1990	0	0	883	827	629	0	970			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.09	0.09	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	57.9	19.5	0.0	0.0	30.2	30.2	27.3	0.0	38.8			
Incr Delay (d2), s/veh	1.2	0.2	0.0	0.0	51.6	103.2	0.2	0.0	107.6			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.8	13.5	0.0	0.0	35.8	45.4	2.8	0.0	28.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.2	19.8	0.0	0.0	81.8	133.4	27.5	0.0	146.5			
LnGrp LOS	E	B	A	A	F	F	C	A	F			
Approach Vol, veh/h		1469			1943			1322				
Approach Delay, s/veh		20.5			108.3			133.9				
Approach LOS		C			F			F				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		73.0			7.6	65.4		47.0				
Change Period (Y+Rc), s		5.8			4.6	5.8		4.7				
Max Green Setting (Gmax), s		67.2			5.0	57.6		42.3				
Max Q Clear Time (g_c+I1), s		38.1			3.8	61.6		44.3				
Green Ext Time (p_c), s		17.8			0.0	0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			88.2									
HCM 6th LOS			F									



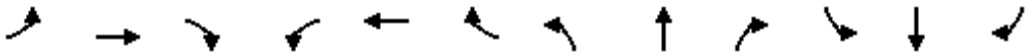
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	697	141	849	432	0	0	0	0	655	15	27
Future Volume (veh/h)	0	697	141	849	432	0	0	0	0	655	15	27
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	758	139	923	470	0				712	16	28
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1241	227	947	2605	0				619	14	24
Arrive On Green	0.00	0.41	0.41	0.27	0.73	0.00				0.37	0.37	0.37
Sat Flow, veh/h	0	3092	550	3456	3647	0				1672	38	66
Grp Volume(v), veh/h	0	449	448	923	470	0				756	0	0
Grp Sat Flow(s),veh/h/ln	0	1777	1771	1728	1777	0				1775	0	0
Q Serve(g_s), s	0.0	23.8	23.8	31.7	4.9	0.0				44.4	0.0	0.0
Cycle Q Clear(g_c), s	0.0	23.8	23.8	31.7	4.9	0.0				44.4	0.0	0.0
Prop In Lane	0.00		0.31	1.00		0.00				0.94		0.04
Lane Grp Cap(c), veh/h	0	735	733	947	2605	0				657	0	0
V/C Ratio(X)	0.00	0.61	0.61	0.97	0.18	0.00				1.15	0.00	0.00
Avail Cap(c_a), veh/h	0	735	733	947	2605	0				657	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.09	0.09	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	27.6	27.6	43.1	4.9	0.0				37.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.8	1.8	4.5	0.0	0.0				84.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	10.0	10.0	13.6	1.5	0.0				33.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	29.4	29.4	47.6	4.9	0.0				122.6	0.0	0.0
LnGrp LOS	A	C	C	D	A	A				F	A	A
Approach Vol, veh/h		897			1393						756	
Approach Delay, s/veh		29.4			33.2						122.6	
Approach LOS		C			C						F	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	38.3	55.2		49.5		93.5
Change Period (Y+Rc), s	5.4	* 5.4		5.1		5.4
Max Green Setting (Gmax), s	32.9	* 28		44.4		65.1
Max Q Clear Time (g_c+I1), s	33.7	25.8		46.4		6.9
Green Ext Time (p_c), s	0.0	1.2		0.0		4.1

Intersection Summary	
HCM 6th Ctrl Delay	54.3
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	26	130	183	21	42	82	721	157	62	803	19
Future Volume (veh/h)	41	26	130	183	21	42	82	721	157	62	803	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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	45	28	45	199	23	7	89	784	138	67	873	19
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	676	245	393	237	183	56	151	974	170	141	1116	24
Arrive On Green	0.38	0.38	0.38	0.13	0.13	0.13	0.17	0.45	0.45	0.08	0.22	0.22
Sat Flow, veh/h	1781	645	1037	1781	1373	418	1781	4370	763	1781	5142	112
Grp Volume(v), veh/h	45	0	73	199	0	30	89	609	313	67	578	314
Grp Sat Flow(s),veh/h/ln	1781	0	1683	1781	0	1791	1781	1702	1729	1781	1702	1850
Q Serve(g_s), s	1.8	0.0	3.1	12.0	0.0	1.6	5.1	17.0	17.3	4.0	17.6	17.6
Cycle Q Clear(g_c), s	1.8	0.0	3.1	12.0	0.0	1.6	5.1	17.0	17.3	4.0	17.6	17.6
Prop In Lane	1.00		0.62	1.00		0.23	1.00		0.44	1.00		0.06
Lane Grp Cap(c), veh/h	676	0	638	237	0	239	151	759	385	141	739	402
V/C Ratio(X)	0.07	0.00	0.11	0.84	0.00	0.13	0.59	0.80	0.81	0.48	0.78	0.78
Avail Cap(c_a), veh/h	676	0	638	356	0	358	227	978	497	211	947	515
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.13	0.13	0.13	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.7	0.0	22.2	46.5	0.0	42.0	43.9	28.4	28.5	48.5	40.6	40.6
Incr Delay (d2), s/veh	0.2	0.0	0.4	13.0	0.0	0.3	0.5	0.5	1.1	2.5	3.3	5.9
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	0.8	0.0	1.3	6.2	0.0	0.7	2.1	5.2	5.4	1.8	7.6	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.9	0.0	22.5	59.5	0.0	42.4	44.4	28.9	29.6	50.9	43.9	46.6
LnGrp LOS	C	A	C	E	A	D	D	C	C	D	D	D
Approach Vol, veh/h		118			229			1011			959	
Approach Delay, s/veh		22.3			57.3			30.5			45.2	
Approach LOS		C			E			C			D	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		46.7	14.3	29.3		19.7	13.7	29.9				
Change Period (Y+Rc), s		5.0	5.0	5.4		5.0	5.0	5.4				
Max Green Setting (Gmax), s		23.0	14.0	30.6		22.0	13.0	31.6				
Max Q Clear Time (g_c+I1), s		5.1	7.1	19.6		14.0	6.0	19.3				
Green Ext Time (p_c), s		0.4	0.1	4.2		0.7	0.1	4.7				

Intersection Summary												
HCM 6th Ctrl Delay			38.8									
HCM 6th LOS			D									

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	601	1162	117	0	813	359	0	0	53	394	64	658
Future Volume (veh/h)	601	1162	117	0	813	359	0	0	53	394	64	658
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
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	0	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	653	1263	0	0	884	0	0	0	0	478	0	179
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	0	2	2	0	2	2	2	2	2
Cap, veh/h	503	2508		0	2629		0	2		673	0	592
Arrive On Green	0.29	1.00	0.00	0.00	0.51	0.00	0.00	0.00	0.00	0.19	0.00	0.19
Sat Flow, veh/h	3456	3647	0	0	5274	1585	0	-56111	1585	3563	0	3135
Grp Volume(v), veh/h	653	1263	0	0	884	0	0	0	0	478	0	179
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1702	1585	0	1870	1585	1781	0	1567
Q Serve(g_s), s	16.0	0.0	0.0	0.0	11.2	0.0	0.0	0.0	0.0	13.8	0.0	5.4
Cycle Q Clear(g_c), s	16.0	0.0	0.0	0.0	11.2	0.0	0.0	0.0	0.0	13.8	0.0	5.4
Prop In Lane	1.00		0.00	0.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	503	2508		0	2629		0	2		673	0	592
V/C Ratio(X)	1.30	0.50		0.00	0.34		0.00	0.00		0.71	0.00	0.30
Avail Cap(c_a), veh/h	503	2508		0	2629		0	34		1360	0	1197
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.64	0.00	0.64
Uniform Delay (d), s/veh	39.0	0.0	0.0	0.0	15.7	0.0	0.0	0.0	0.0	41.8	0.0	38.4
Incr Delay (d2), s/veh	136.0	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.9	0.0	0.2
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	14.8	0.0	0.0	0.0	4.1	0.0	0.0	0.0	0.0	6.1	0.0	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	175.0	0.1	0.0	0.0	16.0	0.0	0.0	0.0	0.0	42.7	0.0	38.6
LnGrp LOS	F	A		A	B		A	A		D	A	D
Approach Vol, veh/h		1916	A		884	A		0	A		657	
Approach Delay, s/veh		59.7			16.0			0.0			41.6	
Approach LOS		E			B						D	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		83.8		26.2	21.0	62.8		0.0				
Change Period (Y+Rc), s		6.2		5.4	5.0	6.2		3.0				
Max Green Setting (Gmax), s		51.4		42.0	16.0	30.4		2.0				
Max Q Clear Time (g_c+I1), s		2.0		15.8	18.0	13.2		0.0				
Green Ext Time (p_c), s		17.6		2.5	0.0	7.0		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	45.1	
HCM 6th LOS	D	

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



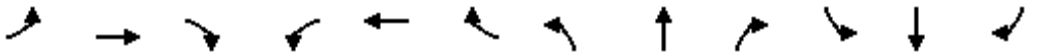
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	233	54	989	327	55	755
Future Volume (veh/h)	233	54	989	327	55	755
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	253	20	1075	0	60	821
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	243	216	1226		82	1551
Arrive On Green	0.14	0.14	0.69	0.00	0.05	0.44
Sat Flow, veh/h	1781	1585	3647	1585	1781	3647
Grp Volume(v), veh/h	253	20	1075	0	60	821
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1585	1781	1777
Q Serve(g_s), s	15.0	1.2	26.1	0.0	3.7	18.6
Cycle Q Clear(g_c), s	15.0	1.2	26.1	0.0	3.7	18.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	243	216	1226		82	1551
V/C Ratio(X)	1.04	0.09	0.88		0.74	0.53
Avail Cap(c_a), veh/h	243	216	1777		372	2681
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.09	0.00	1.00	1.00
Uniform Delay (d), s/veh	47.5	41.5	15.2	0.0	51.8	22.7
Incr Delay (d2), s/veh	69.0	0.8	0.4	0.0	14.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.3	1.2	5.0	0.0	1.9	7.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	116.5	42.4	15.6	0.0	66.1	23.1
LnGrp LOS	F	D	B		E	C
Approach Vol, veh/h	273		1075	A		881
Approach Delay, s/veh	111.1		15.6			26.0
Approach LOS	F		B			C

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			54.0		21.0	10.0	44.0
Change Period (Y+Rc), s			6.0		6.0	5.0	6.0
Max Green Setting (Gmax), s			83.0		15.0	23.0	55.0
Max Q Clear Time (g_c+I1), s			20.6		17.0	5.7	28.1
Green Ext Time (p_c), s			8.0		0.0	0.1	9.9

Intersection Summary	
HCM 6th Ctrl Delay	31.4
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	562	1500	392	247	1051	173	398	581	206	174	410	404
Future Volume (veh/h)	562	1500	392	247	1051	173	398	581	206	174	410	404
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	611	1630	385	268	1142	0	433	632	0	189	446	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	637	1334	312	543	1050		425	802		248	620	
Arrive On Green	0.18	0.32	0.32	0.31	0.59	0.00	0.12	0.23	0.00	0.07	0.17	0.00
Sat Flow, veh/h	3456	4135	966	3456	3554	1585	3456	3647	0	3456	3554	1585
Grp Volume(v), veh/h	611	1339	676	268	1142	0	433	632	0	189	446	0
Grp Sat Flow(s),veh/h/ln	1728	1702	1697	1728	1777	1585	1728	1777	0	1728	1777	1585
Q Serve(g_s), s	19.3	35.5	35.5	6.9	32.5	0.0	13.5	18.4	0.0	5.9	13.0	0.0
Cycle Q Clear(g_c), s	19.3	35.5	35.5	6.9	32.5	0.0	13.5	18.4	0.0	5.9	13.0	0.0
Prop In Lane	1.00		0.57	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	637	1099	548	543	1050		425	802		248	620	
V/C Ratio(X)	0.96	1.22	1.24	0.49	1.09		1.02	0.79		0.76	0.72	
Avail Cap(c_a), veh/h	637	1099	548	543	1050		425	1163		251	1195	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.86	0.86	0.00	1.00	1.00	0.00	0.91	0.91	0.00
Uniform Delay (d), s/veh	44.4	37.3	37.3	34.2	22.5	0.0	48.2	40.1	0.0	50.1	42.9	0.0
Incr Delay (d2), s/veh	25.5	106.8	121.0	0.2	53.1	0.0	48.7	2.3	0.0	10.5	1.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.2	30.2	32.2	2.6	14.6	0.0	8.5	8.1	0.0	2.9	5.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.9	144.0	158.2	34.4	75.6	0.0	96.9	42.4	0.0	60.7	44.3	0.0
LnGrp LOS	E	F	F	C	F		F	D		E	D	
Approach Vol, veh/h		2626			1410	A		1065	A		635	A
Approach Delay, s/veh		130.4			67.7			64.6			49.2	
Approach LOS		F			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.3	41.8	19.5	25.4	26.3	38.8	13.9	31.0
Change Period (Y+Rc), s	6.0	6.3	6.0	6.2	6.0	6.3	6.0	6.2
Max Green Setting (Gmax), s	6.0	35.5	7.0	37.0	9.0	32.5	8.0	36.0
Max Q Clear Time (g_c+I1), s	8.9	37.5	15.5	15.0	21.3	34.5	7.9	20.4
Green Ext Time (p_c), s	0.0	0.0	0.0	2.7	0.0	0.0	0.0	3.6

Intersection Summary	
HCM 6th Ctrl Delay	93.8
HCM 6th LOS	F

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	55	825	1975	121	710
v/c Ratio	0.71	0.34	0.93	0.31	0.83
Control Delay (s/veh)	49.0	6.5	29.6	39.5	31.7
Queue Delay	0.0	0.5	0.5	0.0	0.0
Total Delay (s/veh)	49.0	7.0	30.2	39.5	31.7
Queue Length 50th (ft)	35	120	668	79	168
Queue Length 95th (ft)	m55	m194	#1020	121	223
Internal Link Dist (ft)		408	505	1354	
Turn Bay Length (ft)	140				
Base Capacity (vph)	78	2428	2128	532	1062
Starvation Cap Reductn	0	1095	0	0	0
Spillback Cap Reductn	0	0	25	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.71	0.62	0.94	0.23	0.67

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

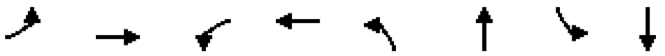


Lane Group	EBT	WBL	WBT	SBT
Lane Group Flow (vph)	577	871	509	570
v/c Ratio	0.86	0.75	0.26	0.92
Control Delay (s/veh)	53.6	19.5	8.6	58.4
Queue Delay	0.0	0.5	0.0	0.0
Total Delay (s/veh)	53.6	20.0	8.6	58.4
Queue Length 50th (ft)	195	297	95	403
Queue Length 95th (ft)	#280	m281	m91	#610
Internal Link Dist (ft)	371		408	1244
Turn Bay Length (ft)		280		
Base Capacity (vph)	694	1154	1962	656
Starvation Cap Reductn	0	63	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.83	0.80	0.26	0.87

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	15	30	27	16	27	623	8	618
v/c Ratio	0.02	0.03	0.14	0.09	0.17	0.53	0.05	0.68
Control Delay (s/veh)	19.4	8.4	46.4	27.6	37.2	37.6	46.6	45.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	19.4	8.4	46.4	27.6	37.2	37.6	46.6	45.5
Stops (vph)	9	7	25	9	26	536	8	511
Fuel Used(gal)	0	0	0	0	0	11	0	11
CO Emissions (g/hr)	9	10	29	12	34	751	11	789
NOx Emissions (g/hr)	2	2	6	2	7	146	2	153
VOC Emissions (g/hr)	2	2	7	3	8	174	2	183
Dilemma Vehicles (#)	0	0	0	0	0	6	0	20
Queue Length 50th (ft)	6	1	18	3	20	157	5	150
Queue Length 95th (ft)	20	21	45	25	m30	m175	21	180
Internal Link Dist (ft)		206		308		483		447
Turn Bay Length (ft)					160		145	
Base Capacity (vph)	963	879	286	277	286	1566	159	1170
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.03	0.09	0.06	0.09	0.40	0.05	0.53

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBT	WBR	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	441	836	1245	209	8	99	100	459
v/c Ratio	1.02	0.32	0.42	0.21	0.02	0.47	0.47	0.62
Control Delay (s/veh)	109.8	1.9	13.7	2.4	0.1	26.0	25.9	19.3
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay (s/veh)	109.8	2.1	13.7	2.4	0.1	26.0	25.9	19.5
Stops (vph)	343	66	605	14	0	66	66	325
Fuel Used(gal)	14	3	13	1	0	1	1	6
CO Emissions (g/hr)	989	185	943	51	2	94	95	407
NOx Emissions (g/hr)	192	36	183	10	0	18	18	79
VOC Emissions (g/hr)	229	43	219	12	1	22	22	94
Dilemma Vehicles (#)	0	15	52	0	0	0	1	0
Queue Length 50th (ft)	~144	31	157	0	0	78	80	161
Queue Length 95th (ft)	#281	32	247	37	0	16	16	0
Internal Link Dist (ft)		226	293				483	
Turn Bay Length (ft)						270		
Base Capacity (vph)	432	2645	2956	1006	369	635	644	1323
Starvation Cap Reductn	0	961	0	0	0	0	0	0
Spillback Cap Reductn	0	0	42	0	0	0	0	277
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.02	0.50	0.43	0.21	0.02	0.16	0.16	0.44

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	18	5	408	53	7	363
v/c Ratio	0.01	0.00	0.66	0.17	0.07	0.52
Control Delay (s/veh)	8.2	5.8	44.1	9.7	49.8	40.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	8.2	5.8	44.1	9.7	49.8	40.7
Stops (vph)	7	1	250	10	8	283
Fuel Used(gal)	0	0	8	1	0	8
CO Emissions (g/hr)	5	1	588	37	13	592
NOx Emissions (g/hr)	1	0	114	7	3	115
VOC Emissions (g/hr)	1	0	136	9	3	137
Dilemma Vehicles (#)	0	0	10	0	0	12
Queue Length 50th (ft)	3	0	112	5	5	125
Queue Length 95th (ft)	16	6	105	m2	20	136
Internal Link Dist (ft)	72		940			1206
Turn Bay Length (ft)				240	280	
Base Capacity (vph)	1210	1084	1752	810	254	2421
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.00	0.23	0.07	0.03	0.15

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	129	1406	99	1515	89	307	357	29	199	153
v/c Ratio	0.61	0.58	0.42	0.87	0.10	1.42	0.48	0.15	0.37	0.41
Control Delay (s/veh)	63.3	21.8	49.6	26.6	0.2	252.5	31.7	19.2	7.7	4.5
Queue Delay	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	63.3	21.8	49.6	27.1	0.2	252.5	31.7	19.2	7.7	4.5
Stops (vph)	114	872	87	822	0	210	218	26	59	26
Fuel Used(gal)	3	21	2	21	0	19	7	1	2	1
CO Emissions (g/hr)	236	1483	153	1435	12	1305	469	38	149	95
NOx Emissions (g/hr)	46	289	30	279	2	254	91	7	29	19
VOC Emissions (g/hr)	55	344	35	333	3	302	109	9	35	22
Dilemma Vehicles (#)	0	59	0	51	0	0	12	0	5	0
Queue Length 50th (ft)	46	222	36	274	0	~151	99	5	6	0
Queue Length 95th (ft)	78	384	64	#850	0	#240	116	25	7	1
Internal Link Dist (ft)		471		226			1023		940	
Turn Bay Length (ft)	260					200		300		260
Base Capacity (vph)	216	2425	236	1746	887	216	1198	216	1210	641
Starvation Cap Reductn	0	0	0	43	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.58	0.42	0.89	0.10	1.42	0.30	0.13	0.16	0.24

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	27	1442	2014	140	1225
v/c Ratio	0.37	0.73	1.13	0.22	1.21
Control Delay (s/veh)	76.1	4.0	94.3	28.5	137.4
Queue Delay	0.0	2.3	0.1	0.0	0.0
Total Delay (s/veh)	76.1	6.3	94.4	28.5	137.4
Queue Length 50th (ft)	23	163	~969	76	~640
Queue Length 95th (ft)	m20	m124	#1109	126	#790
Internal Link Dist (ft)		408	505	1354	
Turn Bay Length (ft)	140				
Base Capacity (vph)	73	1981	1779	627	1012
Starvation Cap Reductn	0	390	0	0	0
Spillback Cap Reductn	0	0	57	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.37	0.91	1.17	0.22	1.21

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

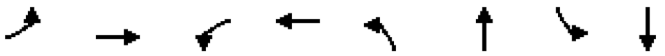
Lane Group	EBT	WBL	WBT	SBT
Lane Group Flow (vph)	911	923	470	757
v/c Ratio	1.13	0.98	0.24	1.15
Control Delay (s/veh)	115.0	39.1	5.3	121.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	115.0	39.1	5.3	121.2
Queue Length 50th (ft)	~425	393	34	~693
Queue Length 95th (ft)	#558	m346	m35	#936
Internal Link Dist (ft)	371		408	1244
Turn Bay Length (ft)		280		
Base Capacity (vph)	807	941	1919	656
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.13	0.98	0.24	1.15

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	45	169	199	69	89	955	67	894
v/c Ratio	0.08	0.27	0.69	0.22	0.48	0.75	0.39	0.71
Control Delay (s/veh)	32.5	10.1	55.9	18.5	30.0	39.3	53.0	41.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.5	10.1	55.9	18.5	30.0	39.3	53.0	41.0
Queue Length 50th (ft)	23	14	133	14	65	245	45	210
Queue Length 95th (ft)	58	75	205	52	m69	m223	89	249
Internal Link Dist (ft)		206		308		483		447
Turn Bay Length (ft)					160		145	
Base Capacity (vph)	580	623	354	368	225	1446	209	1410
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.27	0.56	0.19	0.40	0.66	0.32	0.63

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBT	WBR	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	653	1390	884	390	58	248	250	715
v/c Ratio	1.31	0.66	0.42	0.44	0.36	0.59	0.58	0.58
Control Delay (s/veh)	187.2	5.7	25.5	4.8	6.2	21.4	21.2	7.1
Queue Delay	0.0	0.9	0.1	0.0	0.0	0.0	0.0	0.1
Total Delay (s/veh)	187.2	6.6	25.6	4.8	6.2	21.4	21.2	7.2
Queue Length 50th (ft)	~315	68	158	0	0	185	186	187
Queue Length 95th (ft)	m#287	m61	247	74	0	66	67	11
Internal Link Dist (ft)		226	293				483	
Turn Bay Length (ft)						270		
Base Capacity (vph)	499	2117	2115	878	161	641	652	1487
Starvation Cap Reductn	0	416	0	0	0	0	0	0
Spillback Cap Reductn	0	0	198	0	0	0	0	112
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.31	0.82	0.46	0.44	0.36	0.39	0.38	0.52

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	253	59	1075	355	60	821
v/c Ratio	0.40	0.10	0.72	0.41	0.39	0.43
Control Delay (s/veh)	33.1	9.1	10.6	1.5	54.0	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.1	9.1	10.6	1.5	54.0	15.5
Queue Length 50th (ft)	139	0	234	0	41	165
Queue Length 95th (ft)	251	34	m201	m0	81	154
Internal Link Dist (ft)	72		940			1206
Turn Bay Length (ft)				240	280	
Base Capacity (vph)	627	598	1769	956	370	2670
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.10	0.61	0.37	0.16	0.31

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	611	2056	268	1142	188	433	856	189	446	439
v/c Ratio	2.18	1.14	1.43	0.98	0.30	1.17	0.83	0.77	0.49	0.84
Control Delay (s/veh)	569.1	104.2	256.6	53.6	6.5	146.2	41.8	64.1	27.4	30.5
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	569.1	104.2	256.6	53.6	6.8	146.2	41.8	64.1	27.4	30.5
Queue Length 50th (ft)	~357	~626	~135	~445	15	~193	278	70	90	93
Queue Length 95th (ft)	#470	#759	#224	#581	45	#346	343	#124	123	157
Internal Link Dist (ft)		471		226			1023		940	
Turn Bay Length (ft)	260					200		300		260
Base Capacity (vph)	280	1800	187	1167	629	370	1140	249	1190	633
Starvation Cap Reductn	0	0	0	0	137	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.18	1.14	1.43	0.98	0.38	1.17	0.75	0.76	0.37	0.69

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Appendix H – Year 2050 No Build Conditions Freeway Analysis Worksheets

HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	3/7/2024
Agency		Analysis Year	2050 No-Build
Jurisdiction		Time Analyzed	AM Peak Hour
Project Description	SR-99/Standiford Improvement (SR-99 NB)	Units	U.S. Customary
Segment Number	1	Segment Name	Briggsmore Avenue On-Ramp to Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	3340	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6247	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2569
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	34.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	55.6
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	61.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	885
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6247	765
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	13.50	13.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	0.881
Flow Rate (vi),pc/h	7707	944
Capacity (c), pc/h	6210	1785
Volume-to-Capacity Ratio (v/c)	0.93	0.53

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.383
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2071
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	53.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.572	Outer Lanes Freeway Speed (SO), mi/h	62.7
Flow in Lanes 1 and 2 (v12), pc/h	3712	Ramp Junction Speed (S), mi/h	56.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	34.1
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	28.2

HCS7 Basic Freeway Report

Project Information

Segment Number	3	Segment Name	Beckwith Road Off-Ramp to Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2665	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5482	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1613
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.78
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	58.3
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	27.7
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Basic Freeway Report

Project Information

Segment Number	4	Segment Name	Beckwith Road On-Ramp to Pelandale Avenue Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	5630	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6193	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1429
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.69
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	60.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	23.7
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	3/7/2024
Agency		Analysis Year	2050 No-Build
Jurisdiction		Time Analyzed	AM Peak Hour
Project Description	SR-99/Standiford Improvement (SR-99 SB)	Units	U.S. Customary
Segment Number	1	Segment Name	Pelandale Avenue Off-Ramp to Pelandale Avenue On-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2450	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5913	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2432
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.99
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	45.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	45.3
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Basic Freeway Report

Project Information

Segment Number	2	Segment Name	Pelandale Avenue On-Ramp to Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	5250	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6221	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1919
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.68
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	22.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	63.0
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Basic Freeway Report

Project Information

Segment Number	3	Segment Name	Beckwith Road Off-Ramp to Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2510	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5696	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2343
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.77
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	21.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	75.6
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Freeway Merge Report

Project Information

Segment Number	4	Segment Name	Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	61.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5696	1008
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	13.50	13.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	0.881
Flow Rate (vi),pc/h	7028	1244
Capacity (c), pc/h	6210	1785
Volume-to-Capacity Ratio (v/c)	0.93	0.70

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.412
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1725
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	53.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.620	Outer Lanes Freeway Speed (SO), mi/h	56.6
Flow in Lanes 1 and 2 (v12), pc/h	2814	Ramp Junction Speed (S), mi/h	54.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	4058	Average Density (D), pc/mi/ln	35.6
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	27.2

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	Beckwith Road On-Ramp to Briggsmore Avenue Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	3390	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6704	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1928
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	51.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	37.6
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	3/7/2024
Agency		Analysis Year	2050 No-Build
Jurisdiction		Time Analyzed	PM Peak Hour
Project Description	SR-99/Standiford Improvement (SR-99 NB)	Units	U.S. Customary
Segment Number	1	Segment Name	Briggsmore Avenue On-Ramp to Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	3340	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6186	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2544
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	34.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	55.6
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	61.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	885
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6186	1255
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	13.50	13.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	0.881
Flow Rate (vi),pc/h	7632	1548
Capacity (c), pc/h	6210	1785
Volume-to-Capacity Ratio (v/c)	0.93	0.87

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.437
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1931
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	52.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.544	Outer Lanes Freeway Speed (SO), mi/h	63.3
Flow in Lanes 1 and 2 (v12), pc/h	3852	Ramp Junction Speed (S), mi/h	55.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	34.5
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	29.4

HCS7 Basic Freeway Report

Project Information

Segment Number	3	Segment Name	Beckwith Road Off-Ramp to Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2665	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4931	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1412
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.68
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	60.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	23.3
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Basic Freeway Report

Project Information

Segment Number	4	Segment Name	Beckwith Road On-Ramp to Pelandale Avenue Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	5630	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5656	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1282
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.62
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	61.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	21.0
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	3/7/2024
Agency		Analysis Year	2050 No-Build
Jurisdiction		Time Analyzed	PM Peak Hour
Project Description	SR-99/Standiford Improvement (SR-99 SB)	Units	U.S. Customary
Segment Number	1	Segment Name	Pelandale Avenue Off-Ramp to Pelandale Avenue On-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2450	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5683	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2337
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.94
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	36.8
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	53.3
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Freeway Weaving Report

Project Information

Segment Number	2	Segment Name	Pelandale Avenue On-Ramp to Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes (N), ln	4	Segment Type	Freeway
Segment Length (L_S), ft	4250	Number of Maneuver Lanes (N_{WL}), ln	2
Weaving Configuration	One-Sided	Ramp-to-Freeway Lane Changes (LC_{RF}), lc	1
Terrain Type	Level	Freeway-to-Ramp Lane Changes (LC_{FR}), lc	0
Percent Grade, %	-	Ramp-to-Ramp Lane Changes (LC_{RR}), lc	0
Interchange Density (ID), int/mi	0.67	Cross Weaving Managed Lane	No

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

	FF	RF	RR	FR
Demand Volume (V_i), veh/h	5024	729	38	659
Peak Hour Factor (PHF)	0.92	0.92	0.92	0.92
Total Trucks, %	13.50	13.50	13.50	13.50
Heavy Vehicle Adjustment Factor (f_{HV})	0.881	0.881	0.881	0.881
Flow Rate (v_i), pc/h	6198	899	47	813

Weaving Flow Rate (v_W), pc/h	1712	Freeway Max Capacity (c_{IFL}), pc/h/ln	2310
Non-Weaving Flow Rate (v_{NW}), pc/h	6245	Density-Based Capacity (c_{IWL}), pc/h/ln	2276
Total Flow Rate (v), pc/h	7957	Demand Flow-Based Capacity (c_{IW}), pc/h	11163
Volume Ratio (VR)	0.215	Weaving Segment Capacity (c_W), veh/h	8021
Minimum Lane Change Rate (LC_{MIN}), lc/h	899	Adjusted Weaving Area Capacity, pc/h	8194
Maximum Weaving Length (L_{MAX}), ft	4690	Volume-to-Capacity Ratio (v/c)	0.72

Speed and Density

Non-Weaving Vehicle Index (I_{NW})	1778	Average Weaving Speed (S_W), mi/h	52.2
Non-Weaving Lane Change Rate (LC_{NW}), lc/h	3012	Average Non-Weaving Speed (S_{NW}), mi/h	45.0
Weaving Lane Change Rate (LC_W), lc/h	1490	Average Speed (S), mi/h	20.8
Weaving Lane Change Rate (LC_{All}), lc/h	4502	Density (D), pc/mi/ln	70.5
Weaving Intensity Factor (W)	0.237	Level of Service (LOS)	F

HCS7 Basic Freeway Report

Project Information

Segment Number	3	Segment Name	Beckwith Road Off-Ramp to Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2510	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5753	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2366
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.77
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	21.1
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	76.1
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Freeway Merge Report

Project Information

Segment Number	4	Segment Name	Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	61.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5753	1005
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	13.50	13.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	0.881
Flow Rate (vi),pc/h	7098	1240
Capacity (c), pc/h	6210	1785
Volume-to-Capacity Ratio (v/c)	0.93	0.69

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.411
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1726
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	53.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.620	Outer Lanes Freeway Speed (SO), mi/h	56.6
Flow in Lanes 1 and 2 (v12), pc/h	2817	Ramp Junction Speed (S), mi/h	54.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	4057	Average Density (D), pc/mi/ln	35.6
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	27.2

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	Beckwith Road On-Ramp to Briggsmore Avenue Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	3390	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6758	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1928
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	51.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	37.6
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

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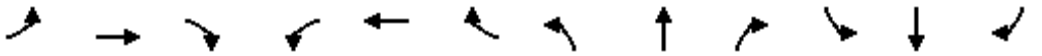
Appendix I – Year 2050 Build Conditions "B" Alternatives Intersection Analysis Worksheets



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	210	0	0	418	36	0	675	386	0	0	0
Future Volume (veh/h)	0	210	0	0	418	36	0	675	386	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	1856	1856	0	0	1856	1856	1856	1856	1856			
Adj Flow Rate, veh/h	0	228	0	0	454	32	0	734	180			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	0	2168	0	0	2055	144	0	1013	429			
Arrive On Green	0.00	0.61	0.00	0.00	0.61	0.61	0.00	0.09	0.09			
Sat Flow, veh/h	0	3711	0	0	3434	235	0	3711	1572			
Grp Volume(v), veh/h	0	228	0	0	239	247	0	734	180			
Grp Sat Flow(s),veh/h/ln	0	1763	0	0	1763	1813	0	1856	1572			
Q Serve(g_s), s	0.0	2.4	0.0	0.0	5.4	5.5	0.0	17.3	9.7			
Cycle Q Clear(g_c), s	0.0	2.4	0.0	0.0	5.4	5.5	0.0	17.3	9.7			
Prop In Lane	0.00		0.00	0.00		0.13	0.00		1.00			
Lane Grp Cap(c), veh/h	0	2168	0	0	1084	1115	0	1013	429			
V/C Ratio(X)	0.00	0.11	0.00	0.00	0.22	0.22	0.00	0.72	0.42			
Avail Cap(c_a), veh/h	0	2168	0	0	1084	1115	0	1456	617			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.70	0.70			
Uniform Delay (d), s/veh	0.0	7.1	0.0	0.0	7.7	7.7	0.0	37.7	34.2			
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.5	0.5	0.0	0.7	0.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.8	0.0	0.0	1.8	1.9	0.0	8.7	4.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	7.2	0.0	0.0	8.2	8.2	0.0	38.4	34.7			
LnGrp LOS	A	A	A	A	A	A	A	D	C			
Approach Vol, veh/h		228			486			914				
Approach Delay, s/veh		7.2			8.2			37.7				
Approach LOS		A			A			D				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		60.7				60.7		29.3				
Change Period (Y+Rc), s		5.4				5.4		4.7				
Max Green Setting (Gmax), s		44.6				44.6		35.3				
Max Q Clear Time (g_c+I1), s		4.4				7.5		19.3				
Green Ext Time (p_c), s		1.4				2.8		5.2				

Intersection Summary	
HCM 6th Ctrl Delay	24.6
HCM 6th LOS	C

Notes

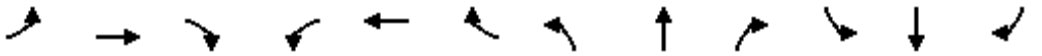
User approved volume balancing among the lanes for turning movement.



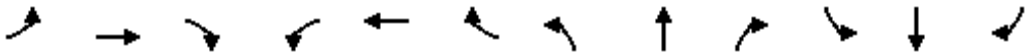
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	418	0	0	0	210	315
Future Volume (vph)	418	0	0	0	210	315
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.4					5.1
Lane Util. Factor	0.97					0.95
Frt	1.00					1.00
Flt Protected	0.95					0.98
Satd. Flow (prot)	3400					3436
Flt Permitted	0.95					0.98
Satd. Flow (perm)	3400					3436
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	454	0	0	0	228	342
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	454	0	0	0	0	570
Turn Type	Prot				Split	NA
Protected Phases	1				4	4
Permitted Phases						
Actuated Green, G (s)	58.6					20.9
Effective Green, g (s)	58.6					20.9
Actuated g/C Ratio	0.65					0.23
Clearance Time (s)	5.4					5.1
Vehicle Extension (s)	3.0					3.0
Lane Grp Cap (vph)	2213					797
v/s Ratio Prot	c0.13					c0.17
v/s Ratio Perm						
v/c Ratio	0.21					0.72
Uniform Delay, d1	6.3					31.8
Progression Factor	0.79					1.00
Incremental Delay, d2	0.2					3.1
Delay (s)	5.2					34.9
Level of Service	A					C
Approach Delay (s)	5.2		0.0			34.9
Approach LOS	A		A			C

Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	549	0	0	743	620	109	390	266	0	0	0
Future Volume (veh/h)	51	549	0	0	743	620	109	390	266	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	1856	1856	0	0	1856	1856	1856	1856	1856			
Adj Flow Rate, veh/h	55	597	0	0	808	547	118	424	125			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	73	2368	0	0	2041	910	158	601	333			
Arrive On Green	0.04	0.67	0.00	0.00	0.58	0.58	0.21	0.21	0.21			
Sat Flow, veh/h	1767	3618	0	0	3618	1572	744	2837	1572			
Grp Volume(v), veh/h	55	597	0	0	808	547	288	254	125			
Grp Sat Flow(s),veh/h/ln	1767	1763	0	0	1763	1572	1818	1763	1572			
Q Serve(g_s), s	2.8	6.0	0.0	0.0	11.3	20.2	13.4	11.9	6.1			
Cycle Q Clear(g_c), s	2.8	6.0	0.0	0.0	11.3	20.2	13.4	11.9	6.1			
Prop In Lane	1.00		0.00	0.00		1.00	0.41		1.00			
Lane Grp Cap(c), veh/h	73	2368	0	0	2041	910	385	373	333			
V/C Ratio(X)	0.75	0.25	0.00	0.00	0.40	0.60	0.75	0.68	0.38			
Avail Cap(c_a), veh/h	100	2368	0	0	2041	910	729	707	631			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.63	0.63	0.00	0.00	1.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	42.7	5.8	0.0	0.0	10.4	12.2	33.2	32.7	30.4			
Incr Delay (d2), s/veh	12.3	0.2	0.0	0.0	0.6	2.9	3.3	2.4	0.8			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.4	1.7	0.0	0.0	3.8	6.6	5.9	5.0	2.3			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.9	6.0	0.0	0.0	10.9	15.2	36.5	35.1	31.2			
LnGrp LOS	D	A	A	A	B	B	D	D	C			
Approach Vol, veh/h		652			1355			667				
Approach Delay, s/veh		10.1			12.6			35.0				
Approach LOS		B			B			C				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		66.2			8.3	57.9		23.8				
Change Period (Y+Rc), s		5.8			4.6	5.8		4.7				
Max Green Setting (Gmax), s		43.4			5.1	33.7		36.1				
Max Q Clear Time (g_c+I1), s		8.0			4.8	22.2		15.4				
Green Ext Time (p_c), s		6.5			0.0	7.5		3.7				
Intersection Summary												
HCM 6th Ctrl Delay			17.6									
HCM 6th LOS			B									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	334	197	458	393	0	0	0	0	266	353	114
Future Volume (veh/h)	0	334	197	458	393	0	0	0	0	266	353	114
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1856	1856	1856	1856	0				1856	1856	1856
Adj Flow Rate, veh/h	0	363	114	498	427	0				289	384	106
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	480	149	1281	2136	0				350	496	141
Arrive On Green	0.00	0.18	0.18	0.37	0.61	0.00				0.28	0.28	0.28
Sat Flow, veh/h	0	2743	821	3428	3618	0				1261	1788	508
Grp Volume(v), veh/h	0	240	237	498	427	0				411	0	368
Grp Sat Flow(s),veh/h/ln	0	1763	1708	1714	1763	0				1792	0	1764
Q Serve(g_s), s	0.0	11.6	11.9	9.6	4.9	0.0				19.3	0.0	17.2
Cycle Q Clear(g_c), s	0.0	11.6	11.9	9.6	4.9	0.0				19.3	0.0	17.2
Prop In Lane	0.00		0.48	1.00		0.00				0.70		0.29
Lane Grp Cap(c), veh/h	0	319	309	1281	2136	0				497	0	489
V/C Ratio(X)	0.00	0.75	0.77	0.39	0.20	0.00				0.83	0.00	0.75
Avail Cap(c_a), veh/h	0	443	429	1281	2136	0				615	0	606
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.91	0.91	0.00				0.87	0.00	0.87
Uniform Delay (d), s/veh	0.0	34.9	35.1	20.6	8.0	0.0				30.5	0.0	29.7
Incr Delay (d2), s/veh	0.0	6.2	7.2	0.2	0.2	0.0				7.0	0.0	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.2	5.3	3.6	1.6	0.0				8.7	0.0	7.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	41.2	42.3	20.9	8.1	0.0				37.5	0.0	33.6
LnGrp LOS	A	D	D	C	A	A				D	A	C
Approach Vol, veh/h		477			925						779	
Approach Delay, s/veh		41.7			15.0						35.7	
Approach LOS		D			B						D	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	38.2	21.7		30.1		59.9
Change Period (Y+Rc), s	4.6	5.4		5.1		5.4
Max Green Setting (Gmax), s	21.4	22.6		30.9		48.6
Max Q Clear Time (g_c+I1), s	11.6	13.9		21.3		6.9
Green Ext Time (p_c), s	1.8	2.4		3.6		3.6

Intersection Summary		
HCM 6th Ctrl Delay		28.2
HCM 6th LOS		C

Lane Group	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	228	493	805	349
v/c Ratio	0.12	0.26	0.71	0.49
Control Delay (s/veh)	2.5	11.6	33.4	7.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	2.5	11.6	33.4	7.6
Queue Length 50th (ft)	0	72	247	47
Queue Length 95th (ft)	32	113	236	35
Internal Link Dist (ft)	363	270	498	
Turn Bay Length (ft)				
Base Capacity (vph)	1922	1905	1307	771
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.12	0.26	0.62	0.45

Intersection Summary

Lane Group	WBL	SBT
Lane Group Flow (vph)	454	570
v/c Ratio	0.21	0.71
Control Delay (s/veh)	5.8	36.6
Queue Delay	0.0	0.0
Total Delay (s/veh)	5.8	36.6
Queue Length 50th (ft)	83	156
Queue Length 95th (ft)	128	195
Internal Link Dist (ft)	363	475
Turn Bay Length (ft)		
Base Capacity (vph)	2212	1217
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.21	0.47

Intersection Summary



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	55	597	808	674	542	289
v/c Ratio	0.56	0.26	0.41	0.68	0.65	0.54
Control Delay (s/veh)	56.9	6.1	13.8	13.6	34.1	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	56.9	6.1	13.8	13.6	34.1	11.5
Queue Length 50th (ft)	33	92	136	151	146	33
Queue Length 95th (ft)	m50	129	217	345	180	94
Internal Link Dist (ft)		408	434		1432	
Turn Bay Length (ft)	140					1000
Base Capacity (vph)	99	2254	1952	997	1390	758
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.26	0.41	0.68	0.39	0.38

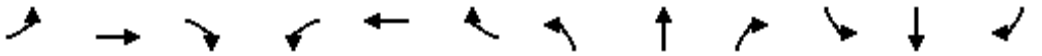
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	WBL	WBT	SBT
Lane Group Flow (vph)	577	498	427	797
v/c Ratio	0.72	0.46	0.21	0.77
Control Delay (s/veh)	30.3	21.0	11.0	20.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.3	21.0	11.0	20.5
Queue Length 50th (ft)	124	124	83	146
Queue Length 95th (ft)	175	191	140	171
Internal Link Dist (ft)	1043		408	519
Turn Bay Length (ft)		280		
Base Capacity (vph)	926	1075	2036	1171
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	0.46	0.21	0.68

Intersection Summary

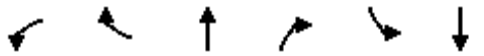


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	286	0	0	634	202	0	523	761	0	0	0
Future Volume (veh/h)	0	286	0	0	634	202	0	523	761	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	311	0	0	689	192	0	722	335			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	0	2170	0	0	1676	467	0	1078	457			
Arrive On Green	0.00	0.61	0.00	0.00	0.61	0.61	0.00	0.10	0.10			
Sat Flow, veh/h	0	3741	0	0	2838	765	0	3741	1585			
Grp Volume(v), veh/h	0	311	0	0	446	435	0	722	335			
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1777	1733	0	1870	1585			
Q Serve(g_s), s	0.0	3.7	0.0	0.0	13.0	13.1	0.0	18.7	20.6			
Cycle Q Clear(g_c), s	0.0	3.7	0.0	0.0	13.0	13.1	0.0	18.7	20.6			
Prop In Lane	0.00		0.00	0.00		0.44	0.00		1.00			
Lane Grp Cap(c), veh/h	0	2170	0	0	1085	1058	0	1078	457			
V/C Ratio(X)	0.00	0.14	0.00	0.00	0.41	0.41	0.00	0.67	0.73			
Avail Cap(c_a), veh/h	0	2170	0	0	1085	1058	0	1582	670			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.60	0.60			
Uniform Delay (d), s/veh	0.0	8.3	0.0	0.0	10.1	10.1	0.0	40.6	41.5			
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	1.2	1.2	0.0	0.4	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			
%ile BackOfQ(50%),veh/ln	0.0	1.3	0.0	0.0	4.7	4.6	0.0	9.4	8.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	8.4	0.0	0.0	11.3	11.3	0.0	41.1	42.9			
LnGrp LOS	A	A	A	A	B	B	A	D	D			
Approach Vol, veh/h		311			881			1057				
Approach Delay, s/veh		8.4			11.3			41.7				
Approach LOS		A			B			D				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		66.5				66.5		33.5				
Change Period (Y+Rc), s		5.4				5.4		4.7				
Max Green Setting (Gmax), s		47.6				47.6		42.3				
Max Q Clear Time (g_c+I1), s		5.7				15.1		22.6				
Green Ext Time (p_c), s		1.9				5.8		6.3				

Intersection Summary	
HCM 6th Ctrl Delay	25.2
HCM 6th LOS	C

Notes

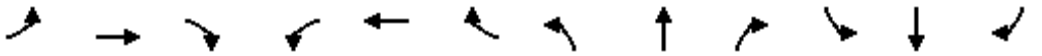
User approved volume balancing among the lanes for turning movement.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	634	0	0	0	286	411
Future Volume (vph)	634	0	0	0	286	411
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.4					5.1
Lane Util. Factor	0.97					0.95
Frt	1.00					1.00
Flt Protected	0.95					0.98
Satd. Flow (prot)	3433					3468
Flt Permitted	0.95					0.98
Satd. Flow (perm)	3433					3468
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	689	0	0	0	311	447
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	689	0	0	0	0	758
Turn Type	Prot				Perm	NA
Protected Phases	1					4
Permitted Phases					4	
Actuated Green, G (s)	61.0					28.5
Effective Green, g (s)	61.0					28.5
Actuated g/C Ratio	0.61					0.28
Clearance Time (s)	5.4					5.1
Vehicle Extension (s)	3.0					3.0
Lane Grp Cap (vph)	2094					988
v/s Ratio Prot	c0.20					
v/s Ratio Perm						0.22
v/c Ratio	0.33					0.77
Uniform Delay, d1	9.5					32.7
Progression Factor	1.16					1.00
Incremental Delay, d2	0.1					3.6
Delay (s)	11.1					36.3
Level of Service	B					D
Approach Delay (s)	11.1		0.0			36.3
Approach LOS	B		A			D

Intersection Summary			
HCM 2000 Control Delay	24.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	55.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	1041	0	0	526	492	122	767	366	0	0	0
Future Volume (veh/h)	25	1041	0	0	526	492	122	767	366	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	27	1132	0	0	572	473	133	834	345			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	47	2019	0	0	1761	786	156	1029	518			
Arrive On Green	0.03	0.57	0.00	0.00	0.50	0.50	0.33	0.33	0.33			
Sat Flow, veh/h	1781	3647	0	0	3647	1585	476	3147	1585			
Grp Volume(v), veh/h	27	1132	0	0	572	473	516	451	345			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	1585	1847	1777	1585			
Q Serve(g_s), s	1.5	20.2	0.0	0.0	9.7	21.5	26.1	22.9	18.7			
Cycle Q Clear(g_c), s	1.5	20.2	0.0	0.0	9.7	21.5	26.1	22.9	18.7			
Prop In Lane	1.00		0.00	0.00		1.00	0.26		1.00			
Lane Grp Cap(c), veh/h	47	2019	0	0	1761	786	604	581	518			
V/C Ratio(X)	0.57	0.56	0.00	0.00	0.32	0.60	0.85	0.78	0.67			
Avail Cap(c_a), veh/h	96	2019	0	0	1761	786	670	645	575			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.33	0.33	0.00	0.00	1.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	48.1	13.7	0.0	0.0	15.2	18.1	31.4	30.4	29.0			
Incr Delay (d2), s/veh	3.6	0.4	0.0	0.0	0.5	3.4	9.9	5.6	2.7			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.7	7.1	0.0	0.0	3.7	7.8	12.5	10.0	7.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.7	14.1	0.0	0.0	15.6	21.5	41.3	35.9	31.6			
LnGrp LOS	D	B	A	A	B	C	D	D	C			
Approach Vol, veh/h		1159			1045			1312				
Approach Delay, s/veh		14.9			18.3			36.9				
Approach LOS		B			B			D				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		62.6			7.2	55.4		37.4				
Change Period (Y+Rc), s		5.8			4.6	5.8		4.7				
Max Green Setting (Gmax), s		53.2			5.4	43.2		36.3				
Max Q Clear Time (g_c+I1), s		22.2			3.5	23.5		28.1				
Green Ext Time (p_c), s		13.8			0.0	8.3		4.6				
Intersection Summary												
HCM 6th Ctrl Delay			24.1									
HCM 6th LOS			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	697	141	324	324	0	0	0	0	369	541	135
Future Volume (veh/h)	0	697	141	324	324	0	0	0	0	369	541	135
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	758	136	352	352	0				401	588	135
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	851	153	725	1914	0				437	684	162
Arrive On Green	0.00	0.28	0.28	0.21	0.54	0.00				0.36	0.36	0.36
Sat Flow, veh/h	0	3104	540	3456	3647	0				1226	1918	454
Grp Volume(v), veh/h	0	447	447	352	352	0				592	0	532
Grp Sat Flow(s),veh/h/ln	0	1777	1773	1728	1777	0				1809	0	1789
Q Serve(g_s), s	0.0	24.1	24.2	9.0	5.1	0.0				31.3	0.0	27.3
Cycle Q Clear(g_c), s	0.0	24.1	24.2	9.0	5.1	0.0				31.3	0.0	27.3
Prop In Lane	0.00		0.30	1.00		0.00				0.68		0.25
Lane Grp Cap(c), veh/h	0	502	501	725	1914	0				645	0	638
V/C Ratio(X)	0.00	0.89	0.89	0.49	0.18	0.00				0.92	0.00	0.83
Avail Cap(c_a), veh/h	0	526	525	725	1914	0				668	0	660
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.95	0.95	0.00				0.81	0.00	0.81
Uniform Delay (d), s/veh	0.0	34.4	34.4	34.8	11.8	0.0				30.8	0.0	29.5
Incr Delay (d2), s/veh	0.0	17.3	17.4	0.6	0.2	0.0				14.9	0.0	7.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	12.2	12.2	3.7	1.9	0.0				15.3	0.0	12.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	51.7	51.8	35.4	12.0	0.0				45.6	0.0	37.0
LnGrp LOS	A	D	D	D	B	A				D	A	D
Approach Vol, veh/h		894			704						1124	
Approach Delay, s/veh		51.7			23.7						41.5	
Approach LOS		D			C						D	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	25.6	33.7		40.8		59.2
Change Period (Y+Rc), s	4.6	5.4		5.1		5.4
Max Green Setting (Gmax), s	18.4	29.6		36.9		52.6
Max Q Clear Time (g_c+I1), s	11.0	26.2		33.3		7.1
Green Ext Time (p_c), s	1.0	2.1		2.4		3.0

Intersection Summary			
HCM 6th Ctrl Delay		40.3	
HCM 6th LOS		D	

Lane Group	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	311	909	957	438
v/c Ratio	0.17	0.49	0.75	0.54
Control Delay (s/veh)	1.9	15.9	25.5	5.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	1.9	15.9	25.5	5.5
Queue Length 50th (ft)	0	178	213	46
Queue Length 95th (ft)	43	253	224	m51
Internal Link Dist (ft)	363	270	498	
Turn Bay Length (ft)				
Base Capacity (vph)	1879	1840	1448	862
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.17	0.49	0.66	0.51

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	WBL	SBT
Lane Group Flow (vph)	689	758
v/c Ratio	0.33	0.77
Control Delay (s/veh)	12.4	37.8
Queue Delay	0.0	0.0
Total Delay (s/veh)	12.4	37.8
Queue Length 50th (ft)	181	230
Queue Length 95th (ft)	251	272
Internal Link Dist (ft)	363	475
Turn Bay Length (ft)		
Base Capacity (vph)	2092	1314
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.33	0.58

Intersection Summary



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	27	1132	572	535	967	398
v/c Ratio	0.28	0.58	0.33	0.64	0.80	0.67
Control Delay (s/veh)	44.5	8.8	17.4	20.1	35.5	27.8
Queue Delay	0.0	0.8	0.0	0.0	0.0	0.0
Total Delay (s/veh)	44.5	9.7	17.4	20.1	35.5	27.8
Queue Length 50th (ft)	14	273	126	215	281	165
Queue Length 95th (ft)	m16	m314	170	346	358	271
Internal Link Dist (ft)		408	434		1432	
Turn Bay Length (ft)	140					1000
Base Capacity (vph)	95	1954	1742	839	1275	626
Starvation Cap Reductn	0	483	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.77	0.33	0.64	0.76	0.64

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

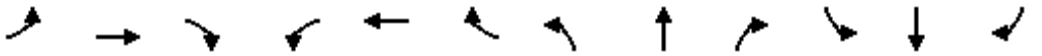


Lane Group	EBT	WBL	WBT	SBT
Lane Group Flow (vph)	911	352	352	1136
v/c Ratio	0.89	0.53	0.19	0.91
Control Delay (s/veh)	45.0	39.5	18.4	26.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	45.0	39.5	18.4	26.9
Queue Length 50th (ft)	283	118	100	176
Queue Length 95th (ft)	#393	m166	m136	#310
Internal Link Dist (ft)	1043		408	519
Turn Bay Length (ft)		280		
Base Capacity (vph)	1038	666	1882	1271
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.88	0.53	0.19	0.89

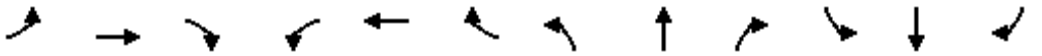
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	759	0	0	817	657	109	3	266	0	0	0
Future Volume (veh/h)	51	759	0	0	817	657	109	3	266	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	1856	1856	0	0	1856	1856	1856	1856	1856			
Adj Flow Rate, veh/h	55	825	0	0	888	455	118	3	36			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	73	2795	0	0	2468	1101	156	4	251			
Arrive On Green	0.04	0.79	0.00	0.00	0.70	0.70	0.09	0.09	0.09			
Sat Flow, veh/h	1767	3618	0	0	3618	1572	1725	44	2768			
Grp Volume(v), veh/h	55	825	0	0	888	455	121	0	36			
Grp Sat Flow(s),veh/h/ln	1767	1763	0	0	1763	1572	1769	0	1384			
Q Serve(g_s), s	2.8	5.7	0.0	0.0	9.1	11.0	6.0	0.0	1.1			
Cycle Q Clear(g_c), s	2.8	5.7	0.0	0.0	9.1	11.0	6.0	0.0	1.1			
Prop In Lane	1.00		0.00	0.00		1.00	0.98		1.00			
Lane Grp Cap(c), veh/h	73	2795	0	0	2468	1101	160	0	251			
V/C Ratio(X)	0.75	0.30	0.00	0.00	0.36	0.41	0.75	0.00	0.14			
Avail Cap(c_a), veh/h	165	2795	0	0	2468	1101	281	0	440			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.59	0.59	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	42.7	2.5	0.0	0.0	5.4	5.7	39.9	0.0	37.7			
Incr Delay (d2), s/veh	8.7	0.2	0.0	0.0	0.4	1.1	7.0	0.0	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			
%ile BackOfQ(50%),veh/ln	1.3	0.9	0.0	0.0	2.5	2.9	2.8	0.0	0.4			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.4	2.7	0.0	0.0	5.8	6.8	47.0	0.0	38.0			
LnGrp LOS	D	A	A	A	A	A	D	A	D			
Approach Vol, veh/h		880			1343			157				
Approach Delay, s/veh		5.7			6.2			44.9				
Approach LOS		A			A			D				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		77.1			8.3	68.8		12.9				
Change Period (Y+Rc), s		5.8			4.6	5.8		4.7				
Max Green Setting (Gmax), s		65.2			8.4	52.2		14.3				
Max Q Clear Time (g_c+I1), s		7.7			4.8	13.0		8.0				
Green Ext Time (p_c), s		6.2			0.0	9.1		0.3				
Intersection Summary												
HCM 6th Ctrl Delay			8.6									
HCM 6th LOS			A									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	334	197	458	468	0	0	0	0	476	10	39
Future Volume (veh/h)	0	334	197	458	468	0	0	0	0	476	10	39
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1856	1856	1856	1856	0				1856	1856	1856
Adj Flow Rate, veh/h	0	363	104	498	509	0				557	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1245	352	598	2444	0				672	353	0
Arrive On Green	0.00	0.46	0.46	0.17	0.69	0.00				0.19	0.00	0.00
Sat Flow, veh/h	0	2806	767	3428	3618	0				3534	1856	0
Grp Volume(v), veh/h	0	234	233	498	509	0				557	0	0
Grp Sat Flow(s),veh/h/ln	0	1763	1717	1714	1763	0				1767	1856	0
Q Serve(g_s), s	0.0	7.5	7.6	12.6	4.7	0.0				13.6	0.0	0.0
Cycle Q Clear(g_c), s	0.0	7.5	7.6	12.6	4.7	0.0				13.6	0.0	0.0
Prop In Lane	0.00		0.45	1.00		0.00				1.00		0.00
Lane Grp Cap(c), veh/h	0	809	788	598	2444	0				672	353	0
V/C Ratio(X)	0.00	0.29	0.30	0.83	0.21	0.00				0.83	0.00	0.00
Avail Cap(c_a), veh/h	0	809	788	815	2444	0				997	524	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.93	0.93	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	15.2	15.2	35.9	5.0	0.0				35.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.2	0.2	5.1	0.2	0.0				3.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.7	2.7	5.4	1.3	0.0				5.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.4	15.5	41.0	5.1	0.0				38.8	0.0	0.0
LnGrp LOS	A	B	B	D	A	A				D	A	A
Approach Vol, veh/h		467			1007						557	
Approach Delay, s/veh		15.4			22.9						38.8	
Approach LOS		B			C						D	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	21.1	46.7		22.2		67.8
Change Period (Y+Rc), s	5.4	* 5.4		5.1		5.4
Max Green Setting (Gmax), s	21.4	* 28		25.4		54.1
Max Q Clear Time (g_c+I1), s	14.6	9.6		15.6		6.7
Green Ext Time (p_c), s	1.1	2.4		1.5		3.4

Intersection Summary		
HCM 6th Ctrl Delay		25.5
HCM 6th LOS		C

Notes

User approved volume balancing among the lanes for turning movement.

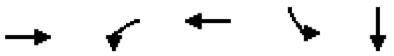
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	55	825	888	714	121	289
v/c Ratio	0.38	0.31	0.39	0.56	0.56	0.49
Control Delay (s/veh)	57.2	0.9	9.2	2.7	46.5	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	57.2	0.9	9.2	2.7	46.5	7.3
Queue Length 50th (ft)	33	5	125	0	65	0
Queue Length 95th (ft)	m43	5	181	45	117	37
Internal Link Dist (ft)		408	434		1432	
Turn Bay Length (ft)	140					1000
Base Capacity (vph)	163	2662	2270	1267	279	681
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.31	0.39	0.56	0.43	0.42

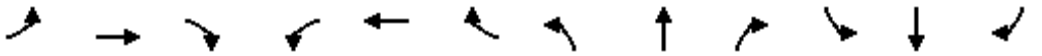
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	577	498	509	290	280
v/c Ratio	0.74	0.37	0.22	0.76	0.73
Control Delay (s/veh)	30.7	21.1	4.4	45.4	42.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.7	21.1	4.4	45.4	42.0
Queue Length 50th (ft)	123	113	25	160	148
Queue Length 95th (ft)	165	180	25	241	226
Internal Link Dist (ft)	1043		408		1244
Turn Bay Length (ft)		280		150	
Base Capacity (vph)	1128	1358	2295	469	471
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.51	0.37	0.22	0.62	0.59

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	1327	0	0	516	694	122	6	366	0	0	0
Future Volume (veh/h)	25	1327	0	0	516	694	122	6	366	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	27	1442	0	0	561	511	133	7	285			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	659	2793	0	0	1306	583	215	11	353			
Arrive On Green	0.37	0.79	0.00	0.00	0.37	0.37	0.13	0.13	0.13			
Sat Flow, veh/h	1781	3647	0	0	3647	1585	1696	89	2790			
Grp Volume(v), veh/h	27	1442	0	0	561	511	140	0	285			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	1585	1786	0	1395			
Q Serve(g_s), s	1.2	17.5	0.0	0.0	14.2	36.1	8.9	0.0	11.9			
Cycle Q Clear(g_c), s	1.2	17.5	0.0	0.0	14.2	36.1	8.9	0.0	11.9			
Prop In Lane	1.00		0.00	0.00		1.00	0.95		1.00			
Lane Grp Cap(c), veh/h	659	2793	0	0	1306	583	226	0	353			
V/C Ratio(X)	0.04	0.52	0.00	0.00	0.43	0.88	0.62	0.00	0.81			
Avail Cap(c_a), veh/h	659	2793	0	0	2168	967	347	0	542			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.35	0.35	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	24.2	4.6	0.0	0.0	28.5	35.4	49.7	0.0	51.0			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	1.0	16.9	2.8	0.0	5.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.5	4.4	0.0	0.0	6.0	15.9	4.1	0.0	4.3			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.2	4.9	0.0	0.0	29.5	52.3	52.4	0.0	56.1			
LnGrp LOS	C	A	A	A	C	D	D	A	E			
Approach Vol, veh/h		1469			1072			425				
Approach Delay, s/veh		5.2			40.4			54.9				
Approach LOS		A			D			D				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		100.1			50.2	49.9		19.9				
Change Period (Y+Rc), s		5.8			5.8	* 5.8		4.7				
Max Green Setting (Gmax), s		86.2			8.4	* 73		23.3				
Max Q Clear Time (g_c+I1), s		19.5			3.2	38.1		13.9				
Green Ext Time (p_c), s		15.1			0.0	6.0		1.3				

Intersection Summary	
HCM 6th Ctrl Delay	25.1
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	697	141	206	432	0	0	0	0	655	15	27
Future Volume (veh/h)	0	697	141	206	432	0	0	0	0	655	15	27
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	758	137	224	470	0				748	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1701	307	297	2476	0				769	404	0
Arrive On Green	0.00	0.57	0.57	0.09	0.70	0.00				0.22	0.00	0.00
Sat Flow, veh/h	0	3100	543	3456	3647	0				3563	1870	0
Grp Volume(v), veh/h	0	448	447	224	470	0				748	0	0
Grp Sat Flow(s),veh/h/ln	0	1777	1773	1728	1777	0				1781	1870	0
Q Serve(g_s), s	0.0	17.6	17.6	7.6	5.5	0.0				25.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	17.6	17.6	7.6	5.5	0.0				25.0	0.0	0.0
Prop In Lane	0.00		0.31	1.00		0.00				1.00		0.00
Lane Grp Cap(c), veh/h	0	1005	1003	297	2476	0				769	404	0
V/C Ratio(X)	0.00	0.45	0.45	0.76	0.19	0.00				0.97	0.00	0.00
Avail Cap(c_a), veh/h	0	1005	1003	965	2476	0				769	404	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.98	0.98	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	15.1	15.1	53.6	6.4	0.0				46.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.3	3.8	0.2	0.0				25.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.6	6.6	3.4	1.8	0.0				13.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.4	15.4	57.4	6.5	0.0				72.5	0.0	0.0
LnGrp LOS	A	B	B	E	A	A				E	A	A
Approach Vol, veh/h		895			694						748	
Approach Delay, s/veh		15.4			23.0						72.5	
Approach LOS		B			C						E	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	15.7	73.3		31.0		89.0
Change Period (Y+Rc), s	5.4	* 5.4		5.1		5.4
Max Green Setting (Gmax), s	33.5	* 46		25.9		83.6
Max Q Clear Time (g_c+I1), s	9.6	19.6		27.0		7.5
Green Ext Time (p_c), s	0.7	5.6		0.0		3.1

Intersection Summary		
HCM 6th Ctrl Delay		35.9
HCM 6th LOS		D

Notes

User approved volume balancing among the lanes for turning movement.

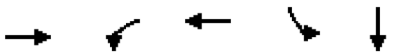
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	27	1442	561	754	140	398
v/c Ratio	0.21	0.53	0.23	0.57	0.54	0.77
Control Delay (s/veh)	32.5	2.0	8.8	2.7	54.7	42.7
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.5	2.2	8.8	2.7	54.7	42.7
Queue Length 50th (ft)	18	40	83	0	102	114
Queue Length 95th (ft)	m23	m15	144	51	160	167
Internal Link Dist (ft)		408	434		1432	
Turn Bay Length (ft)	140					1000
Base Capacity (vph)	145	2716	2473	1333	345	647
Starvation Cap Reductn	0	456	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.64	0.23	0.57	0.41	0.62

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	911	224	470	377	380
v/c Ratio	0.82	0.19	0.19	1.04	1.04
Control Delay (s/veh)	42.9	33.0	9.3	104.5	104.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	42.9	33.0	9.3	104.5	104.6
Queue Length 50th (ft)	333	42	47	~331	~333
Queue Length 95th (ft)	375	112	156	#535	#541
Internal Link Dist (ft)	1043		408		1244
Turn Bay Length (ft)		280		150	
Base Capacity (vph)	1325	1169	2465	362	364
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.69	0.19	0.19	1.04	1.04

Intersection Summary

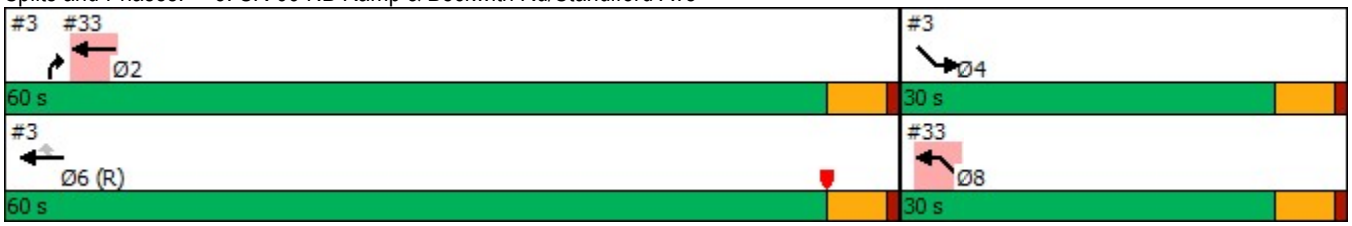
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	WBT	WBR2	NBR	SEL	Ø8
Lane Configurations					
Traffic Volume (vph)	1160	621	269	759	
Future Volume (vph)	1160	621	269	759	
Ideal Flow (vphpl)	1900	1900	1900	1900	
Right Turn on Red		Yes	Yes		
Link Speed (mph)	45			45	
Link Distance (ft)	1971			177	
Travel Time (s)	29.9			2.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	
Shared Lane Traffic (%)					
Turn Type	NA	Perm	Prot	Prot	
Protected Phases	6		2	4	8
Permitted Phases		6			
Detector Phase	6	6	2	4	
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0
Total Split (s)	60.0	60.0	60.0	30.0	30.0
Total Split (%)	66.7%	66.7%	66.7%	33.3%	33%
Maximum Green (s)	55.0	55.0	55.0	25.0	25.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	None	None	None

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 6:WBT, Start of Yellow, Master Intersection	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	

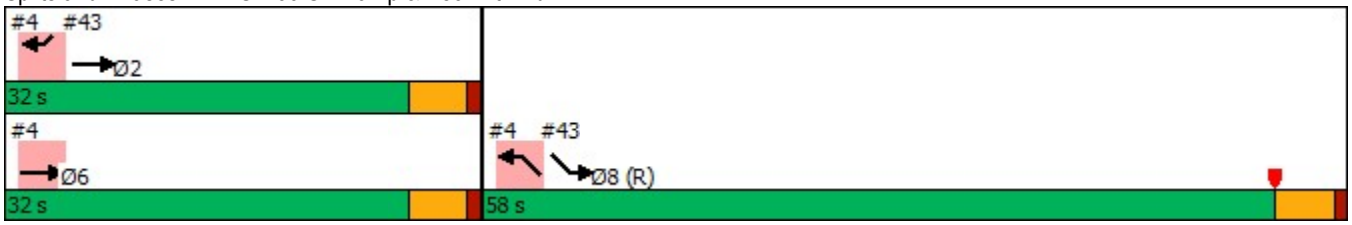
Splits and Phases: 3: SR-99 NB Ramp & Beckwith Rd/Standiford Ave



Lane Group	EBT	EBR2	NWL	SWR
Lane Configurations				
Traffic Volume (vph)	334	197	468	49
Future Volume (vph)	334	197	468	49
Ideal Flow (vphpl)	1900	1900	1900	1900
Storage Length (ft)			0	0
Storage Lanes			1	1
Taper Length (ft)			25	
Right Turn on Red		Yes		Yes
Link Speed (mph)	45		45	
Link Distance (ft)	4260		168	
Travel Time (s)	64.5		2.5	
Peak Hour Factor	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)				
Turn Type	NA		Prot	Prot
Protected Phases	6		8	2
Permitted Phases				
Detector Phase	6		8	2
Switch Phase				
Minimum Initial (s)	8.0		8.0	8.0
Minimum Split (s)	13.0		13.0	13.0
Total Split (s)	32.0		58.0	32.0
Total Split (%)	35.6%		64.4%	35.6%
Maximum Green (s)	27.0		53.0	27.0
Yellow Time (s)	4.0		4.0	4.0
All-Red Time (s)	1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0		3.0	3.0
Recall Mode	Max		C-Max	None

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 86 (96%), Referenced to phase 8:NWL, Start of Yellow	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	

Splits and Phases: 4: SR-99 SB Ramp & Beckwith Rd



3: SR-99 NB Ramp & Beckwith Rd & Standiford Ave Performance by movement

Movement	WBT	WBR2	NBR	SEL	All
Denied Delay (hr)	0.1	0.1	0.0	0.0	0.1
Denied Del/Veh (s)	0.2	0.3	0.0	0.0	0.2
Total Delay (hr)	3.6	0.4	0.1	5.5	9.7
Total Del/Veh (s)	11.0	2.5	1.9	26.1	12.3
Stop Delay (hr)	1.5	0.0	0.1	4.9	6.4
Stop Del/Veh (s)	4.6	0.0	0.9	23.1	8.2
Total Stops	371	1	31	383	786
Stop/Veh	0.32	0.00	0.11	0.50	0.28
Travel Dist (mi)	427.4	217.6	7.1	17.2	669.3
Travel Time (hr)	13.2	5.4	0.4	6.0	25.0
Avg Speed (mph)	32	41	18	3	27
Fuel Used (gal)	10.3	5.1	0.2	1.9	17.5
Fuel Eff. (mpg)	41.5	42.6	46.1	9.0	38.3
HC Emissions (g)	208	106	2	16	332
CO Emissions (g)	5747	2975	82	337	9141
NOx Emissions (g)	747	388	6	42	1183
Vehicles Entered	1155	633	274	749	2811
Vehicles Exited	1155	633	274	749	2811
Hourly Exit Rate	1155	633	274	749	2811
Input Volume	1160	621	269	759	2808
% of Volume	100	102	102	99	100
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0
Density (ft/veh)					257
Occupancy (veh)	13	5	0	6	25

4: SR-99 SB Ramp & Beckwith Rd Performance by movement

Movement	EBT	EBR2	NWL	SWR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.1
Total Delay (hr)	2.3	0.4	0.9	0.0	3.7
Total Del/Veh (s)	24.4	7.7	7.2	2.1	12.6
Stop Delay (hr)	1.7	0.2	0.7	0.0	2.6
Stop Del/Veh (s)	17.6	3.1	5.5	0.4	8.7
Total Stops	209	48	134	29	420
Stop/Veh	0.61	0.24	0.29	0.58	0.40
Travel Dist (mi)	263.5	154.0	10.1	1.1	428.7
Travel Time (hr)	8.2	4.0	1.2	0.1	13.5
Avg Speed (mph)	32	38	9	15	32
Fuel Used (gal)	6.3	3.4	0.7	0.0	10.4
Fuel Eff. (mpg)	42.1	45.2	13.7	36.7	41.1
HC Emissions (g)	117	77	13	0	208
CO Emissions (g)	2729	1768	552	16	5065
NOx Emissions (g)	465	290	40	1	797
Vehicles Entered	327	194	466	50	1037
Vehicles Exited	330	196	466	50	1042
Hourly Exit Rate	330	196	466	50	1042
Input Volume	334	197	468	49	1048
% of Volume	99	100	100	102	99
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0
Density (ft/veh)					647
Occupancy (veh)	8	4	1	0	13

6: SR-99 SB Ramp Performance by movement

Movement	SET	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	1.4	1.4
Total Del/Veh (s)	4.9	4.9
Stop Delay (hr)	0.2	0.2
Stop Del/Veh (s)	0.6	0.6
Total Stops	110	110
Stop/Veh	0.11	0.11
Travel Dist (mi)	127.9	127.9
Travel Time (hr)	4.5	4.5
Avg Speed (mph)	28	28
Fuel Used (gal)	4.6	4.6
Fuel Eff. (mpg)	27.7	27.7
HC Emissions (g)	100	100
CO Emissions (g)	4763	4763
NOx Emissions (g)	290	290
Vehicles Entered	990	990
Vehicles Exited	989	989
Hourly Exit Rate	989	989
Input Volume	998	998
% of Volume	99	99
Denied Entry Before	0	0
Denied Entry After	0	0
Density (ft/veh)		305
Occupancy (veh)	5	5

9: SR-99 NB Ramp Performance by movement

Movement	WBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.1	0.1
Total Del/Veh (s)	0.6	0.6
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	1	1
Stop/Veh	0.00	0.00
Travel Dist (mi)	65.7	65.7
Travel Time (hr)	2.3	2.3
Avg Speed (mph)	28	28
Fuel Used (gal)	1.7	1.7
Fuel Eff. (mpg)	38.9	38.9
HC Emissions (g)	26	26
CO Emissions (g)	596	596
NOx Emissions (g)	70	70
Vehicles Entered	683	683
Vehicles Exited	683	683
Hourly Exit Rate	683	683
Input Volume	672	672
% of Volume	102	102
Denied Entry Before	0	0
Denied Entry After	0	0
Density (ft/veh)		435
Occupancy (veh)	2	2

11: SR-99 NB Ramp Performance by movement

Movement	NBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.2	0.2
Total Delay (hr)	0.0	0.0
Total Del/Veh (s)	0.5	0.5
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	36.7	36.7
Travel Time (hr)	0.9	0.9
Avg Speed (mph)	42	42
Fuel Used (gal)	0.7	0.7
Fuel Eff. (mpg)	50.0	50.0
HC Emissions (g)	18	18
CO Emissions (g)	459	459
NOx Emissions (g)	60	60
Vehicles Entered	294	294
Vehicles Exited	295	295
Hourly Exit Rate	295	295
Input Volume	292	292
% of Volume	101	101
Denied Entry Before	0	0
Denied Entry After	0	0
Density (ft/veh)		1516
Occupancy (veh)	1	1

31: SR-99 NB Ramp Performance by movement

Movement	NWR	NEL	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0
Total Del/Veh (s)	0.1	0.3	0.1
Stop Delay (hr)	0.0	0.0	0.0
Stop Del/Veh (s)	0.0	0.0	0.0
Total Stops	0	0	0
Stop/Veh	0.00	0.00	0.00
Travel Dist (mi)	32.8	1.9	34.7
Travel Time (hr)	1.0	0.1	1.1
Avg Speed (mph)	32	26	32
Fuel Used (gal)	0.7	0.1	0.8
Fuel Eff. (mpg)	45.4	23.0	43.1
HC Emissions (g)	13	1	14
CO Emissions (g)	405	65	469
NOx Emissions (g)	36	4	40
Vehicles Entered	633	50	683
Vehicles Exited	634	50	684
Hourly Exit Rate	634	50	684
Input Volume	621	51	672
% of Volume	102	98	102
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			570
Occupancy (veh)	1	0	1

32: Beckwith Rd & SR-99 NB Ramp Performance by movement

Movement	EBL	EBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.1	1.7	1.8
Total Del/Veh (s)	3.7	8.2	8.0
Stop Delay (hr)	0.0	0.8	0.8
Stop Del/Veh (s)	0.0	3.9	3.7
Total Stops	1	148	149
Stop/Veh	0.02	0.20	0.19
Travel Dist (mi)	3.0	44.3	47.2
Travel Time (hr)	0.1	3.0	3.2
Avg Speed (mph)	21	15	15
Fuel Used (gal)	0.1	1.7	1.8
Fuel Eff. (mpg)	34.0	26.6	27.0
HC Emissions (g)	1	28	28
CO Emissions (g)	37	913	951
NOx Emissions (g)	3	91	94
Vehicles Entered	50	749	799
Vehicles Exited	50	749	799
Hourly Exit Rate	50	749	799
Input Volume	51	759	810
% of Volume	98	99	99
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			199
Occupancy (veh)	0	3	3

33: SR-99 NB Ramp & Beckwith Rd Performance by movement

Movement	WBT	NWL	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.9	0.7	1.6
Total Del/Veh (s)	2.9	24.1	4.7
Stop Delay (hr)	0.3	0.7	1.0
Stop Del/Veh (s)	1.0	22.4	2.8
Total Stops	40	74	114
Stop/Veh	0.03	0.69	0.09
Travel Dist (mi)	36.8	2.3	39.1
Travel Time (hr)	1.7	0.8	2.6
Avg Speed (mph)	21	3	15
Fuel Used (gal)	1.6	0.2	1.9
Fuel Eff. (mpg)	22.4	9.8	20.8
HC Emissions (g)	29	1	31
CO Emissions (g)	923	42	964
NOx Emissions (g)	109	4	113
Vehicles Entered	1155	105	1260
Vehicles Exited	1154	106	1260
Hourly Exit Rate	1154	106	1260
Input Volume	1160	109	1269
% of Volume	100	97	99
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			178
Occupancy (veh)	2	1	3

34: SR-99 NB Ramp Performance by movement

Movement	NBL	NBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.0	0.1	0.1
Total Del/Veh (s)	1.3	0.7	0.9
Stop Delay (hr)	0.0	0.0	0.0
Stop Del/Veh (s)	0.1	0.0	0.0
Total Stops	1	0	1
Stop/Veh	0.01	0.00	0.00
Travel Dist (mi)	16.0	41.6	57.6
Travel Time (hr)	0.5	1.3	1.8
Avg Speed (mph)	31	33	33
Fuel Used (gal)	0.3	0.9	1.2
Fuel Eff. (mpg)	52.3	47.8	49.0
HC Emissions (g)	4	16	21
CO Emissions (g)	77	299	377
NOx Emissions (g)	13	51	64
Vehicles Entered	106	275	381
Vehicles Exited	105	274	379
Hourly Exit Rate	105	274	379
Input Volume	109	269	378
% of Volume	96	102	100
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			1536
Occupancy (veh)	1	1	2

41: SR-99 SB Ramp Performance by movement

Movement	SER	SWL	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.2	0.0	0.3
Total Del/Veh (s)	4.2	0.2	1.0
Stop Delay (hr)	0.1	0.0	0.1
Stop Del/Veh (s)	2.5	0.0	0.5
Total Stops	28	11	39
Stop/Veh	0.14	0.01	0.04
Travel Dist (mi)	7.5	15.7	23.2
Travel Time (hr)	0.6	0.6	1.2
Avg Speed (mph)	12	25	19
Fuel Used (gal)	0.4	0.9	1.3
Fuel Eff. (mpg)	18.2	17.1	17.4
HC Emissions (g)	7	17	24
CO Emissions (g)	226	860	1085
NOx Emissions (g)	24	56	79
Vehicles Entered	196	794	990
Vehicles Exited	195	793	988
Hourly Exit Rate	195	793	988
Input Volume	197	801	998
% of Volume	99	99	99
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			366
Occupancy (veh)	1	1	1

42: SR-99 SB Ramp & Beckwith Rd Performance by movement

Movement	WBL	WBT	WBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Delay (hr)	0.3	0.0	0.5	0.8
Total Del/Veh (s)	1.4	2.2	4.2	2.4
Stop Delay (hr)	0.0	0.0	0.1	0.1
Stop Del/Veh (s)	0.0	0.3	0.6	0.2
Total Stops	1	0	21	22
Stop/Veh	0.00	0.00	0.04	0.02
Travel Dist (mi)	46.8	0.0	27.4	74.2
Travel Time (hr)	1.7	0.0	1.2	2.9
Avg Speed (mph)	28	21	23	26
Fuel Used (gal)	1.2	0.0	1.0	2.3
Fuel Eff. (mpg)	37.6	15.8	27.0	32.8
HC Emissions (g)	22	0	21	43
CO Emissions (g)	763	7	686	1456
NOx Emissions (g)	73	1	70	143
Vehicles Entered	794	1	467	1262
Vehicles Exited	794	1	466	1261
Hourly Exit Rate	794	1	466	1261
Input Volume	801	0	468	1269
% of Volume	99	400	100	99
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0
Density (ft/veh)				217
Occupancy (veh)	2	0	1	3

43: Beckwith Rd & SR-99 SB Ramp Performance by movement

Movement	EBT	SEL	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.3	0.9	1.3
Total Del/Veh (s)	3.7	7.0	5.7
Stop Delay (hr)	0.1	0.8	0.9
Stop Del/Veh (s)	1.6	6.2	4.3
Total Stops	8	156	164
Stop/Veh	0.02	0.33	0.21
Travel Dist (mi)	7.6	9.8	17.4
Travel Time (hr)	0.5	1.3	1.8
Avg Speed (mph)	15	7	9
Fuel Used (gal)	0.5	0.5	1.0
Fuel Eff. (mpg)	14.6	21.3	17.7
HC Emissions (g)	10	5	15
CO Emissions (g)	334	113	447
NOx Emissions (g)	36	16	51
Vehicles Entered	330	469	799
Vehicles Exited	329	468	797
Hourly Exit Rate	329	468	797
Input Volume	334	476	810
% of Volume	99	98	98
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			254
Occupancy (veh)	1	1	2

44: SR-99 SB Ramp Performance by movement

Movement	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.4	0.1
Total Delay (hr)	0.3	0.0	0.3
Total Del/Veh (s)	2.2	0.7	2.1
Stop Delay (hr)	0.1	0.0	0.1
Stop Del/Veh (s)	0.7	0.0	0.6
Total Stops	33	0	33
Stop/Veh	0.07	0.00	0.06
Travel Dist (mi)	162.7	17.4	180.1
Travel Time (hr)	5.8	0.6	6.4
Avg Speed (mph)	28	29	28
Fuel Used (gal)	3.9	0.4	4.4
Fuel Eff. (mpg)	41.3	41.2	41.3
HC Emissions (g)	63	8	71
CO Emissions (g)	1180	147	1328
NOx Emissions (g)	173	24	197
Vehicles Entered	469	50	519
Vehicles Exited	469	50	519
Hourly Exit Rate	469	50	519
Input Volume	476	49	525
% of Volume	99	102	99
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			860
Occupancy (veh)	6	1	6

Total Network Performance

Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.2
Total Delay (hr)	24.5
Total Del/Veh (s)	26.6
Stop Delay (hr)	12.6
Stop Del/Veh (s)	13.8
Total Stops	1950
Stop/Veh	0.59
Travel Dist (mi)	2830.9
Travel Time (hr)	96.3
Avg Speed (mph)	29
Fuel Used (gal)	81.2
Fuel Eff. (mpg)	34.9
HC Emissions (g)	1650
CO Emissions (g)	48225
NOx Emissions (g)	5689
Vehicles Entered	3208
Vehicles Exited	3212
Hourly Exit Rate	3212
Input Volume	15764
% of Volume	20
Denied Entry Before	0
Denied Entry After	0
Density (ft/veh)	315
Occupancy (veh)	96

Intersection: 3: SR-99 NB Ramp & Beckwith Rd & Standiford Ave

Movement	WB	WB	WB	NB	NB	SE	SE
Directions Served	T	T	>	R	R	L	L
Maximum Queue (ft)	243	248	4	104	87	142	146
Average Queue (ft)	117	134	0	33	13	117	121
95th Queue (ft)	197	212	4	91	56	142	141
Link Distance (ft)	1948	1948	1948	122	122	60	60
Upstream Blk Time (%)				0	0	43	53
Queuing Penalty (veh)				0	0	164	201
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 4: SR-99 SB Ramp & Beckwith Rd

Movement	EB	EB	NW	SW
Directions Served	T	T>	L	R
Maximum Queue (ft)	164	223	137	57
Average Queue (ft)	81	107	96	4
95th Queue (ft)	140	201	148	29
Link Distance (ft)	4238	4238	54	76
Upstream Blk Time (%)			17	0
Queuing Penalty (veh)			79	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: SR-99 SB Ramp

Movement	SE	SE
Directions Served	T	T
Maximum Queue (ft)	126	134
Average Queue (ft)	28	30
95th Queue (ft)	90	96
Link Distance (ft)	622	622
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: SR-99 NB Ramp

Movement	WB	WB
Directions Served	T	T
Maximum Queue (ft)	15	10
Average Queue (ft)	0	0
95th Queue (ft)	3	0
Link Distance (ft)	460	460
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: SR-99 NB Ramp

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 31: SR-99 NB Ramp

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 32: Beckwith Rd & SR-99 NB Ramp

Movement	EB	EB
Directions Served	LT	T
Maximum Queue (ft)	162	169
Average Queue (ft)	51	66
95th Queue (ft)	126	141
Link Distance (ft)	256	256
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 33: SR-99 NB Ramp & Beckwith Rd

Movement	WB	WB	NW
Directions Served	T	T	L
Maximum Queue (ft)	63	68	131
Average Queue (ft)	18	21	63
95th Queue (ft)	49	54	117
Link Distance (ft)	74	74	72
Upstream Blk Time (%)	0	0	8
Queuing Penalty (veh)	1	1	9
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 34: SR-99 NB Ramp

Movement	NB
Directions Served	L
Maximum Queue (ft)	26
Average Queue (ft)	1
95th Queue (ft)	14
Link Distance (ft)	872
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 41: SR-99 SB Ramp

Movement	SE	SW
Directions Served	R	L
Maximum Queue (ft)	118	45
Average Queue (ft)	25	7
95th Queue (ft)	78	29
Link Distance (ft)	120	53
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 42: SR-99 SB Ramp & Beckwith Rd

Movement	WB
Directions Served	LR
Maximum Queue (ft)	123
Average Queue (ft)	20
95th Queue (ft)	78
Link Distance (ft)	271
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 43: Beckwith Rd & SR-99 SB Ramp

Movement	EB	EB	SE	SE
Directions Served	T	T	L	L
Maximum Queue (ft)	33	31	74	95
Average Queue (ft)	5	4	59	56
95th Queue (ft)	23	21	82	93
Link Distance (ft)	36	36	55	55
Upstream Blk Time (%)	7	5	11	11
Queuing Penalty (veh)	12	8	26	25
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 44: SR-99 SB Ramp

Movement	SB	SB	SB
Directions Served	L	L	R
Maximum Queue (ft)	84	94	11
Average Queue (ft)	20	16	0
95th Queue (ft)	63	62	8
Link Distance (ft)	1830	1830	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			900
Storage Blk Time (%)			
Queuing Penalty (veh)			

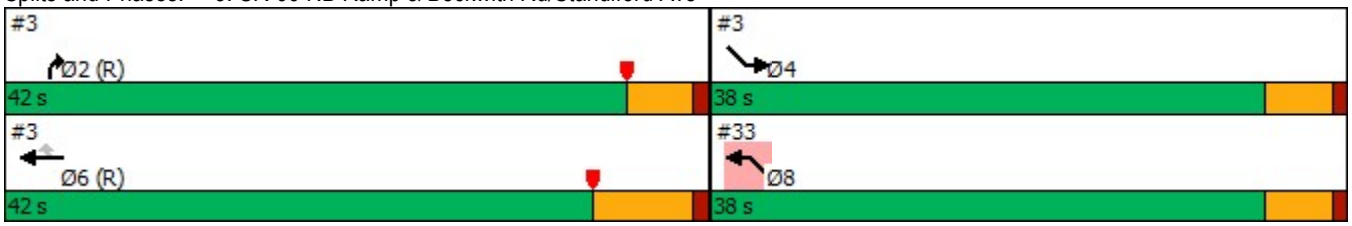
Network Summary

Network wide Queuing Penalty: 527

Lane Group	WBT	WBR2	NBR	SEL	Ø8
Lane Configurations					
Traffic Volume (vph)	1159	492	372	1327	
Future Volume (vph)	1159	492	372	1327	
Ideal Flow (vphpl)	1900	1900	1900	1900	
Right Turn on Red		Yes	Yes		
Link Speed (mph)	30			45	
Link Distance (ft)	1971			177	
Travel Time (s)	44.8			2.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	
Shared Lane Traffic (%)					
Turn Type	NA	Perm	Prot	Prot	
Protected Phases	6		2	4	8
Permitted Phases		6			
Detector Phase	6	6	2	4	
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	15.0	15.0	13.0	13.0	13.0
Total Split (s)	42.0	42.0	42.0	38.0	38.0
Total Split (%)	52.5%	52.5%	52.5%	47.5%	48%
Maximum Green (s)	35.0	35.0	37.0	33.0	33.0
Yellow Time (s)	6.0	6.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0	5.0	5.0	
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	None	None

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBR and 6:WBT, Start of Yellow, Master Intersection	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	

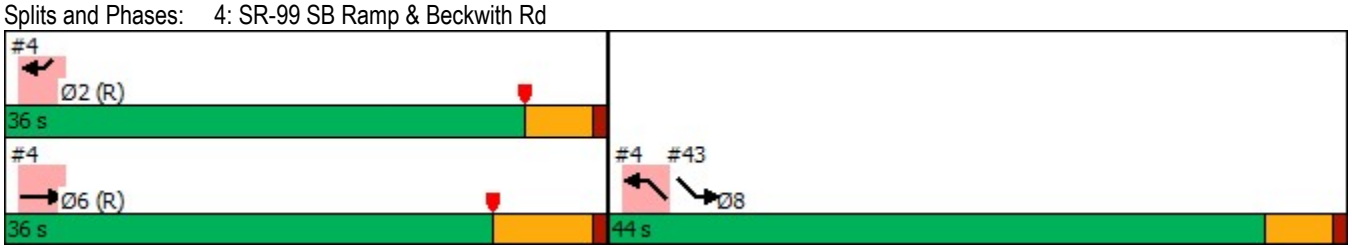
Splits and Phases: 3: SR-99 NB Ramp & Beckwith Rd/Standiford Ave



Lane Group	EBT	EBR2	NWL	SWR
Lane Configurations				
Traffic Volume (vph)	697	141	432	42
Future Volume (vph)	697	141	432	42
Ideal Flow (vphpl)	1900	1900	1900	1900
Storage Length (ft)			0	0
Storage Lanes			1	1
Taper Length (ft)			25	
Right Turn on Red		Yes		Yes
Link Speed (mph)	30		45	
Link Distance (ft)	4260		168	
Travel Time (s)	96.8		2.5	
Peak Hour Factor	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)				
Turn Type	NA		Prot	Prot
Protected Phases	6		8	2
Permitted Phases				
Detector Phase	6		8	2
Switch Phase				
Minimum Initial (s)	8.0		8.0	8.0
Minimum Split (s)	15.0		13.0	13.0
Total Split (s)	36.0		44.0	36.0
Total Split (%)	45.0%		55.0%	45.0%
Maximum Green (s)	29.0		39.0	31.0
Yellow Time (s)	6.0		4.0	4.0
All-Red Time (s)	1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	7.0		5.0	5.0
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0		3.0	3.0
Recall Mode	C-Max		None	C-Max

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 35 (44%), Referenced to phase 2:SWR and 6:EBT, Start of Yellow	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	

Splits and Phases: 4: SR-99 SB Ramp & Beckwith Rd



3: SR-99 NB Ramp & Beckwith Rd & Standiford Ave Performance by movement

Movement	WBT	WBR2	NBR	SEL	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.1	0.2	0.0	0.0	0.1
Total Delay (hr)	7.2	0.3	0.5	5.8	13.8
Total Del/Veh (s)	22.0	2.2	5.3	16.1	14.9
Stop Delay (hr)	4.7	0.0	0.4	4.9	9.9
Stop Del/Veh (s)	14.4	0.0	3.7	13.5	10.7
Total Stops	749	1	108	441	1299
Stop/Veh	0.64	0.00	0.29	0.34	0.39
Travel Dist (mi)	427.3	167.7	9.6	29.8	634.4
Travel Time (hr)	21.6	6.0	0.9	6.9	35.3
Avg Speed (mph)	20	28	11	4	18
Fuel Used (gal)	12.2	4.3	0.3	2.6	19.4
Fuel Eff. (mpg)	34.9	39.3	28.0	11.6	32.7
HC Emissions (g)	186	67	4	25	283
CO Emissions (g)	3826	1378	140	498	5841
NOx Emissions (g)	527	193	12	77	809
Vehicles Entered	1157	487	369	1294	3307
Vehicles Exited	1153	488	369	1294	3304
Hourly Exit Rate	1153	488	369	1294	3304
Input Volume	1159	492	372	1327	3350
% of Volume	100	99	99	97	99
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0
Density (ft/veh)					181
Occupancy (veh)	22	6	1	7	35

4: SR-99 SB Ramp & Beckwith Rd Performance by movement

Movement	EBT	EBR2	NWL	SWR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.1
Total Delay (hr)	3.4	0.4	2.3	0.0	6.1
Total Del/Veh (s)	17.8	10.6	18.4	1.9	16.7
Stop Delay (hr)	2.1	0.2	2.1	0.0	4.3
Stop Del/Veh (s)	10.9	4.2	16.7	1.0	11.8
Total Stops	343	41	187	15	586
Stop/Veh	0.50	0.29	0.42	0.34	0.45
Travel Dist (mi)	534.7	110.3	9.5	0.9	655.5
Travel Time (hr)	21.5	4.1	2.6	0.1	28.3
Avg Speed (mph)	25	27	4	14	23
Fuel Used (gal)	13.7	2.8	0.9	0.0	17.4
Fuel Eff. (mpg)	39.1	39.5	10.4	50.4	37.7
HC Emissions (g)	217	52	11	0	279
CO Emissions (g)	3727	896	230	4	4857
NOx Emissions (g)	583	143	30	0	756
Vehicles Entered	665	138	441	44	1288
Vehicles Exited	667	139	440	44	1290
Hourly Exit Rate	667	139	440	44	1290
Input Volume	697	141	432	42	1312
% of Volume	96	99	102	104	98
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0
Density (ft/veh)					308
Occupancy (veh)	21	4	3	0	28

6: SR-99 SB Ramp Performance by movement

Movement	SET	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	1.1	1.1
Total Del/Veh (s)	4.2	4.2
Stop Delay (hr)	0.3	0.3
Stop Del/Veh (s)	1.2	1.2
Total Stops	215	215
Stop/Veh	0.22	0.22
Travel Dist (mi)	125.1	125.1
Travel Time (hr)	5.4	5.4
Avg Speed (mph)	23	23
Fuel Used (gal)	3.8	3.8
Fuel Eff. (mpg)	33.0	33.0
HC Emissions (g)	61	61
CO Emissions (g)	1716	1716
NOx Emissions (g)	190	190
Vehicles Entered	972	972
Vehicles Exited	968	968
Hourly Exit Rate	968	968
Input Volume	990	990
% of Volume	98	98
Denied Entry Before	0	0
Denied Entry After	0	0
Density (ft/veh)		252
Occupancy (veh)	5	5

9: SR-99 NB Ramp Performance by movement

Movement	WBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.1	0.1
Total Del/Veh (s)	0.7	0.7
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	49.0	49.0
Travel Time (hr)	1.8	1.8
Avg Speed (mph)	27	27
Fuel Used (gal)	1.6	1.6
Fuel Eff. (mpg)	31.5	31.5
HC Emissions (g)	27	27
CO Emissions (g)	746	746
NOx Emissions (g)	80	80
Vehicles Entered	508	508
Vehicles Exited	508	508
Hourly Exit Rate	508	508
Input Volume	517	517
% of Volume	98	98
Denied Entry Before	0	0
Denied Entry After	0	0
Density (ft/veh)		567
Occupancy (veh)	2	2

31: SR-99 NB Ramp Performance by movement

Movement	NWR	NEL	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.1	0.0	0.1
Total Del/Veh (s)	0.7	2.2	0.8
Stop Delay (hr)	0.0	0.0	0.0
Stop Del/Veh (s)	0.0	1.3	0.1
Total Stops	0	0	0
Stop/Veh	0.00	0.00	0.00
Travel Dist (mi)	25.2	0.8	26.0
Travel Time (hr)	1.1	0.0	1.1
Avg Speed (mph)	24	19	24
Fuel Used (gal)	0.7	0.0	0.7
Fuel Eff. (mpg)	37.8	16.1	36.3
HC Emissions (g)	9	1	10
CO Emissions (g)	207	46	253
NOx Emissions (g)	27	3	31
Vehicles Entered	488	20	508
Vehicles Exited	487	20	507
Hourly Exit Rate	487	20	507
Input Volume	492	25	517
% of Volume	99	81	98
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			564
Occupancy (veh)	1	0	1

32: Beckwith Rd & SR-99 NB Ramp Performance by movement

Movement	EBL	EBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.1	7.0	7.1
Total Del/Veh (s)	13.2	19.4	19.3
Stop Delay (hr)	0.0	4.3	4.4
Stop Del/Veh (s)	5.4	11.9	11.8
Total Stops	8	685	693
Stop/Veh	0.40	0.52	0.52
Travel Dist (mi)	1.2	76.8	78.0
Travel Time (hr)	0.1	9.0	9.1
Avg Speed (mph)	11	8	9
Fuel Used (gal)	0.0	3.4	3.4
Fuel Eff. (mpg)	26.8	22.6	22.6
HC Emissions (g)	1	40	41
CO Emissions (g)	15	1052	1067
NOx Emissions (g)	2	119	121
Vehicles Entered	20	1295	1315
Vehicles Exited	20	1296	1316
Hourly Exit Rate	20	1296	1316
Input Volume	25	1328	1353
% of Volume	81	98	97
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			69
Occupancy (veh)	0	9	9

33: Beckwith Rd Performance by movement

Movement	WBT	NWL	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.6	0.5	1.1
Total Del/Veh (s)	2.0	14.1	3.2
Stop Delay (hr)	0.0	0.4	0.5
Stop Del/Veh (s)	0.1	12.7	1.3
Total Stops	2	68	70
Stop/Veh	0.00	0.54	0.05
Travel Dist (mi)	36.8	2.7	39.5
Travel Time (hr)	1.8	0.6	2.4
Avg Speed (mph)	20	5	16
Fuel Used (gal)	2.0	0.2	2.2
Fuel Eff. (mpg)	18.1	14.4	17.8
HC Emissions (g)	37	2	38
CO Emissions (g)	1138	48	1186
NOx Emissions (g)	142	4	146
Vehicles Entered	1153	124	1277
Vehicles Exited	1152	125	1277
Hourly Exit Rate	1152	125	1277
Input Volume	1159	122	1280
% of Volume	99	103	100
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			190
Occupancy (veh)	2	1	2

34: SR-99 NB Ramp Performance by movement

Movement	NBL	NBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.1	0.1
Total Delay (hr)	0.0	0.1	0.1
Total Del/Veh (s)	0.8	0.7	0.7
Stop Delay (hr)	0.0	0.0	0.0
Stop Del/Veh (s)	0.1	0.0	0.0
Total Stops	1	1	2
Stop/Veh	0.01	0.00	0.00
Travel Dist (mi)	10.2	30.6	40.9
Travel Time (hr)	0.4	1.1	1.5
Avg Speed (mph)	27	28	28
Fuel Used (gal)	0.2	0.7	0.9
Fuel Eff. (mpg)	47.4	42.2	43.4
HC Emissions (g)	3	13	17
CO Emissions (g)	69	321	390
NOx Emissions (g)	9	36	45
Vehicles Entered	123	370	493
Vehicles Exited	124	369	493
Hourly Exit Rate	124	369	493
Input Volume	122	372	494
% of Volume	102	99	100
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			1834
Occupancy (veh)	0	1	1

41: SR-99 SB Ramp Performance by movement

Movement	SER	SWL	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.2	0.2	0.4
Total Del/Veh (s)	3.9	0.9	1.3
Stop Delay (hr)	0.1	0.1	0.2
Stop Del/Veh (s)	2.2	0.6	0.9
Total Stops	16	12	28
Stop/Veh	0.11	0.01	0.03
Travel Dist (mi)	5.3	16.4	21.7
Travel Time (hr)	0.4	0.8	1.2
Avg Speed (mph)	15	20	18
Fuel Used (gal)	0.3	0.7	1.0
Fuel Eff. (mpg)	19.8	24.0	22.8
HC Emissions (g)	6	11	16
CO Emissions (g)	180	394	574
NOx Emissions (g)	18	39	57
Vehicles Entered	139	833	972
Vehicles Exited	140	832	972
Hourly Exit Rate	140	832	972
Input Volume	141	849	990
% of Volume	99	98	98
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			382
Occupancy (veh)	0	1	1

42: SR-99 SB Ramp & Beckwith Rd Performance by movement

Movement	WBL	WBR	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.9	1.7	2.5
Total Del/Veh (s)	3.7	13.8	7.2
Stop Delay (hr)	0.2	1.1	1.4
Stop Del/Veh (s)	1.0	9.1	3.8
Total Stops	40	144	184
Stop/Veh	0.05	0.33	0.14
Travel Dist (mi)	49.1	26.0	75.1
Travel Time (hr)	2.3	2.5	4.8
Avg Speed (mph)	21	10	16
Fuel Used (gal)	1.6	1.1	2.7
Fuel Eff. (mpg)	30.1	24.6	27.9
HC Emissions (g)	27	16	43
CO Emissions (g)	876	387	1263
NOx Emissions (g)	94	49	143
Vehicles Entered	834	442	1276
Vehicles Exited	833	441	1274
Hourly Exit Rate	833	441	1274
Input Volume	849	432	1280
% of Volume	98	102	99
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			130
Occupancy (veh)	2	3	5

43: Beckwith Rd & SR-99 SB Ramp Performance by movement

Movement	EBT	SEL	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.4	2.4	2.8
Total Del/Veh (s)	2.2	13.2	7.6
Stop Delay (hr)	0.1	2.1	2.2
Stop Del/Veh (s)	0.5	11.7	6.0
Total Stops	32	241	273
Stop/Veh	0.05	0.37	0.21
Travel Dist (mi)	15.4	13.7	29.1
Travel Time (hr)	0.9	2.9	3.8
Avg Speed (mph)	17	5	8
Fuel Used (gal)	0.7	1.1	1.8
Fuel Eff. (mpg)	21.7	12.6	16.2
HC Emissions (g)	13	12	25
CO Emissions (g)	401	278	679
NOx Emissions (g)	46	40	86
Vehicles Entered	667	650	1317
Vehicles Exited	666	648	1314
Hourly Exit Rate	666	648	1314
Input Volume	697	655	1352
% of Volume	96	99	97
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			122
Occupancy (veh)	1	3	4

44: SR-99 SB Ramp Performance by movement

Movement	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.5	0.2
Total Delay (hr)	1.6	0.0	1.6
Total Del/Veh (s)	8.7	0.7	8.2
Stop Delay (hr)	1.0	0.0	1.0
Stop Del/Veh (s)	5.4	0.0	5.0
Total Stops	201	0	201
Stop/Veh	0.31	0.00	0.29
Travel Dist (mi)	225.7	15.4	241.1
Travel Time (hr)	9.2	0.5	9.8
Avg Speed (mph)	25	29	25
Fuel Used (gal)	5.7	0.4	6.0
Fuel Eff. (mpg)	39.8	41.2	39.9
HC Emissions (g)	89	6	95
CO Emissions (g)	1696	118	1815
NOx Emissions (g)	241	17	258
Vehicles Entered	650	44	694
Vehicles Exited	650	44	694
Hourly Exit Rate	650	44	694
Input Volume	655	42	697
% of Volume	99	104	100
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			564
Occupancy (veh)	9	1	10

Total Network Performance

Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.2
Total Delay (hr)	42.3
Total Del/Veh (s)	40.5
Stop Delay (hr)	24.9
Stop Del/Veh (s)	23.9
Total Stops	3691
Stop/Veh	0.98
Travel Dist (mi)	3242.3
Travel Time (hr)	151.7
Avg Speed (mph)	21
Fuel Used (gal)	97.2
Fuel Eff. (mpg)	33.4
HC Emissions (g)	1584
CO Emissions (g)	33613
NOx Emissions (g)	4610
Vehicles Entered	3635
Vehicles Exited	3610
Hourly Exit Rate	3610
Input Volume	17813
% of Volume	20
Denied Entry Before	0
Denied Entry After	0
Density (ft/veh)	200
Occupancy (veh)	152

Intersection: 3: SR-99 NB Ramp & Beckwith Rd & Standiford Ave

Movement	WB	WB	WB	NB	NB	SE	SE
Directions Served	T	T	>	R	R	L	L
Maximum Queue (ft)	380	407	22	177	126	155	155
Average Queue (ft)	210	232	1	90	32	126	125
95th Queue (ft)	333	356	25	158	110	141	140
Link Distance (ft)	1948	1948	1948	122	122	60	60
Upstream Blk Time (%)				3	0	44	50
Queuing Penalty (veh)				5	0	296	331
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 4: SR-99 SB Ramp & Beckwith Rd

Movement	EB	EB	NW	SW
Directions Served	T	T>	L	R
Maximum Queue (ft)	241	270	146	57
Average Queue (ft)	114	136	117	6
95th Queue (ft)	208	239	143	35
Link Distance (ft)	4238	4238	54	76
Upstream Blk Time (%)			48	0
Queuing Penalty (veh)			209	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: SR-99 SB Ramp

Movement	SE	SE
Directions Served	T	T
Maximum Queue (ft)	137	147
Average Queue (ft)	51	56
95th Queue (ft)	122	132
Link Distance (ft)	622	622
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: SR-99 NB Ramp

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 11: SR-99 NB Ramp

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 31: SR-99 NB Ramp

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 32: Beckwith Rd & SR-99 NB Ramp

Movement	EB	EB
Directions Served	LT	T
Maximum Queue (ft)	334	342
Average Queue (ft)	193	213
95th Queue (ft)	335	351
Link Distance (ft)	256	256
Upstream Blk Time (%)	5	8
Queuing Penalty (veh)	35	53
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 33: Beckwith Rd

Movement	WB	WB	NW
Directions Served	T	T	L
Maximum Queue (ft)	2	33	122
Average Queue (ft)	0	2	56
95th Queue (ft)	3	24	107
Link Distance (ft)	74	74	72
Upstream Blk Time (%)		0	5
Queuing Penalty (veh)		0	6
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 34: SR-99 NB Ramp

Movement	NB	NB	NB
Directions Served	L	T	T
Maximum Queue (ft)	28	25	4
Average Queue (ft)	1	1	0
95th Queue (ft)	15	11	4
Link Distance (ft)			
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 41: SR-99 SB Ramp

Movement	SE	SW
Directions Served	R	L
Maximum Queue (ft)	104	81
Average Queue (ft)	15	7
95th Queue (ft)	59	49
Link Distance (ft)	120	53
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 42: SR-99 SB Ramp & Beckwith Rd

Movement	WB	WB
Directions Served	L	LR
Maximum Queue (ft)	200	281
Average Queue (ft)	22	136
95th Queue (ft)	110	258
Link Distance (ft)	271	271
Upstream Blk Time (%)	0	1
Queuing Penalty (veh)	0	4
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 43: Beckwith Rd & SR-99 SB Ramp

Movement	EB	EB	SE	SE
Directions Served	T	T	L	L
Maximum Queue (ft)	91	118	77	109
Average Queue (ft)	9	13	68	75
95th Queue (ft)	55	66	79	95
Link Distance (ft)	36	36	55	55
Upstream Blk Time (%)	1	2	34	35
Queuing Penalty (veh)	5	6	110	115
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 44: SR-99 SB Ramp

Movement	SB	SB	SB
Directions Served	L	L	R
Maximum Queue (ft)	184	192	8
Average Queue (ft)	82	84	0
95th Queue (ft)	160	168	7
Link Distance (ft)	1830	1830	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			900
Storage Blk Time (%)			
Queuing Penalty (veh)			

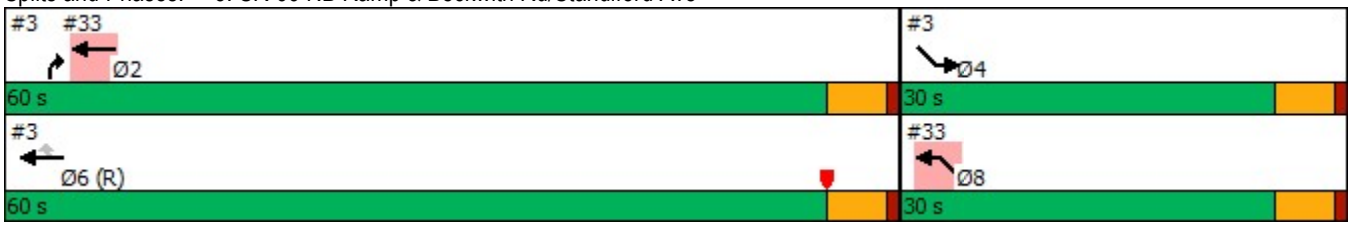
Network Summary

Network wide Queuing Penalty: 1177

Lane Group	WBT	WBR2	NBR	SEL	Ø8
Lane Configurations					
Traffic Volume (vph)	817	657	269	759	
Future Volume (vph)	817	657	269	759	
Ideal Flow (vphpl)	1900	1900	1900	1900	
Right Turn on Red		Yes	Yes		
Link Speed (mph)	45			45	
Link Distance (ft)	1971			177	
Travel Time (s)	29.9			2.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	
Shared Lane Traffic (%)					
Turn Type	NA	Perm	Prot	Prot	
Protected Phases	6		2	4	8
Permitted Phases		6			
Detector Phase	6	6	2	4	
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0
Total Split (s)	60.0	60.0	60.0	30.0	30.0
Total Split (%)	66.7%	66.7%	66.7%	33.3%	33%
Maximum Green (s)	55.0	55.0	55.0	25.0	25.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	None	None	None

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 6:WBT, Start of Yellow, Master Intersection	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	

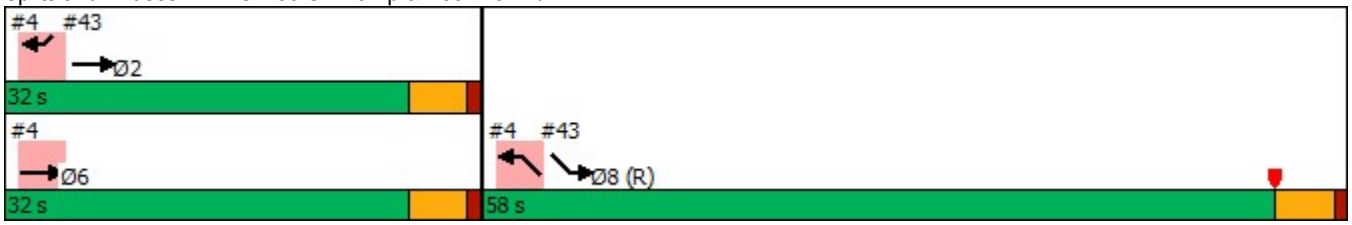
Splits and Phases: 3: SR-99 NB Ramp & Beckwith Rd/Standiford Ave



Lane Group	EBT	EBR2	NWL	SWR
Lane Configurations				
Traffic Volume (vph)	334	197	468	49
Future Volume (vph)	334	197	468	49
Ideal Flow (vphpl)	1900	1900	1900	1900
Storage Length (ft)			0	0
Storage Lanes			1	1
Taper Length (ft)			25	
Right Turn on Red		Yes		Yes
Link Speed (mph)	45		45	
Link Distance (ft)	4260		168	
Travel Time (s)	64.5		2.5	
Peak Hour Factor	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)				
Turn Type	NA		Prot	Prot
Protected Phases	6		8	2
Permitted Phases				
Detector Phase	6		8	2
Switch Phase				
Minimum Initial (s)	8.0		8.0	8.0
Minimum Split (s)	13.0		13.0	13.0
Total Split (s)	32.0		58.0	32.0
Total Split (%)	35.6%		64.4%	35.6%
Maximum Green (s)	27.0		53.0	27.0
Yellow Time (s)	4.0		4.0	4.0
All-Red Time (s)	1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0		3.0	3.0
Recall Mode	Max		C-Max	None

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 86 (96%), Referenced to phase 8:NWL, Start of Yellow	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	

Splits and Phases: 4: SR-99 SB Ramp & Beckwith Rd



3: SR-99 NB Ramp & Beckwith Rd & Standiford Ave Performance by movement

Movement	WBT	WBR2	NBR	SEL	All
Denied Delay (hr)	0.0	0.1	0.0	0.0	0.1
Denied Del/Veh (s)	0.2	0.3	0.0	0.0	0.1
Total Delay (hr)	2.1	0.5	0.2	5.7	8.5
Total Del/Veh (s)	9.2	2.6	2.0	26.3	11.9
Stop Delay (hr)	1.0	0.0	0.1	5.1	6.1
Stop Del/Veh (s)	4.3	0.0	0.9	23.2	8.6
Total Stops	252	0	32	389	673
Stop/Veh	0.31	0.00	0.12	0.49	0.26
Travel Dist (mi)	303.0	231.0	7.1	17.8	558.8
Travel Time (hr)	9.0	5.7	0.4	6.2	21.3
Avg Speed (mph)	34	41	18	3	26
Fuel Used (gal)	7.4	5.4	0.2	2.0	14.9
Fuel Eff. (mpg)	40.7	43.2	45.4	9.0	37.4
HC Emissions (g)	154	130	2	15	302
CO Emissions (g)	4280	3419	78	335	8112
NOx Emissions (g)	563	456	6	43	1069
Vehicles Entered	818	670	272	776	2536
Vehicles Exited	819	672	272	777	2540
Hourly Exit Rate	819	672	272	777	2540
Input Volume	817	657	269	759	2502
% of Volume	100	102	101	102	102
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0
Density (ft/veh)					301
Occupancy (veh)	9	6	0	6	21

4: SR-99 SB Ramp & Beckwith Rd Performance by movement

Movement	EBT	EBR2	NWL	SWR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.1
Total Delay (hr)	2.4	0.4	0.9	0.0	3.8
Total Del/Veh (s)	24.6	7.8	6.8	2.0	12.7
Stop Delay (hr)	1.7	0.2	0.7	0.0	2.6
Stop Del/Veh (s)	17.6	3.2	5.2	0.3	8.7
Total Stops	217	44	134	24	419
Stop/Veh	0.61	0.22	0.28	0.55	0.39
Travel Dist (mi)	275.2	156.9	10.2	0.9	443.2
Travel Time (hr)	8.6	4.1	1.1	0.1	13.9
Avg Speed (mph)	32	38	9	15	32
Fuel Used (gal)	6.6	3.5	0.7	0.0	10.7
Fuel Eff. (mpg)	41.9	45.4	15.6	37.0	41.4
HC Emissions (g)	134	86	11	0	231
CO Emissions (g)	3070	1911	405	14	5400
NOx Emissions (g)	513	313	35	1	862
Vehicles Entered	342	198	474	44	1058
Vehicles Exited	341	197	474	44	1056
Hourly Exit Rate	341	197	474	44	1056
Input Volume	334	197	468	49	1048
% of Volume	102	100	101	89	101
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0
Density (ft/veh)					627
Occupancy (veh)	9	4	1	0	14

6: SR-99 SB Ramp Performance by movement

Movement	SET	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.4	0.4
Total Del/Veh (s)	2.2	2.2
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	4	4
Stop/Veh	0.01	0.01
Travel Dist (mi)	84.3	84.3
Travel Time (hr)	2.5	2.5
Avg Speed (mph)	34	34
Fuel Used (gal)	3.3	3.3
Fuel Eff. (mpg)	25.5	25.5
HC Emissions (g)	78	78
CO Emissions (g)	3972	3972
NOx Emissions (g)	222	222
Vehicles Entered	652	652
Vehicles Exited	652	652
Hourly Exit Rate	652	652
Input Volume	655	655
% of Volume	100	100
Denied Entry Before	0	0
Denied Entry After	0	0
Density (ft/veh)		552
Occupancy (veh)	2	2

9: SR-99 NB Ramp Performance by movement

Movement	WBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.1	0.1
Total Del/Veh (s)	0.7	0.7
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	1	1
Stop/Veh	0.00	0.00
Travel Dist (mi)	69.6	69.6
Travel Time (hr)	2.5	2.5
Avg Speed (mph)	28	28
Fuel Used (gal)	1.8	1.8
Fuel Eff. (mpg)	39.2	39.2
HC Emissions (g)	31	31
CO Emissions (g)	681	681
NOx Emissions (g)	84	84
Vehicles Entered	724	724
Vehicles Exited	723	723
Hourly Exit Rate	723	723
Input Volume	708	708
% of Volume	102	102
Denied Entry Before	0	0
Denied Entry After	0	0
Density (ft/veh)		409
Occupancy (veh)	2	2

11: SR-99 NB Ramp Performance by movement

Movement	NBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.2	0.2
Total Delay (hr)	0.0	0.0
Total Del/Veh (s)	0.5	0.5
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	36.8	36.8
Travel Time (hr)	0.9	0.9
Avg Speed (mph)	42	42
Fuel Used (gal)	0.7	0.7
Fuel Eff. (mpg)	50.1	50.1
HC Emissions (g)	15	15
CO Emissions (g)	419	419
NOx Emissions (g)	55	55
Vehicles Entered	295	295
Vehicles Exited	295	295
Hourly Exit Rate	295	295
Input Volume	292	292
% of Volume	101	101
Denied Entry Before	0	0
Denied Entry After	0	0
Density (ft/veh)		1514
Occupancy (veh)	1	1

31: SR-99 NB Ramp Performance by movement

Movement	NWR	NEL	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0
Total Del/Veh (s)	0.1	0.4	0.1
Stop Delay (hr)	0.0	0.0	0.0
Stop Del/Veh (s)	0.0	0.0	0.0
Total Stops	0	0	0
Stop/Veh	0.00	0.00	0.00
Travel Dist (mi)	34.8	2.0	36.8
Travel Time (hr)	1.1	0.1	1.2
Avg Speed (mph)	32	25	32
Fuel Used (gal)	0.8	0.1	0.9
Fuel Eff. (mpg)	45.4	22.5	43.0
HC Emissions (g)	15	1	16
CO Emissions (g)	454	70	524
NOx Emissions (g)	42	4	46
Vehicles Entered	672	52	724
Vehicles Exited	672	52	724
Hourly Exit Rate	672	52	724
Input Volume	657	51	708
% of Volume	102	101	102
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			535
Occupancy (veh)	1	0	1

32: Beckwith Rd & SR-99 NB Ramp Performance by movement

Movement	EBL	EBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.1	2.0	2.1
Total Del/Veh (s)	4.3	9.2	8.9
Stop Delay (hr)	0.0	1.0	1.0
Stop Del/Veh (s)	0.1	4.7	4.4
Total Stops	1	177	178
Stop/Veh	0.02	0.23	0.21
Travel Dist (mi)	3.1	45.9	49.0
Travel Time (hr)	0.2	3.4	3.5
Avg Speed (mph)	20	14	14
Fuel Used (gal)	0.1	1.7	1.8
Fuel Eff. (mpg)	34.2	26.3	26.7
HC Emissions (g)	1	27	28
CO Emissions (g)	40	898	938
NOx Emissions (g)	4	88	91
Vehicles Entered	52	777	829
Vehicles Exited	52	776	828
Hourly Exit Rate	52	776	828
Input Volume	51	759	810
% of Volume	101	102	102
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			180
Occupancy (veh)	0	3	4

33: SR-99 NB Ramp & Beckwith Rd Performance by movement

Movement	WBT	NWL	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.6	0.7	1.3
Total Del/Veh (s)	2.4	23.6	5.0
Stop Delay (hr)	0.2	0.7	0.9
Stop Del/Veh (s)	0.8	22.0	3.4
Total Stops	24	73	97
Stop/Veh	0.03	0.65	0.10
Travel Dist (mi)	26.1	2.4	28.5
Travel Time (hr)	1.1	0.8	2.0
Avg Speed (mph)	23	3	15
Fuel Used (gal)	1.2	0.2	1.4
Fuel Eff. (mpg)	22.0	9.9	20.0
HC Emissions (g)	22	2	24
CO Emissions (g)	771	47	818
NOx Emissions (g)	81	4	85
Vehicles Entered	819	108	927
Vehicles Exited	818	110	928
Hourly Exit Rate	818	110	928
Input Volume	817	109	926
% of Volume	100	101	100
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			233
Occupancy (veh)	1	1	2

34: SR-99 NB Ramp Performance by movement

Movement	NBL	NBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.0	0.1	0.1
Total Del/Veh (s)	1.1	0.7	0.8
Stop Delay (hr)	0.0	0.0	0.0
Stop Del/Veh (s)	0.0	0.0	0.0
Total Stops	1	0	1
Stop/Veh	0.01	0.00	0.00
Travel Dist (mi)	16.4	41.4	57.8
Travel Time (hr)	0.5	1.3	1.8
Avg Speed (mph)	31	33	33
Fuel Used (gal)	0.3	0.9	1.2
Fuel Eff. (mpg)	53.7	48.0	49.5
HC Emissions (g)	4	15	19
CO Emissions (g)	72	271	343
NOx Emissions (g)	13	46	58
Vehicles Entered	108	272	380
Vehicles Exited	108	272	380
Hourly Exit Rate	108	272	380
Input Volume	109	269	378
% of Volume	99	101	101
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			1533
Occupancy (veh)	1	1	2

41: SR-99 SB Ramp Performance by movement

Movement	SER	SWL	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.2	0.0	0.2
Total Del/Veh (s)	3.3	0.1	1.1
Stop Delay (hr)	0.1	0.0	0.1
Stop Del/Veh (s)	1.7	0.0	0.5
Total Stops	13	9	22
Stop/Veh	0.07	0.02	0.03
Travel Dist (mi)	7.5	9.0	16.5
Travel Time (hr)	0.6	0.4	0.9
Avg Speed (mph)	13	25	18
Fuel Used (gal)	0.4	0.5	1.0
Fuel Eff. (mpg)	18.0	16.8	17.4
HC Emissions (g)	8	10	18
CO Emissions (g)	254	527	781
NOx Emissions (g)	26	30	56
Vehicles Entered	197	455	652
Vehicles Exited	197	455	652
Hourly Exit Rate	197	455	652
Input Volume	197	458	655
% of Volume	100	99	100
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			491
Occupancy (veh)	1	0	1

42: SR-99 SB Ramp & Beckwith Rd Performance by movement

Movement	WBL	WBT	WBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0		0.0	0.0
Total Delay (hr)	0.1	0.0	0.4	0.6
Total Del/Veh (s)	0.9		3.4	2.2
Stop Delay (hr)	0.0	0.0	0.1	0.1
Stop Del/Veh (s)	0.0		0.4	0.2
Total Stops	0	0	18	18
Stop/Veh	0.00		0.04	0.02
Travel Dist (mi)	26.9	0.0	27.8	54.7
Travel Time (hr)	0.9	0.0	1.1	2.0
Avg Speed (mph)	29	29	25	27
Fuel Used (gal)	0.6	0.0	1.0	1.6
Fuel Eff. (mpg)	43.2	15.8	27.7	33.6
HC Emissions (g)	12	0	22	33
CO Emissions (g)	453	2	741	1196
NOx Emissions (g)	35	0	72	107
Vehicles Entered	456	0	474	930
Vehicles Exited	455	0	474	929
Hourly Exit Rate	455	0	474	929
Input Volume	458	0	468	926
% of Volume	99	0	101	100
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0
Density (ft/veh)				309
Occupancy (veh)	1	0	1	2

43: Beckwith Rd & SR-99 SB Ramp Performance by movement

Movement	EBT	SEL	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.4	0.9	1.3
Total Del/Veh (s)	3.7	6.9	5.6
Stop Delay (hr)	0.1	0.8	1.0
Stop Del/Veh (s)	1.6	6.1	4.2
Total Stops	8	158	166
Stop/Veh	0.02	0.32	0.20
Travel Dist (mi)	7.9	10.2	18.1
Travel Time (hr)	0.5	1.4	1.9
Avg Speed (mph)	15	7	9
Fuel Used (gal)	0.5	0.5	1.0
Fuel Eff. (mpg)	14.8	21.4	17.9
HC Emissions (g)	10	4	14
CO Emissions (g)	344	105	448
NOx Emissions (g)	38	14	52
Vehicles Entered	341	487	828
Vehicles Exited	340	487	827
Hourly Exit Rate	340	487	827
Input Volume	334	476	810
% of Volume	102	102	102
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			245
Occupancy (veh)	1	1	2

44: SR-99 SB Ramp Performance by movement

Movement	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.4	0.1
Total Delay (hr)	0.3	0.0	0.3
Total Del/Veh (s)	2.2	0.7	2.1
Stop Delay (hr)	0.1	0.0	0.1
Stop Del/Veh (s)	0.6	0.0	0.6
Total Stops	32	0	32
Stop/Veh	0.07	0.00	0.06
Travel Dist (mi)	168.8	15.2	183.9
Travel Time (hr)	6.0	0.5	6.5
Avg Speed (mph)	28	29	28
Fuel Used (gal)	4.1	0.4	4.4
Fuel Eff. (mpg)	41.5	41.1	41.5
HC Emissions (g)	58	7	65
CO Emissions (g)	1117	119	1236
NOx Emissions (g)	161	18	179
Vehicles Entered	486	44	530
Vehicles Exited	487	44	531
Hourly Exit Rate	487	44	531
Input Volume	476	49	525
% of Volume	102	89	101
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			843
Occupancy (veh)	6	1	7

Total Network Performance

Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.2
Total Delay (hr)	21.8
Total Del/Veh (s)	25.9
Stop Delay (hr)	12.2
Stop Del/Veh (s)	14.5
Total Stops	1685
Stop/Veh	0.56
Travel Dist (mi)	2635.7
Travel Time (hr)	88.6
Avg Speed (mph)	30
Fuel Used (gal)	74.8
Fuel Eff. (mpg)	35.3
HC Emissions (g)	1528
CO Emissions (g)	44423
NOx Emissions (g)	5271
Vehicles Entered	2939
Vehicles Exited	2942
Hourly Exit Rate	2942
Input Volume	13849
% of Volume	21
Denied Entry Before	0
Denied Entry After	0
Density (ft/veh)	342
Occupancy (veh)	88

Intersection: 3: SR-99 NB Ramp & Beckwith Rd & Standiford Ave

Movement	WB	WB	WB	NB	NB	SE	SE
Directions Served	T	T	>	R	R	L	L
Maximum Queue (ft)	179	196	7	108	91	145	153
Average Queue (ft)	79	103	0	37	12	119	121
95th Queue (ft)	147	178	6	94	57	142	140
Link Distance (ft)	1948	1948	1948	122	122	60	60
Upstream Blk Time (%)				0	0	45	54
Queuing Penalty (veh)				0	0	170	207
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 4: SR-99 SB Ramp & Beckwith Rd

Movement	EB	EB	NW	SW
Directions Served	T	T>	L	R
Maximum Queue (ft)	154	217	134	55
Average Queue (ft)	83	105	95	4
95th Queue (ft)	136	189	144	27
Link Distance (ft)	4238	4238	54	76
Upstream Blk Time (%)			17	0
Queuing Penalty (veh)			79	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: SR-99 SB Ramp

Movement	SE	SE
Directions Served	T	T
Maximum Queue (ft)	25	30
Average Queue (ft)	1	1
95th Queue (ft)	13	17
Link Distance (ft)	622	622
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: SR-99 NB Ramp

Movement	WB	WB
Directions Served	T	T
Maximum Queue (ft)	11	7
Average Queue (ft)	0	0
95th Queue (ft)	4	0
Link Distance (ft)	460	460
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: SR-99 NB Ramp

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 31: SR-99 NB Ramp

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 32: Beckwith Rd & SR-99 NB Ramp

Movement	EB	EB
Directions Served	LT	T
Maximum Queue (ft)	167	204
Average Queue (ft)	60	77
95th Queue (ft)	143	160
Link Distance (ft)	256	256
Upstream Blk Time (%)		0
Queuing Penalty (veh)		0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 33: SR-99 NB Ramp & Beckwith Rd

Movement	WB	WB	NW
Directions Served	T	T	L
Maximum Queue (ft)	55	54	128
Average Queue (ft)	10	14	62
95th Queue (ft)	37	43	114
Link Distance (ft)	74	74	72
Upstream Blk Time (%)	0	0	8
Queuing Penalty (veh)	0	0	9
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 34: SR-99 NB Ramp

Movement	NB
Directions Served	L
Maximum Queue (ft)	20
Average Queue (ft)	1
95th Queue (ft)	11
Link Distance (ft)	872
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 41: SR-99 SB Ramp

Movement	SE	SW
Directions Served	R	L
Maximum Queue (ft)	74	43
Average Queue (ft)	11	6
95th Queue (ft)	46	26
Link Distance (ft)	120	53
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 42: SR-99 SB Ramp & Beckwith Rd

Movement	WB
Directions Served	LR
Maximum Queue (ft)	102
Average Queue (ft)	18
95th Queue (ft)	69
Link Distance (ft)	271
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 43: Beckwith Rd & SR-99 SB Ramp

Movement	EB	EB	SE	SE
Directions Served	T	T	L	L
Maximum Queue (ft)	42	31	72	94
Average Queue (ft)	6	4	59	57
95th Queue (ft)	27	19	82	93
Link Distance (ft)	36	36	55	55
Upstream Blk Time (%)	8	5	11	11
Queuing Penalty (veh)	13	8	26	26
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 44: SR-99 SB Ramp

Movement	SB	SB	SB
Directions Served	L	L	R
Maximum Queue (ft)	81	85	2
Average Queue (ft)	18	17	0
95th Queue (ft)	59	61	2
Link Distance (ft)	1830	1830	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			900
Storage Blk Time (%)			
Queuing Penalty (veh)			

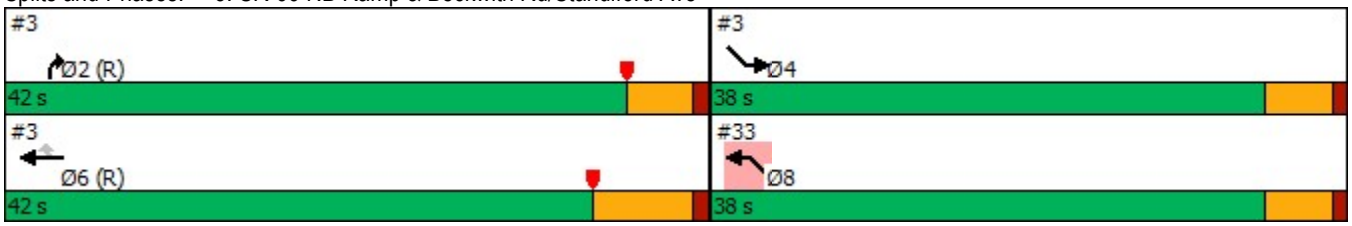
Network Summary

Network wide Queuing Penalty: 539

Lane Group	WBT	WBR2	NBR	SEL	Ø8
Lane Configurations					
Traffic Volume (vph)	516	694	372	1327	
Future Volume (vph)	516	694	372	1327	
Ideal Flow (vphpl)	1900	1900	1900	1900	
Right Turn on Red		Yes	Yes		
Link Speed (mph)	30			45	
Link Distance (ft)	1971			177	
Travel Time (s)	44.8			2.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	
Shared Lane Traffic (%)					
Turn Type	NA	Perm	Prot	Prot	
Protected Phases	6		2	4	8
Permitted Phases		6			
Detector Phase	6	6	2	4	
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	15.0	15.0	13.0	13.0	13.0
Total Split (s)	42.0	42.0	42.0	38.0	38.0
Total Split (%)	52.5%	52.5%	52.5%	47.5%	48%
Maximum Green (s)	35.0	35.0	37.0	33.0	33.0
Yellow Time (s)	6.0	6.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0	5.0	5.0	
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	None	None

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBR and 6:WBT, Start of Yellow, Master Intersection	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

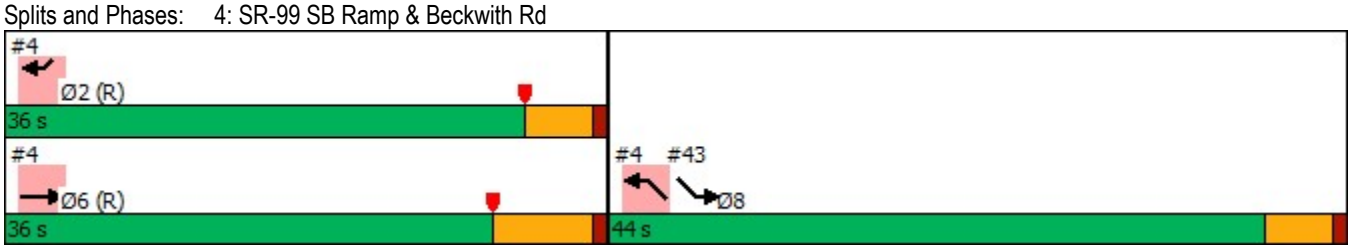
Splits and Phases: 3: SR-99 NB Ramp & Beckwith Rd/Standiford Ave



Lane Group	EBT	EBR2	NWL	SWR
Lane Configurations				
Traffic Volume (vph)	697	141	432	42
Future Volume (vph)	697	141	432	42
Ideal Flow (vphpl)	1900	1900	1900	1900
Storage Length (ft)			0	0
Storage Lanes			1	1
Taper Length (ft)			25	
Right Turn on Red		Yes		Yes
Link Speed (mph)	30		45	
Link Distance (ft)	4260		168	
Travel Time (s)	96.8		2.5	
Peak Hour Factor	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)				
Turn Type	NA		Prot	Prot
Protected Phases	6		8	2
Permitted Phases				
Detector Phase	6		8	2
Switch Phase				
Minimum Initial (s)	8.0		8.0	8.0
Minimum Split (s)	15.0		13.0	13.0
Total Split (s)	36.0		44.0	36.0
Total Split (%)	45.0%		55.0%	45.0%
Maximum Green (s)	29.0		39.0	31.0
Yellow Time (s)	6.0		4.0	4.0
All-Red Time (s)	1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	7.0		5.0	5.0
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0		3.0	3.0
Recall Mode	C-Max		None	C-Max

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 35 (44%), Referenced to phase 2:SWR and 6:EBT, Start of Yellow	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	

Splits and Phases: 4: SR-99 SB Ramp & Beckwith Rd



3: SR-99 NB Ramp & Beckwith Rd & Standiford Ave Performance by movement

Movement	WBT	WBR2	NBR	SEL	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.2	0.0	0.0	0.1
Total Delay (hr)	2.1	0.5	0.6	6.0	9.3
Total Del/Veh (s)	15.1	2.6	5.9	16.3	11.4
Stop Delay (hr)	1.6	0.0	0.4	5.0	7.0
Stop Del/Veh (s)	11.1	0.0	4.1	13.6	8.7
Total Stops	274	2	121	440	837
Stop/Veh	0.53	0.00	0.32	0.33	0.29
Travel Dist (mi)	187.6	238.8	9.8	30.3	466.5
Travel Time (hr)	8.5	8.6	1.0	7.1	25.1
Avg Speed (mph)	22	28	10	4	19
Fuel Used (gal)	5.1	6.0	0.4	2.6	14.2
Fuel Eff. (mpg)	36.5	39.5	26.6	11.5	32.9
HC Emissions (g)	78	100	5	25	208
CO Emissions (g)	1599	1972	151	500	4222
NOx Emissions (g)	220	288	14	77	598
Vehicles Entered	507	695	377	1317	2896
Vehicles Exited	507	693	377	1317	2894
Hourly Exit Rate	507	693	377	1317	2894
Input Volume	516	694	372	1327	2909
% of Volume	98	100	101	99	99
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0
Density (ft/veh)					254
Occupancy (veh)	8	9	1	7	25

4: SR-99 SB Ramp & Beckwith Rd Performance by movement

Movement	EBT	EBR2	NWL	SWR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.2	0.0	0.0	0.1
Total Delay (hr)	4.0	0.5	2.0	0.0	6.5
Total Del/Veh (s)	20.1	12.8	16.8	1.4	17.7
Stop Delay (hr)	2.5	0.2	1.8	0.0	4.6
Stop Del/Veh (s)	12.8	6.2	15.2	0.5	12.5
Total Stops	389	50	172	14	625
Stop/Veh	0.54	0.35	0.40	0.33	0.47
Travel Dist (mi)	557.6	110.5	9.2	0.9	678.2
Travel Time (hr)	22.8	4.2	2.4	0.1	29.5
Avg Speed (mph)	24	26	4	15	23
Fuel Used (gal)	14.3	2.8	0.8	0.0	17.9
Fuel Eff. (mpg)	39.0	40.0	11.6	54.6	38.0
HC Emissions (g)	223	38	7	0	269
CO Emissions (g)	3843	695	169	3	4711
NOx Emissions (g)	599	105	21	0	725
Vehicles Entered	694	139	427	42	1302
Vehicles Exited	693	139	426	42	1300
Hourly Exit Rate	693	139	426	42	1300
Input Volume	697	141	432	42	1312
% of Volume	99	99	99	99	99
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0
Density (ft/veh)					296
Occupancy (veh)	23	4	2	0	29

6: SR-99 SB Ramp Performance by movement

Movement	SET	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.0	0.0
Total Del/Veh (s)	0.4	0.4
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	44.0	44.0
Travel Time (hr)	1.6	1.6
Avg Speed (mph)	28	28
Fuel Used (gal)	1.3	1.3
Fuel Eff. (mpg)	33.6	33.6
HC Emissions (g)	21	21
CO Emissions (g)	623	623
NOx Emissions (g)	62	62
Vehicles Entered	341	341
Vehicles Exited	340	340
Hourly Exit Rate	340	340
Input Volume	347	347
% of Volume	98	98
Denied Entry Before	0	0
Denied Entry After	0	0
Density (ft/veh)		883
Occupancy (veh)	2	2

9: SR-99 NB Ramp Performance by movement

Movement	WBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.2	0.2
Total Del/Veh (s)	0.9	0.9
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	69.1	69.1
Travel Time (hr)	2.6	2.6
Avg Speed (mph)	27	27
Fuel Used (gal)	2.2	2.2
Fuel Eff. (mpg)	31.4	31.4
HC Emissions (g)	38	38
CO Emissions (g)	1024	1024
NOx Emissions (g)	117	117
Vehicles Entered	717	717
Vehicles Exited	718	718
Hourly Exit Rate	718	718
Input Volume	719	719
% of Volume	100	100
Denied Entry Before	0	0
Denied Entry After	0	0
Density (ft/veh)		395
Occupancy (veh)	3	3

31: SR-99 NB Ramp Performance by movement

Movement	NWR	NEL	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.2	0.0	0.2
Total Del/Veh (s)	0.8	1.9	0.9
Stop Delay (hr)	0.0	0.0	0.0
Stop Del/Veh (s)	0.0	1.2	0.0
Total Stops	1	0	1
Stop/Veh	0.00	0.00	0.00
Travel Dist (mi)	35.9	0.9	36.7
Travel Time (hr)	1.5	0.0	1.6
Avg Speed (mph)	24	20	23
Fuel Used (gal)	1.0	0.1	1.0
Fuel Eff. (mpg)	37.0	16.5	36.0
HC Emissions (g)	13	1	14
CO Emissions (g)	332	44	375
NOx Emissions (g)	42	3	45
Vehicles Entered	693	23	716
Vehicles Exited	694	23	717
Hourly Exit Rate	694	23	717
Input Volume	694	25	719
% of Volume	100	93	100
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			396
Occupancy (veh)	2	0	2

32: Beckwith Rd & SR-99 NB Ramp Performance by movement

Movement	EBL	EBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.1	8.2	8.3
Total Del/Veh (s)	14.2	22.2	22.0
Stop Delay (hr)	0.0	5.3	5.4
Stop Del/Veh (s)	6.4	14.4	14.3
Total Stops	8	744	752
Stop/Veh	0.35	0.56	0.56
Travel Dist (mi)	1.4	78.1	79.4
Travel Time (hr)	0.1	10.2	10.3
Avg Speed (mph)	10	8	8
Fuel Used (gal)	0.1	3.7	3.8
Fuel Eff. (mpg)	25.6	21.0	21.1
HC Emissions (g)	0	41	41
CO Emissions (g)	13	1051	1063
NOx Emissions (g)	1	121	122
Vehicles Entered	23	1315	1338
Vehicles Exited	23	1318	1341
Hourly Exit Rate	23	1318	1341
Input Volume	25	1328	1353
% of Volume	93	99	99
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			61
Occupancy (veh)	0	10	10

33: SR-99 NB Ramp & Beckwith Rd Performance by movement

Movement	WBT	NWL	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.2	0.5	0.7
Total Del/Veh (s)	1.5	14.0	3.9
Stop Delay (hr)	0.0	0.4	0.4
Stop Del/Veh (s)	0.1	12.6	2.5
Total Stops	1	64	65
Stop/Veh	0.00	0.53	0.10
Travel Dist (mi)	16.3	2.6	18.9
Travel Time (hr)	0.7	0.6	1.3
Avg Speed (mph)	22	5	15
Fuel Used (gal)	1.1	0.2	1.2
Fuel Eff. (mpg)	15.4	14.2	15.2
HC Emissions (g)	20	2	22
CO Emissions (g)	859	52	910
NOx Emissions (g)	73	4	77
Vehicles Entered	507	119	626
Vehicles Exited	507	120	627
Hourly Exit Rate	507	120	627
Input Volume	516	122	638
% of Volume	98	99	98
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			351
Occupancy (veh)	1	1	1

34: SR-99 NB Ramp Performance by movement

Movement	NBL	NBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.1	0.1
Total Delay (hr)	0.0	0.1	0.1
Total Del/Veh (s)	0.7	0.8	0.8
Stop Delay (hr)	0.0	0.0	0.0
Stop Del/Veh (s)	0.0	0.0	0.0
Total Stops	1	2	3
Stop/Veh	0.01	0.01	0.01
Travel Dist (mi)	9.9	31.2	41.1
Travel Time (hr)	0.4	1.1	1.5
Avg Speed (mph)	27	28	27
Fuel Used (gal)	0.2	0.7	1.0
Fuel Eff. (mpg)	47.4	41.9	43.1
HC Emissions (g)	3	14	18
CO Emissions (g)	68	337	405
NOx Emissions (g)	8	39	47
Vehicles Entered	119	377	496
Vehicles Exited	119	377	496
Hourly Exit Rate	119	377	496
Input Volume	122	372	494
% of Volume	98	101	101
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			1815
Occupancy (veh)	0	1	1

41: SR-99 SB Ramp Performance by movement

Movement	SER	SWL	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.1	0.0	0.2
Total Del/Veh (s)	3.1	0.6	1.6
Stop Delay (hr)	0.1	0.0	0.1
Stop Del/Veh (s)	1.9	0.5	1.1
Total Stops	3	2	5
Stop/Veh	0.02	0.01	0.01
Travel Dist (mi)	5.3	3.9	9.3
Travel Time (hr)	0.3	0.2	0.5
Avg Speed (mph)	16	21	18
Fuel Used (gal)	0.3	0.2	0.4
Fuel Eff. (mpg)	18.6	24.6	20.7
HC Emissions (g)	5	3	8
CO Emissions (g)	195	124	319
NOx Emissions (g)	17	9	26
Vehicles Entered	139	201	340
Vehicles Exited	139	201	340
Hourly Exit Rate	139	201	340
Input Volume	141	206	347
% of Volume	99	98	98
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			896
Occupancy (veh)	0	0	1

42: SR-99 SB Ramp & Beckwith Rd Performance by movement

Movement	WBL	WBR	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.1	1.1	1.1
Total Del/Veh (s)	1.3	8.9	6.5
Stop Delay (hr)	0.0	0.7	0.7
Stop Del/Veh (s)	0.3	5.8	4.0
Total Stops	3	88	91
Stop/Veh	0.01	0.21	0.14
Travel Dist (mi)	11.9	25.1	37.0
Travel Time (hr)	0.4	1.9	2.3
Avg Speed (mph)	28	14	16
Fuel Used (gal)	0.3	0.8	1.2
Fuel Eff. (mpg)	34.0	30.0	31.1
HC Emissions (g)	8	13	21
CO Emissions (g)	346	407	753
NOx Emissions (g)	21	39	61
Vehicles Entered	201	427	628
Vehicles Exited	201	427	628
Hourly Exit Rate	201	427	628
Input Volume	206	432	638
% of Volume	98	99	98
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			276
Occupancy (veh)	0	2	2

43: Beckwith Rd & SR-99 SB Ramp Performance by movement

Movement	EBT	SEL	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	0.5	2.5	3.0
Total Del/Veh (s)	2.8	13.8	8.1
Stop Delay (hr)	0.2	2.2	2.4
Stop Del/Veh (s)	0.8	12.2	6.3
Total Stops	56	242	298
Stop/Veh	0.08	0.38	0.22
Travel Dist (mi)	16.1	13.6	29.6
Travel Time (hr)	1.0	3.0	4.1
Avg Speed (mph)	15	5	7
Fuel Used (gal)	0.7	1.1	1.8
Fuel Eff. (mpg)	22.3	12.5	16.4
HC Emissions (g)	13	11	24
CO Emissions (g)	383	260	643
NOx Emissions (g)	45	37	82
Vehicles Entered	693	645	1338
Vehicles Exited	693	644	1337
Hourly Exit Rate	693	644	1337
Input Volume	697	655	1352
% of Volume	99	98	99
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			115
Occupancy (veh)	1	3	4

44: SR-99 SB Ramp Performance by movement

Movement	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.4	0.2
Total Delay (hr)	1.7	0.0	1.7
Total Del/Veh (s)	9.3	0.8	8.8
Stop Delay (hr)	1.1	0.0	1.1
Stop Del/Veh (s)	5.9	0.0	5.6
Total Stops	210	0	210
Stop/Veh	0.32	0.00	0.30
Travel Dist (mi)	223.5	14.4	238.0
Travel Time (hr)	9.3	0.5	9.8
Avg Speed (mph)	24	29	24
Fuel Used (gal)	5.7	0.4	6.0
Fuel Eff. (mpg)	39.5	39.8	39.6
HC Emissions (g)	86	5	91
CO Emissions (g)	1655	105	1761
NOx Emissions (g)	233	15	248
Vehicles Entered	645	42	687
Vehicles Exited	645	42	687
Hourly Exit Rate	645	42	687
Input Volume	655	42	697
% of Volume	98	99	99
Denied Entry Before	0	0	0
Denied Entry After	0	0	0
Density (ft/veh)			563
Occupancy (veh)	9	0	10

Total Network Performance

Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.1
Total Delay (hr)	36.1
Total Del/Veh (s)	39.0
Stop Delay (hr)	22.4
Stop Del/Veh (s)	24.1
Total Stops	2972
Stop/Veh	0.89
Travel Dist (mi)	2908.9
Travel Time (hr)	134.3
Avg Speed (mph)	22
Fuel Used (gal)	85.2
Fuel Eff. (mpg)	34.1
HC Emissions (g)	1338
CO Emissions (g)	28111
NOx Emissions (g)	3828
Vehicles Entered	3220
Vehicles Exited	3204
Hourly Exit Rate	3204
Input Volume	14764
% of Volume	22
Denied Entry Before	0
Denied Entry After	0
Density (ft/veh)	226
Occupancy (veh)	134

Intersection: 3: SR-99 NB Ramp & Beckwith Rd & Standiford Ave

Movement	WB	WB	WB	NB	NB	SE	SE
Directions Served	T	T	>	R	R	L	L
Maximum Queue (ft)	193	227	18	175	124	155	154
Average Queue (ft)	78	119	1	98	33	126	125
95th Queue (ft)	155	191	10	164	107	142	140
Link Distance (ft)	1948	1948	1948	122	122	60	60
Upstream Blk Time (%)				3	0	46	51
Queuing Penalty (veh)				6	1	307	338
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 4: SR-99 SB Ramp & Beckwith Rd

Movement	EB	EB	NW	SW
Directions Served	T	T>	L	R
Maximum Queue (ft)	263	297	149	54
Average Queue (ft)	130	149	114	4
95th Queue (ft)	227	261	152	26
Link Distance (ft)	4238	4238	54	76
Upstream Blk Time (%)			40	0
Queuing Penalty (veh)			172	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: SR-99 SB Ramp

Movement	SE
Directions Served	T
Maximum Queue (ft)	2
Average Queue (ft)	0
95th Queue (ft)	2
Link Distance (ft)	622
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 9: SR-99 NB Ramp

Movement	WB	WB
Directions Served	T	T
Maximum Queue (ft)	3	5
Average Queue (ft)	0	0
95th Queue (ft)	4	5
Link Distance (ft)	460	460
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: SR-99 NB Ramp

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 31: SR-99 NB Ramp

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 32: Beckwith Rd & SR-99 NB Ramp

Movement	EB	EB
Directions Served	LT	T
Maximum Queue (ft)	347	347
Average Queue (ft)	212	227
95th Queue (ft)	361	368
Link Distance (ft)	256	256
Upstream Blk Time (%)	9	12
Queuing Penalty (veh)	64	82
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 33: SR-99 NB Ramp & Beckwith Rd

Movement	WB	WB	NW
Directions Served	T	T	L
Maximum Queue (ft)	5	24	121
Average Queue (ft)	0	1	53
95th Queue (ft)	5	18	108
Link Distance (ft)	74	74	72
Upstream Blk Time (%)		0	5
Queuing Penalty (veh)		0	6
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 34: SR-99 NB Ramp

Movement	NB	NB
Directions Served	L	T
Maximum Queue (ft)	13	26
Average Queue (ft)	1	1
95th Queue (ft)	8	14
Link Distance (ft)		
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 41: SR-99 SB Ramp

Movement	SE	SW
Directions Served	R	L
Maximum Queue (ft)	5	18
Average Queue (ft)	0	1
95th Queue (ft)	5	7
Link Distance (ft)	120	53
Upstream Blk Time (%)		0
Queuing Penalty (veh)		0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 42: SR-99 SB Ramp & Beckwith Rd

Movement	WB	WB
Directions Served	L	LR
Maximum Queue (ft)	45	270
Average Queue (ft)	2	85
95th Queue (ft)	38	211
Link Distance (ft)	271	271
Upstream Blk Time (%)		1
Queuing Penalty (veh)		2
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 43: Beckwith Rd & SR-99 SB Ramp

Movement	EB	EB	SE	SE
Directions Served	T	T	L	L
Maximum Queue (ft)	117	115	83	104
Average Queue (ft)	16	20	69	75
95th Queue (ft)	74	93	82	95
Link Distance (ft)	36	36	55	55
Upstream Blk Time (%)	3	3	35	36
Queuing Penalty (veh)	10	12	114	118
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 44: SR-99 SB Ramp

Movement	SB	SB
Directions Served	L	L
Maximum Queue (ft)	198	199
Average Queue (ft)	85	85
95th Queue (ft)	162	169
Link Distance (ft)	1830	1830
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 1231

MOVEMENT SUMMARY

Site: B1 [1: SR-99 NB Ramp & New Bridge/New Bridge and Sisk AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build B1
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: SR-99 NB On Ramp															
3	L2	All MCs	1	3.0	1	3.0	0.506	11.6	LOS B	3.1	79.4	0.48	0.49	0.48	34.3
8	T1	All MCs	734	3.0	734	3.0	0.506	5.3	LOS A	3.1	79.7	0.48	0.49	0.48	35.1
18	R2	All MCs	420	3.0	420	3.0	0.506	5.4	LOS A	3.1	79.7	0.48	0.52	0.48	35.0
Approach			1154	3.0	1154	3.0	0.506	5.4	LOS A	3.1	79.7	0.48	0.50	0.48	35.1
East: New Bridge and Sisk															
6	T1	All MCs	454	3.0	454	3.0	0.310	6.9	LOS A	1.6	39.7	0.65	0.65	0.65	34.5
16	R2	All MCs	39	3.0	39	3.0	0.310	6.8	LOS A	1.6	39.7	0.65	0.64	0.65	34.2
Approach			493	3.0	493	3.0	0.310	6.9	LOS A	1.6	39.7	0.65	0.65	0.65	34.5
West: New Bridge															
5	L2	All MCs	1	3.0	1	3.0	0.193	10.0	LOS B	0.0	0.0	0.00	0.35	0.00	36.1
2	T1	All MCs	228	3.0	228	3.0	0.193	3.8	LOS A	0.0	0.0	0.00	0.35	0.00	36.9
Approach			229	3.0	229	3.0	0.193	3.8	LOS A	0.0	0.0	0.00	0.35	0.00	36.9
All Vehicles			1877	3.0	1877	3.0	0.506	5.6	LOS A	3.1	79.7	0.47	0.52	0.47	35.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: B1 [2: SR-99 SB Ramp & New Bridge AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build B1
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
East: New Bridge															
1	L2	All MCs	454	3.0	454	3.0	0.261	10.0	LOS A	0.0	0.0	0.00	0.66	0.00	33.1
Approach			454	3.0	454	3.0	0.261	10.0	LOS A	0.0	0.0	0.00	0.66	0.00	33.1
North: SR-99 SB Off Ramp															
7	L2	All MCs	228	3.0	228	3.0	0.481	12.6	LOS B	2.7	68.1	0.57	0.68	0.60	33.0
4	T1	All MCs	342	3.0	342	3.0	0.481	6.6	LOS A	2.7	68.1	0.55	0.66	0.58	33.9
Approach			571	3.0	571	3.0	0.481	9.0	LOS A	2.7	68.1	0.56	0.67	0.59	33.5
All Vehicles			1025	3.0	1025	3.0	0.481	9.4	LOS A	2.7	68.1	0.31	0.67	0.33	33.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: B1 [3: SR-99 NB Ramp & Beckwith Rd/Standiford Ave AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build B1
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: SR-99 NB Ramp															
3	L2	All MCs	118	3.0	118	3.0	0.229	12.3	LOS B	0.9	22.6	0.49	0.64	0.49	33.3
8	T1	All MCs	424	3.0	424	3.0	0.229	4.8	LOS A	0.9	23.5	0.47	0.50	0.47	35.1
18	R2	All MCs	289	3.0	289	3.0	0.178	3.4	LOS A	0.0	0.0	0.00	0.40	0.00	36.9
Approach			832	3.0	832	3.0	0.229	5.4	LOS A	0.9	23.5	0.31	0.49	0.31	35.4
East: Standiford Ave															
6	T1	All MCs	808	3.0	808	3.0	0.413	5.2	LOS A	2.2	56.2	0.59	0.52	0.60	35.0
16	R2	All MCs	674	3.0	674	3.0	0.413	5.1	LOS A	2.2	56.2	0.56	0.58	0.56	35.1
Approach			1482	3.0	1482	3.0	0.413	5.2	LOS A	2.2	56.2	0.58	0.54	0.58	35.1
West: Beckwith Rd (Existing Bridge)															
5	L2	All MCs	55	3.0	55	3.0	0.235	10.3	LOS B	0.0	0.0	0.00	0.40	0.00	35.9
2	T1	All MCs	597	3.0	597	3.0	0.235	3.3	LOS A	0.0	0.0	0.00	0.35	0.00	37.1
Approach			652	3.0	652	3.0	0.235	3.9	LOS A	0.0	0.0	0.00	0.36	0.00	37.0
All Vehicles			2965	3.0	2965	3.0	0.413	4.9	LOS A	2.2	56.2	0.37	0.49	0.38	35.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: B1 [4: SR-99 SB Ramp & Beckwith Rd AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build B1
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
East: Beckwith Road															
1	L2	All MCs	498	3.0	498	3.0	0.378	9.7	LOS A	0.0	0.0	0.00	0.67	0.00	33.0
6	T1	All MCs	427	3.0	427	3.0	0.332	4.2	LOS A	0.0	0.0	0.00	0.40	0.00	36.5
Approach			925	3.0	925	3.0	0.378	7.2	LOS A	0.0	0.0	0.00	0.54	0.00	34.5
North: SR-99 SB Ramp															
7	L2	All MCs	289	3.0	289	3.0	0.508	15.3	LOS B	2.7	67.9	0.68	0.90	0.87	31.1
4	T1	All MCs	384	3.0	384	3.0	0.508	9.2	LOS A	2.7	69.6	0.67	0.83	0.85	33.3
14	R2	All MCs	124	3.0	124	3.0	0.508	9.0	LOS A	2.7	69.6	0.67	0.81	0.84	33.5
Approach			797	3.0	797	3.0	0.508	11.4	LOS B	2.7	69.6	0.67	0.85	0.85	32.5
West: Beckwith Road															
2	T1	All MCs	363	3.0	363	3.0	0.510	12.5	LOS B	3.2	82.7	0.82	0.92	1.05	32.2
12	R2	All MCs	214	3.0	214	3.0	0.510	11.6	LOS B	3.2	82.7	0.83	0.91	1.04	32.2
Approach			577	3.0	577	3.0	0.510	12.2	LOS B	3.2	82.7	0.82	0.92	1.05	32.2
All Vehicles			2299	3.0	2299	3.0	0.510	9.9	LOS A	3.2	82.7	0.44	0.74	0.56	33.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: B1 [1: SR-99 NB Ramp & New Bridge/New Bridge and Sisk PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build B1
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: SR-99 NB On Ramp															
3	L2	All MCs	1	3.0	1	3.0	0.572	13.0	LOS B	4.1	103.4	0.60	0.58	0.64	33.9
8	T1	All MCs	568	2.0	568	2.0	0.572	6.7	LOS A	4.1	103.4	0.60	0.58	0.64	34.7
18	R2	All MCs	827	2.0	827	2.0	0.738	8.4	LOS A	8.1	206.0	0.73	0.71	0.87	33.9
Approach			1397	2.0	1397	2.0	0.738	7.7	LOS A	8.1	206.0	0.68	0.66	0.78	34.2
East: New Bridge and Sisk															
6	T1	All MCs	689	2.0	689	2.0	0.549	8.8	LOS A	4.5	115.5	0.80	0.75	0.93	34.0
16	R2	All MCs	220	2.0	220	2.0	0.549	8.6	LOS A	4.5	115.5	0.80	0.75	0.92	33.7
Approach			909	2.0	909	2.0	0.549	8.8	LOS A	4.5	115.5	0.80	0.75	0.93	33.9
West: New Bridge															
5	L2	All MCs	1	3.0	1	3.0	0.261	10.0	LOS B	0.0	0.0	0.00	0.35	0.00	36.1
2	T1	All MCs	311	2.0	311	2.0	0.261	3.8	LOS A	0.0	0.0	0.00	0.35	0.00	37.0
Approach			312	2.0	312	2.0	0.261	3.8	LOS A	0.0	0.0	0.00	0.35	0.00	37.0
All Vehicles			2617	2.0	2617	2.0	0.738	7.6	LOS A	8.1	206.0	0.64	0.65	0.74	34.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: B1 [2: SR-99 SB Ramp & New Bridge PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build B1
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
East: New Bridge															
1	L2	All MCs	689	2.0	689	2.0	0.392	10.0	LOS A	0.0	0.0	0.00	0.66	0.00	33.1
Approach			689	2.0	689	2.0	0.392	10.0	LOS A	0.0	0.0	0.00	0.66	0.00	33.1
North: SR-99 SB Off Ramp															
7	L2	All MCs	311	2.0	311	2.0	0.696	16.3	LOS B	6.0	151.9	0.76	0.91	1.07	31.6
4	T1	All MCs	447	2.0	447	2.0	0.696	9.8	LOS A	6.0	151.9	0.72	0.86	0.96	32.6
Approach			758	2.0	758	2.0	0.696	12.5	LOS B	6.0	151.9	0.74	0.88	1.01	32.2
All Vehicles			1447	2.0	1447	2.0	0.696	11.3	LOS B	6.0	151.9	0.39	0.78	0.53	32.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: B1 [3: SR-99 NB Ramp & Beckwith Rd/Standiford Ave PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build B1
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: SR-99 NB Ramp															
3	L2	All MCs	133	2.0	133	2.0	0.452	14.7	LOS B	2.2	57.0	0.66	0.83	0.80	33.0
8	T1	All MCs	834	2.0	834	2.0	0.452	6.7	LOS A	2.4	60.9	0.64	0.69	0.75	34.5
18	R2	All MCs	398	2.0	398	2.0	0.242	3.4	LOS A	0.0	0.0	0.00	0.40	0.00	36.9
Approach			1364	2.0	1364	2.0	0.452	6.5	LOS A	2.4	60.9	0.46	0.62	0.54	35.0
East: Standiford Ave															
6	T1	All MCs	572	2.0	572	2.0	0.318	5.8	LOS A	1.8	45.3	0.71	0.55	0.71	34.6
16	R2	All MCs	535	2.0	535	2.0	0.318	3.5	LOS A	1.8	45.3	0.02	0.40	0.02	36.8
Approach			1107	2.0	1107	2.0	0.318	4.7	LOS A	1.8	45.3	0.37	0.48	0.37	35.6
West: Beckwith Rd (Existing Bridge)															
5	L2	All MCs	27	2.0	27	2.0	0.413	10.2	LOS B	0.0	0.0	0.00	0.34	0.00	36.4
2	T1	All MCs	1132	2.0	1132	2.0	0.413	3.3	LOS A	0.0	0.0	0.00	0.33	0.00	37.3
Approach			1159	2.0	1159	2.0	0.413	3.5	LOS A	0.0	0.0	0.00	0.33	0.00	37.3
All Vehicles			3629	2.0	3629	2.0	0.452	5.0	LOS A	2.4	60.9	0.29	0.48	0.32	35.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: B1 [4: SR-99 SB Ramp & Beckwith Rd PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build B1
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
East: Beckwith Road															
1	L2	All MCs	352	2.0	352	2.0	0.265	9.7	LOS A	0.0	0.0	0.00	0.67	0.00	33.0
6	T1	All MCs	352	2.0	352	2.0	0.264	4.2	LOS A	0.0	0.0	0.00	0.40	0.00	36.5
Approach			704	2.0	704	2.0	0.265	7.0	LOS A	0.0	0.0	0.00	0.53	0.00	34.7
North: SR-99 SB Ramp															
7	L2	All MCs	401	2.0	401	2.0	0.644	15.3	LOS B	4.3	110.4	0.71	0.91	0.96	31.2
4	T1	All MCs	588	2.0	588	2.0	0.644	9.4	LOS A	4.4	111.9	0.70	0.85	0.94	33.2
14	R2	All MCs	147	2.0	147	2.0	0.644	9.3	LOS A	4.4	111.9	0.70	0.83	0.93	33.4
Approach			1136	2.0	1136	2.0	0.644	11.5	LOS B	4.4	111.9	0.70	0.87	0.95	32.5
West: Beckwith Road															
2	T1	All MCs	758	2.0	758	2.0	0.892	27.0	LOS C	10.5	266.2	0.97	1.32	2.10	26.7
12	R2	All MCs	153	2.0	153	2.0	0.892	25.5	LOS C	10.5	266.2	0.98	1.33	2.11	27.0
Approach			911	2.0	911	2.0	0.892	26.7	LOS C	10.5	266.2	0.97	1.32	2.10	26.7
All Vehicles			2751	2.0	2751	2.0	0.892	15.4	LOS B	10.5	266.2	0.61	0.93	1.09	30.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: B5 [3: SR-99 NB Ramp & Beckwith Rd/Standiford Ave AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build B5
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: SR-99 NB Off Ramp															
3	L2	All MCs	118	3.0	118	3.0	0.126	5.0	LOS A	0.5	11.6	0.51	0.44	0.51	31.0
8	T1	All MCs	3	3.0	3	3.0	0.100	3.6	LOS A	0.4	9.6	0.47	0.38	0.47	35.2
18	R2	All MCs	289	3.0	289	3.0	0.100	1.6	LOS A	0.4	9.6	0.21	0.16	0.21	36.0
Approach			411	3.0	411	3.0	0.126	2.6	LOS A	0.5	11.6	0.30	0.24	0.30	34.3
East: Standiford Ave / Beckwith Road															
6	T1	All MCs	888	3.0	888	3.0	0.361	5.7	LOS A	2.1	54.4	0.37	0.20	0.37	34.2
16	R2	All MCs	714	3.0	714	3.0	0.361	1.1	LOS A	2.1	54.4	0.06	0.03	0.06	36.3
Approach			1602	3.0	1602	3.0	0.361	3.7	LOS A	2.1	54.4	0.23	0.13	0.23	35.1
West: New Bridge															
5	L2	All MCs	55	3.0	55	3.0	0.317	4.2	LOS A	0.0	0.0	0.00	0.00	0.00	36.0
2	T1	All MCs	825	3.0	825	3.0	0.317	4.2	LOS A	0.0	0.0	0.00	0.00	0.00	37.2
Approach			880	3.0	880	3.0	0.317	4.2	LOS A	0.0	0.0	0.00	0.00	0.00	37.1
All Vehicles			2893	3.0	2893	3.0	0.361	3.7	LOS A	2.1	54.4	0.17	0.10	0.17	35.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: B5 [4: SR-99 SB Ramp & Beckwith Rd AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build B5
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
East: New Bridge															
1	L2	All MCs	498	3.0	498	3.0	0.364	10.3	LOS B	0.0	0.0	0.00	0.66	0.00	33.1
6	T1	All MCs	509	3.0	509	3.0	0.361	3.3	LOS A	0.0	0.0	0.00	0.31	0.00	37.4
Approach			1007	3.0	1007	3.0	0.364	6.7	LOS A	0.0	0.0	0.00	0.48	0.00	35.1
North: SR-99 SB Off Ramp															
7	L2	All MCs	517	3.0	517	3.0	0.557	15.0	LOS B	3.2	82.8	0.68	0.91	0.90	31.1
4	T1	All MCs	11	3.0	11	3.0	0.098	8.1	LOS A	0.3	8.3	0.58	0.73	0.58	34.4
14	R2	All MCs	42	3.0	42	3.0	0.098	8.4	LOS A	0.3	8.3	0.58	0.73	0.58	34.1
Approach			571	3.0	571	3.0	0.557	14.4	LOS B	3.2	82.8	0.67	0.90	0.87	31.3
West: Standiford Ave and Beckwith Rd															
2	T1	All MCs	363	3.0	363	3.0	0.492	13.6	LOS B	3.9	99.6	0.89	0.89	1.11	32.0
12	R2	All MCs	214	3.0	214	3.0	0.492	12.8	LOS B	3.9	99.6	0.90	0.87	1.11	32.0
Approach			577	3.0	577	3.0	0.492	13.3	LOS B	3.9	99.6	0.89	0.88	1.11	32.0
All Vehicles			2154	3.0	2154	3.0	0.557	10.5	LOS B	3.9	99.6	0.42	0.70	0.53	33.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: B5 [3: SR-99 NB Ramp & Beckwith Rd/Standiford Ave PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build B5
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: SR-99 NB Off Ramp															
3	L2	All MCs	133	2.0	133	2.0	0.170	6.4	LOS A	0.7	16.6	0.63	0.59	0.63	30.5
8	T1	All MCs	7	2.0	7	2.0	0.142	4.2	LOS A	0.6	15.4	0.60	0.52	0.60	34.9
18	R2	All MCs	398	2.0	398	2.0	0.142	1.8	LOS A	0.6	15.4	0.25	0.21	0.25	36.0
Approach			537	2.0	537	2.0	0.170	2.9	LOS A	0.7	16.6	0.35	0.31	0.35	34.3
East: Standiford Ave / Beckwith Road															
6	T1	All MCs	561	2.0	561	2.0	0.292	5.1	LOS A	1.7	43.0	0.35	0.18	0.35	34.5
16	R2	All MCs	754	2.0	754	2.0	0.292	1.8	LOS A	1.7	43.0	0.12	0.06	0.12	36.0
Approach			1315	2.0	1315	2.0	0.292	3.2	LOS A	1.7	43.0	0.22	0.11	0.22	35.3
West: New Bridge															
5	L2	All MCs	27	2.0	27	2.0	0.524	5.2	LOS A	0.0	0.0	0.00	0.00	0.00	36.4
2	T1	All MCs	1442	2.0	1442	2.0	0.524	5.2	LOS A	0.0	0.0	0.00	0.00	0.00	37.3
Approach			1470	2.0	1470	2.0	0.524	5.2	LOS A	0.0	0.0	0.00	0.00	0.00	37.3
All Vehicles			3322	2.0	3322	2.0	0.524	4.0	LOS A	1.7	43.0	0.14	0.09	0.14	36.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: B5 [4: SR-99 SB Ramp & Beckwith Rd PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build B5
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
East: New Bridge															
1	L2	All MCs	224	2.0	224	2.0	0.247	10.2	LOS B	0.0	0.0	0.00	0.59	0.00	34.2
6	T1	All MCs	470	2.0	470	2.0	0.247	3.3	LOS A	0.0	0.0	0.00	0.38	0.00	36.8
Approach			693	2.0	693	2.0	0.247	5.5	LOS A	0.0	0.0	0.00	0.45	0.00	35.9
North: SR-99 SB Off Ramp															
7	L2	All MCs	712	2.0	712	2.0	0.690	15.2	LOS B	5.3	134.8	0.71	0.92	0.97	31.0
4	T1	All MCs	16	2.0	16	2.0	0.075	6.8	LOS A	0.3	6.4	0.52	0.65	0.52	35.2
14	R2	All MCs	29	2.0	29	2.0	0.075	7.1	LOS A	0.3	6.4	0.52	0.65	0.52	34.8
Approach			758	2.0	758	2.0	0.690	14.7	LOS B	5.3	134.8	0.70	0.90	0.95	31.2
West: Standiford Ave and Beckwith Rd															
2	T1	All MCs	758	2.0	758	2.0	0.741	17.8	LOS B	8.5	216.2	0.98	1.07	1.55	30.2
12	R2	All MCs	153	2.0	153	2.0	0.741	17.2	LOS B	8.5	216.2	0.99	1.06	1.55	30.3
Approach			911	2.0	911	2.0	0.741	17.7	LOS B	8.5	216.2	0.99	1.07	1.55	30.3
All Vehicles			2362	2.0	2362	2.0	0.741	13.2	LOS B	8.5	216.2	0.61	0.83	0.90	32.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Appendix J – Year 2050 Build Conditions "M" Alternatives Intersection Analysis Worksheets

FEHR PEERS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	189	3	50	25	5	10	25	230	47	7	314	255
Future Volume (veh/h)	189	3	50	25	5	10	25	230	47	7	314	255
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	205	3	22	27	5	2	27	250	0	8	341	67
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	362	78	570	404	232	93	57	1110		73	976	186
Arrive On Green	0.10	0.40	0.40	0.18	0.18	0.18	0.03	0.22	0.00	0.04	0.23	0.23
Sat Flow, veh/h	3456	194	1421	1386	1271	508	1781	5106	1585	1781	4308	819
Grp Volume(v), veh/h	205	0	25	27	0	7	27	250	0	8	267	141
Grp Sat Flow(s),veh/h/ln	1728	0	1615	1386	0	1779	1781	1702	1585	1781	1702	1723
Q Serve(g_s), s	2.5	0.0	0.4	0.7	0.0	0.1	0.7	1.8	0.0	0.2	2.9	3.0
Cycle Q Clear(g_c), s	2.5	0.0	0.4	1.1	0.0	0.1	0.7	1.8	0.0	0.2	2.9	3.0
Prop In Lane	1.00		0.88	1.00		0.29	1.00		1.00	1.00		0.48
Lane Grp Cap(c), veh/h	362	0	648	404	0	325	57	1110		73	771	390
V/C Ratio(X)	0.57	0.00	0.04	0.07	0.00	0.02	0.47	0.23		0.11	0.35	0.36
Avail Cap(c_a), veh/h	434	0	1032	721	0	731	215	1993		407	1694	857
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.7	0.0	8.0	15.3	0.0	14.7	20.8	14.1	0.0	20.2	14.2	14.3
Incr Delay (d2), s/veh	1.4	0.0	0.0	0.1	0.0	0.0	6.0	0.1	0.0	0.6	0.3	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.1	0.2	0.0	0.1	0.3	0.6	0.0	0.1	0.9	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.1	0.0	8.0	15.3	0.0	14.7	26.9	14.2	0.0	20.9	14.5	14.8
LnGrp LOS	C	A	A	B	A	B	C	B		C	B	B
Approach Vol, veh/h		230			34			277			416	
Approach Delay, s/veh		18.8			15.2			15.4			14.7	
Approach LOS		B			B			B			B	

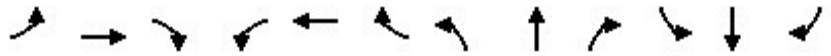
Timer - Assigned Phs	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.6	5.9	15.3	9.6	13.0	6.3	14.9
Change Period (Y+Rc), s	5.0	4.5	5.4	5.0	* 5	4.5	5.4
Max Green Setting (Gmax), s	28.0	5.3	21.8	5.5	* 18	10.0	17.1
Max Q Clear Time (g_c+I1), s	2.4	2.7	5.0	4.5	3.1	2.2	3.8
Green Ext Time (p_c), s	0.1	0.0	2.1	0.1	0.0	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	15.9
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	735	25	67	1130	192	15	61	34	162	131	96
Future Volume (veh/h)	49	735	25	67	1130	192	15	61	34	162	131	96
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	53	799	0	73	1228	0	16	66	9	176	142	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	1225	951		722	1628		63	89	12	248	358	32
Arrive On Green	0.71	0.54	0.00	0.41	0.32	0.00	0.02	0.06	0.06	0.07	0.11	0.11
Sat Flow, veh/h	3456	3554	1585	1781	5106	1585	3456	1611	220	3456	3295	298
Grp Volume(v), veh/h	53	799	0	73	1228	0	16	0	75	176	76	79
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1702	1585	1728	0	1831	1728	1777	1817
Q Serve(g_s), s	0.4	17.1	0.0	2.3	19.4	0.0	0.4	0.0	3.6	4.5	3.6	3.7
Cycle Q Clear(g_c), s	0.4	17.1	0.0	2.3	19.4	0.0	0.4	0.0	3.6	4.5	3.6	3.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.12	1.00		0.16
Lane Grp Cap(c), veh/h	1225	951		722	1628		63	0	101	248	193	197
V/C Ratio(X)	0.04	0.84		0.10	0.75		0.25	0.00	0.74	0.71	0.39	0.40
Avail Cap(c_a), veh/h	1225	1362		722	2128		365	0	417	288	365	373
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.00	1.00	1.00	0.00	1.00	0.00	1.00	0.91	0.91	0.91
Uniform Delay (d), s/veh	8.5	19.3	0.0	16.6	27.5	0.0	43.6	0.0	41.9	40.9	37.4	37.4
Incr Delay (d2), s/veh	0.0	8.3	0.0	0.1	3.3	0.0	2.1	0.0	10.2	6.0	1.2	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	0.2	5.7	0.0	0.9	7.8	0.0	0.2	0.0	1.9	2.1	1.6	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.5	27.6	0.0	16.6	30.8	0.0	45.6	0.0	52.1	46.9	38.5	38.6
LnGrp LOS	A	C		B	C		D	A	D	D	D	D
Approach Vol, veh/h		852			1301			91			331	
Approach Delay, s/veh		26.4			30.0			51.0			43.0	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	28.6	6.1	14.3	36.4	33.2	11.0	9.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	9.5	34.5	9.5	18.5	6.5	37.5	7.5	20.5
Max Q Clear Time (g_c+I1), s	4.3	19.1	2.4	5.7	2.4	21.4	6.5	5.6
Green Ext Time (p_c), s	0.1	5.0	0.0	0.6	0.0	7.3	0.1	0.2

Intersection Summary	
HCM 6th Ctrl Delay	31.2
HCM 6th LOS	C

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



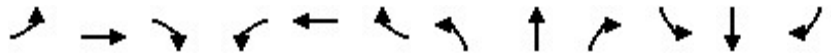
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	198	25	464	86	25	446
Future Volume (veh/h)	198	25	464	86	25	446
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	224	0	504	75	27	485
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	315	140	1403	1329	47	1537
Arrive On Green	0.09	0.00	0.75	0.75	0.03	0.82
Sat Flow, veh/h	3563	1585	1870	1585	1781	1870
Grp Volume(v), veh/h	224	0	504	75	27	485
Grp Sat Flow(s),veh/h/ln	1781	1585	1870	1585	1781	1870
Q Serve(g_s), s	6.1	0.0	9.2	0.8	1.5	6.2
Cycle Q Clear(g_c), s	6.1	0.0	9.2	0.8	1.5	6.2
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	315	140	1403	1329	47	1537
V/C Ratio(X)	0.71	0.00	0.36	0.06	0.57	0.32
Avail Cap(c_a), veh/h	1229	547	1403	1329	89	1537
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.00	1.00	1.00	0.87	0.87
Uniform Delay (d), s/veh	44.3	0.0	4.3	1.4	48.1	2.1
Incr Delay (d2), s/veh	2.8	0.0	0.7	0.1	9.3	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	2.7	0.3	0.8	1.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	47.2	0.0	5.0	1.4	57.4	2.6
LnGrp LOS	D	A	A	A	E	A
Approach Vol, veh/h	224		579			512
Approach Delay, s/veh	47.2		4.5			5.5
Approach LOS	D		A			A

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	7.1	79.5				86.7	13.3
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5
Max Green Setting (Gmax), s	5.6	46.5				46.5	34.5
Max Q Clear Time (g_c+I1), s	3.5	11.2				8.2	8.1
Green Ext Time (p_c), s	0.0	3.5				3.1	0.7

Intersection Summary	
HCM 6th Ctrl Delay	12.2
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	744	251	7	1164	70	282	223	45	20	195	29
Future Volume (veh/h)	31	744	251	7	1164	70	282	223	45	20	195	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	34	809	215	8	1265	0	307	242	0	22	212	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	576	1145	302	882	1323		346	353		298	312	
Arrive On Green	0.17	0.28	0.28	0.51	0.74	0.00	0.10	0.10	0.00	0.09	0.09	0.00
Sat Flow, veh/h	3456	4023	1061	3456	3554	1585	3456	3647	0	3456	3554	1585
Grp Volume(v), veh/h	34	684	340	8	1265	0	307	242	0	22	212	0
Grp Sat Flow(s),veh/h/ln	1728	1702	1679	1728	1777	1585	1728	1777	0	1728	1777	1585
Q Serve(g_s), s	0.7	16.2	16.4	0.1	28.4	0.0	7.9	5.9	0.0	0.5	5.2	0.0
Cycle Q Clear(g_c), s	0.7	16.2	16.4	0.1	28.4	0.0	7.9	5.9	0.0	0.5	5.2	0.0
Prop In Lane	1.00		0.63	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	576	969	478	882	1323		346	353		298	312	
V/C Ratio(X)	0.06	0.71	0.71	0.01	0.96		0.89	0.69		0.07	0.68	
Avail Cap(c_a), veh/h	576	1256	620	882	1386		346	802		298	644	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.93	0.93	0.00	0.93	0.93	0.00	0.97	0.97	0.00
Uniform Delay (d), s/veh	31.6	28.8	28.9	16.4	10.8	0.0	40.0	39.2	0.0	37.8	39.8	0.0
Incr Delay (d2), s/veh	0.0	4.3	8.7	0.0	15.5	0.0	22.1	2.2	0.0	0.1	2.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	6.7	7.3	0.0	6.5	0.0	4.3	2.6	0.0	0.2	2.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.6	33.1	37.6	16.4	26.3	0.0	62.1	41.4	0.0	37.9	42.4	0.0
LnGrp LOS	C	C	D	B	C		E	D		D	D	
Approach Vol, veh/h		1058			1273			549			234	
Approach Delay, s/veh		34.5			26.2			53.0			41.9	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	31.9	15.0	14.1	21.0	39.9	14.0	15.1
Change Period (Y+Rc), s	6.0	6.3	6.0	6.2	6.0	6.4	6.2	* 6.2
Max Green Setting (Gmax), s	7.0	33.2	9.0	16.3	5.0	35.1	5.0	* 20
Max Q Clear Time (g_c+I1), s	2.7	18.4	9.9	7.2	2.7	30.4	2.5	7.9
Green Ext Time (p_c), s	0.0	7.3	0.0	0.7	0.0	3.1	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	34.9
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

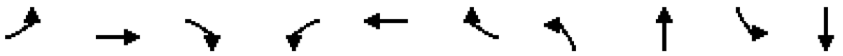
Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	205	57	27	16	27	250	51	8	618
v/c Ratio	0.44	0.08	0.10	0.05	0.11	0.20	0.10	0.02	0.43
Control Delay (s/veh)	21.5	4.3	17.3	12.1	19.1	14.0	0.4	15.0	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	21.5	4.3	17.3	12.1	19.1	14.0	0.4	15.0	8.3
Queue Length 50th (ft)	21	0	5	1	5	15	0	1	20
Queue Length 95th (ft)	#61	19	25	15	26	42	0	11	57
Internal Link Dist (ft)		206		308		483			447
Turn Bay Length (ft)					200		100	260	
Base Capacity (vph)	461	1111	590	742	238	2127	766	432	2659
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.05	0.05	0.02	0.11	0.12	0.07	0.02	0.23

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	53	799	27	73	1228	209	16	103	176	246
v/c Ratio	0.22	0.41	0.03	0.40	0.39	0.20	0.07	0.50	0.62	0.35
Control Delay (s/veh)	36.9	6.9	0.0	43.6	11.2	2.3	39.8	35.3	50.1	18.9
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	36.9	6.9	0.0	43.6	11.3	2.3	39.8	35.3	50.1	18.9
Queue Length 50th (ft)	14	80	0	39	145	0	4	40	51	34
Queue Length 95th (ft)	37	40	m0	80	200	34	14	86	84	73
Internal Link Dist (ft)		226			293			483		483
Turn Bay Length (ft)				200			200		220	
Base Capacity (vph)	247	1966	960	204	3116	1051	362	423	286	822
Starvation Cap Reductn	0	211	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	209	0	0	0	0	3
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.46	0.03	0.36	0.42	0.20	0.04	0.24	0.62	0.30

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	WBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	242	504	93	27	485
v/c Ratio	0.57	0.38	0.07	0.22	0.33
Control Delay (s/veh)	43.7	8.0	0.5	47.1	4.0
Queue Delay	0.0	0.0	0.0	0.0	1.3
Total Delay (s/veh)	43.7	8.0	0.5	47.1	5.3
Queue Length 50th (ft)	71	127	0	17	68
Queue Length 95th (ft)	105	225	7	43	124
Internal Link Dist (ft)	483	662			276
Turn Bay Length (ft)					
Base Capacity (vph)	1188	1329	1583	125	1469
Starvation Cap Reductn	0	0	0	0	745
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.20	0.38	0.06	0.22	0.67

Intersection Summary

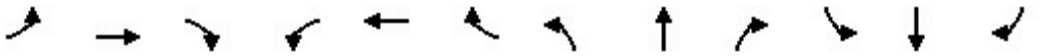


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	34	1082	8	1265	76	307	291	22	212	32
v/c Ratio	0.18	0.40	0.04	0.71	0.08	0.90	0.36	0.10	0.50	0.09
Control Delay (s/veh)	42.9	12.1	27.3	12.9	0.2	69.6	29.4	40.2	41.1	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	42.9	12.1	27.3	12.9	0.2	69.6	29.4	40.2	41.1	0.5
Queue Length 50th (ft)	9	100	2	321	0	90	61	6	60	0
Queue Length 95th (ft)	24	192	m5	432	0	#165	112	18	92	0
Internal Link Dist (ft)		471		226			276		940	
Turn Bay Length (ft)	260							235		325
Base Capacity (vph)	190	2722	267	1773	922	343	888	220	640	438
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.40	0.03	0.71	0.08	0.90	0.33	0.10	0.33	0.07

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



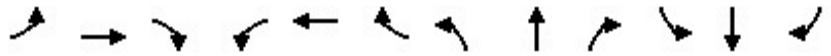
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	598	26	155	183	21	42	102	437	164	62	412	410
Future Volume (veh/h)	598	26	155	183	21	42	102	437	164	62	412	410
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	650	28	84	199	23	11	111	475	0	67	448	289
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	758	194	583	343	226	108	144	786		319	858	400
Arrive On Green	0.22	0.47	0.47	0.19	0.19	0.19	0.08	0.15	0.00	0.18	0.25	0.25
Sat Flow, veh/h	3456	412	1236	1281	1196	572	1781	5106	1585	1781	3404	1585
Grp Volume(v), veh/h	650	0	112	199	0	34	111	475	0	67	448	289
Grp Sat Flow(s),veh/h/ln	1728	0	1648	1281	0	1767	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	12.9	0.0	2.7	10.6	0.0	1.1	4.3	6.2	0.0	2.3	8.1	11.9
Cycle Q Clear(g_c), s	12.9	0.0	2.7	10.6	0.0	1.1	4.3	6.2	0.0	2.3	8.1	11.9
Prop In Lane	1.00		0.75	1.00		0.32	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	758	0	777	343	0	334	144	786		319	858	400
V/C Ratio(X)	0.86	0.00	0.14	0.58	0.00	0.10	0.77	0.60		0.21	0.52	0.72
Avail Cap(c_a), veh/h	850	0	1357	760	0	909	368	1758		451	1330	619
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.7	0.0	10.7	27.7	0.0	23.9	32.0	28.1	0.0	24.9	22.9	24.3
Incr Delay (d2), s/veh	8.0	0.0	0.1	1.6	0.0	0.1	8.3	0.8	0.0	0.3	0.5	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	0.0	0.9	3.2	0.0	0.5	2.1	2.4	0.0	0.9	3.1	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.7	0.0	10.7	29.3	0.0	24.0	40.3	28.8	0.0	25.2	23.4	26.8
LnGrp LOS	C	A	B	C	A	C	D	C		C	C	C
Approach Vol, veh/h		762			233			586			804	
Approach Delay, s/veh		31.2			28.5			31.0			24.8	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	38.0	10.3	22.8	20.1	17.9	17.2	15.9
Change Period (Y+Rc), s	4.5	4.5	4.9	4.5	4.5	4.5	4.9
Max Green Setting (Gmax), s	58.6	14.7	27.8	17.5	36.6	18.0	24.5
Max Q Clear Time (g_c+I1), s	4.7	6.3	13.9	14.9	12.6	4.3	8.2
Green Ext Time (p_c), s	0.7	0.1	4.1	0.7	0.8	0.1	2.8

Intersection Summary	
HCM 6th Ctrl Delay	28.7
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	237	1103	50	47	798	359	15	107	124	394	321	36
Future Volume (veh/h)	237	1103	50	47	798	359	15	107	124	394	321	36
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	258	1199	0	51	867	0	16	116	100	428	349	31
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	1392	1310		392	950		504	133	115	473	436	38
Arrive On Green	0.40	0.37	0.00	0.22	0.19	0.00	0.15	0.14	0.14	0.14	0.13	0.13
Sat Flow, veh/h	3456	3554	1585	1781	5106	1585	3456	927	799	3456	3303	292
Grp Volume(v), veh/h	258	1199	0	51	867	0	16	0	216	428	187	193
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1702	1585	1728	0	1726	1728	1777	1818
Q Serve(g_s), s	7.2	48.2	0.0	3.4	25.0	0.0	0.6	0.0	18.4	18.3	15.3	15.5
Cycle Q Clear(g_c), s	7.2	48.2	0.0	3.4	25.0	0.0	0.6	0.0	18.4	18.3	15.3	15.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.46	1.00		0.16
Lane Grp Cap(c), veh/h	1392	1310		392	950		504	0	248	473	234	240
V/C Ratio(X)	0.19	0.92		0.13	0.91		0.03	0.00	0.87	0.91	0.80	0.81
Avail Cap(c_a), veh/h	1392	1407		392	977		504	0	489	495	699	715
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.63	0.63	0.00	1.00	1.00	0.00	0.99	0.00	0.99	0.66	0.66	0.66
Uniform Delay (d), s/veh	28.9	45.1	0.0	46.9	59.9	0.0	55.0	0.0	62.9	63.8	63.2	63.2
Incr Delay (d2), s/veh	0.0	7.8	0.0	0.1	14.5	0.0	0.0	0.0	9.1	14.2	4.1	4.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	22.0	0.0	1.5	11.8	0.0	0.3	0.0	8.7	9.0	7.2	7.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.9	52.9	0.0	47.1	74.4	0.0	55.0	0.0	71.9	78.0	67.3	67.5
LnGrp LOS	C	D		D	E		D	A	E	E	E	E
Approach Vol, veh/h		1457			918			232			808	
Approach Delay, s/veh		48.7			72.8			70.8			73.0	
Approach LOS		D			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	61.0	26.8	24.7	64.9	33.6	25.0	26.4
Change Period (Y+Rc), s	4.5	5.7	4.9	* 4.9	4.5	5.7	4.5	4.9
Max Green Setting (Gmax), s	7.3	59.4	5.0	* 59	37.7	28.7	21.5	42.5
Max Q Clear Time (g_c+I1), s	5.4	50.2	2.6	17.5	9.2	27.0	20.3	20.4
Green Ext Time (p_c), s	0.0	5.1	0.0	2.3	0.8	0.9	0.2	1.2

Intersection Summary	
HCM 6th Ctrl Delay	62.4
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



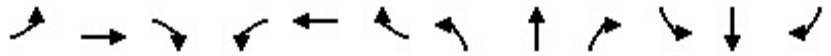
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	368	50	858	221	25	828
Future Volume (veh/h)	368	50	858	221	25	828
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	442	0	933	174	27	900
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	511	227	1391	1179	40	1490
Arrive On Green	0.05	0.00	0.74	0.74	0.02	0.80
Sat Flow, veh/h	3563	1585	1870	1585	1781	1870
Grp Volume(v), veh/h	442	0	933	174	27	900
Grp Sat Flow(s),veh/h/ln	1781	1585	1870	1585	1781	1870
Q Serve(g_s), s	18.5	0.0	38.2	4.7	2.3	28.3
Cycle Q Clear(g_c), s	18.5	0.0	38.2	4.7	2.3	28.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	511	227	1391	1179	40	1490
V/C Ratio(X)	0.86	0.00	0.67	0.15	0.67	0.60
Avail Cap(c_a), veh/h	677	301	1391	1179	59	1490
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.00	1.00	1.00	0.65	0.65
Uniform Delay (d), s/veh	70.0	0.0	9.8	5.5	72.8	6.0
Incr Delay (d2), s/veh	8.2	0.0	2.6	0.3	12.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	0.0	14.7	1.5	1.2	9.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	78.2	0.0	12.4	5.8	84.8	7.2
LnGrp LOS	E	A	B	A	F	A
Approach Vol, veh/h	442		1107			927
Approach Delay, s/veh	78.2		11.4			9.4
Approach LOS	E		B			A

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	7.9	116.1			124.0	26.0
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	5.6	102.5			102.5	28.5
Max Q Clear Time (g_c+I1), s	4.3	40.2			30.3	20.5
Green Ext Time (p_c), s	0.0	9.8			8.3	1.0

Intersection Summary	
HCM 6th Ctrl Delay	22.6
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	1186	392	15	705	128	398	581	40	163	436	108
Future Volume (veh/h)	115	1186	392	15	705	128	398	581	40	163	436	108
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	125	1289	386	16	766	0	433	632	0	177	474	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	178	1905	569	71	1626		397	776		233	601	
Arrive On Green	0.05	0.49	0.49	0.02	0.46	0.00	0.11	0.22	0.00	0.07	0.17	0.00
Sat Flow, veh/h	3456	3899	1165	3456	3554	1585	3456	3647	0	3456	3554	1585
Grp Volume(v), veh/h	125	1125	550	16	766	0	433	632	0	177	474	0
Grp Sat Flow(s),veh/h/ln	1728	1702	1661	1728	1777	1585	1728	1777	0	1728	1777	1585
Q Serve(g_s), s	4.3	30.3	30.4	0.5	17.9	0.0	13.8	20.3	0.0	6.0	15.3	0.0
Cycle Q Clear(g_c), s	4.3	30.3	30.4	0.5	17.9	0.0	13.8	20.3	0.0	6.0	15.3	0.0
Prop In Lane	1.00		0.70	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	178	1663	811	71	1626		397	776		233	601	
V/C Ratio(X)	0.70	0.68	0.68	0.22	0.47		1.09	0.81		0.76	0.79	
Avail Cap(c_a), veh/h	202	1663	811	173	1626		397	1238		317	1208	
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	0.91	0.91	0.00	0.67	0.67	0.00	0.87	0.87	0.00
Uniform Delay (d), s/veh	56.0	23.4	23.5	57.8	22.5	0.0	53.1	44.6	0.0	55.0	47.8	0.0
Incr Delay (d2), s/veh	6.8	2.2	4.5	0.5	0.9	0.0	63.9	1.6	0.0	3.8	2.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	11.8	12.1	0.2	7.3	0.0	9.4	8.9	0.0	2.7	6.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.8	25.7	28.0	58.3	23.4	0.0	117.0	46.2	0.0	58.8	49.8	0.0
LnGrp LOS	E	C	C	E	C		F	D		E	D	
Approach Vol, veh/h		1800			782			1065			651	
Approach Delay, s/veh		29.0			24.1			75.0			52.3	
Approach LOS		C			C			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.5	65.0	20.0	26.5	12.2	61.3	14.1	32.4
Change Period (Y+Rc), s	6.0	* 6.4	6.2	* 6.2	6.0	6.4	6.0	6.2
Max Green Setting (Gmax), s	6.0	* 37	12.0	* 41	7.0	35.6	11.0	41.8
Max Q Clear Time (g_c+I1), s	2.5	32.4	15.8	17.3	6.3	19.9	8.0	22.3
Green Ext Time (p_c), s	0.0	3.7	0.0	3.0	0.0	5.8	0.1	3.9

Intersection Summary	
HCM 6th Ctrl Delay	43.0
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

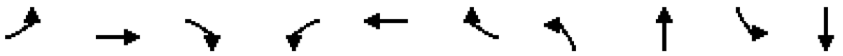
Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	650	196	199	69	111	475	178	67	894
v/c Ratio	0.89	0.22	0.71	0.16	0.50	0.50	0.40	0.20	0.69
Control Delay (s/veh)	53.8	4.3	47.2	14.2	48.8	36.4	9.0	35.5	27.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	53.8	4.3	47.2	14.2	48.8	36.4	9.0	35.5	27.2
Queue Length 50th (ft)	188	8	104	10	59	91	0	32	129
Queue Length 95th (ft)	#407	48	200	46	133	148	59	82	212
Internal Link Dist (ft)		206		308		483			447
Turn Bay Length (ft)					200		100	260	
Base Capacity (vph)	728	1187	524	769	315	1511	595	408	1723
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.17	0.38	0.09	0.35	0.31	0.30	0.16	0.52

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	258	1199	54	51	867	390	16	251	428	388
v/c Ratio	0.43	0.63	0.06	0.64	0.43	0.45	0.05	0.81	0.89	0.44
Control Delay (s/veh)	56.0	28.3	0.1	102.8	37.2	5.7	56.7	69.6	84.4	49.5
Queue Delay	0.0	49.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	56.0	77.9	0.1	102.8	37.2	5.7	56.7	69.6	84.4	49.5
Queue Length 50th (ft)	118	441	0	50	227	0	8	204	214	145
Queue Length 95th (ft)	147	587	0	#115	333	88	18	288	#303	237
Internal Link Dist (ft)		226			293			483		483
Turn Bay Length (ft)				200			200		220	
Base Capacity (vph)	862	1893	900	82	1998	858	305	513	492	1376
Starvation Cap Reductn	0	851	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	1.15	0.06	0.62	0.43	0.45	0.05	0.49	0.87	0.28

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	WBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	454	933	240	27	900
v/c Ratio	0.81	0.69	0.20	0.34	0.62
Control Delay (s/veh)	70.8	15.8	1.8	81.0	10.0
Queue Delay	0.0	0.0	0.0	0.0	20.3
Total Delay (s/veh)	70.8	15.8	1.8	81.0	30.3
Queue Length 50th (ft)	218	519	6	26	337
Queue Length 95th (ft)	273	704	34	#66	502
Internal Link Dist (ft)	483	662			276
Turn Bay Length (ft)					
Base Capacity (vph)	655	1366	1218	79	1447
Starvation Cap Reductn	0	0	0	0	562
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.69	0.68	0.20	0.34	1.02

Intersection Summary

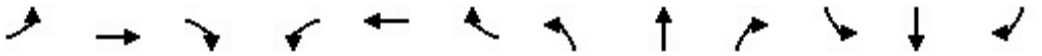
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	125	1715	16	766	139	433	675	177	474	117
v/c Ratio	0.64	0.72	0.09	0.53	0.18	0.89	0.78	0.63	0.72	0.29
Control Delay (s/veh)	70.8	28.1	55.7	29.4	1.5	71.6	48.3	63.7	52.3	5.3
Queue Delay	0.0	0.0	0.0	6.6	0.0	0.0	0.5	0.0	0.0	0.0
Total Delay (s/veh)	70.8	28.1	55.7	36.0	1.5	71.6	48.8	63.7	52.3	5.3
Queue Length 50th (ft)	49	335	6	234	0	171	256	69	183	0
Queue Length 95th (ft)	#84	#571	18	327	13	#241	301	106	227	31
Internal Link Dist (ft)		471		226			276		940	
Turn Bay Length (ft)	260							235		325
Base Capacity (vph)	200	2382	171	1455	765	486	1224	314	1203	631
Starvation Cap Reductn	0	0	0	630	0	0	206	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.72	0.09	0.93	0.18	0.89	0.66	0.56	0.39	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



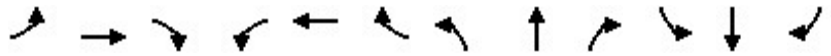
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	189	3	25	25	5	10	25	222	47	7	314	255
Future Volume (veh/h)	189	3	25	25	5	10	25	222	47	7	314	255
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	205	3	11	27	5	2	27	241	0	8	341	67
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	365	139	508	425	235	94	57	1115		77	988	188
Arrive On Green	0.11	0.39	0.39	0.18	0.18	0.18	0.03	0.22	0.00	0.04	0.23	0.23
Sat Flow, veh/h	3456	351	1287	1400	1271	508	1781	5106	1585	1781	4308	819
Grp Volume(v), veh/h	205	0	14	27	0	7	27	241	0	8	267	141
Grp Sat Flow(s),veh/h/ln	1728	0	1639	1400	0	1779	1781	1702	1585	1781	1702	1723
Q Serve(g_s), s	2.4	0.0	0.2	0.7	0.0	0.1	0.6	1.7	0.0	0.2	2.8	3.0
Cycle Q Clear(g_c), s	2.4	0.0	0.2	0.7	0.0	0.1	0.6	1.7	0.0	0.2	2.8	3.0
Prop In Lane	1.00		0.79	1.00		0.29	1.00		1.00	1.00		0.48
Lane Grp Cap(c), veh/h	365	0	646	425	0	329	57	1115		77	781	395
V/C Ratio(X)	0.56	0.00	0.02	0.06	0.00	0.02	0.47	0.22		0.10	0.34	0.36
Avail Cap(c_a), veh/h	439	0	1060	748	0	740	235	2017		412	1683	852
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.4	0.0	8.0	14.7	0.0	14.4	20.6	13.9	0.0	19.9	14.0	14.0
Incr Delay (d2), s/veh	1.4	0.0	0.0	0.1	0.0	0.0	6.0	0.1	0.0	0.6	0.3	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.1	0.2	0.0	0.1	0.3	0.5	0.0	0.1	0.9	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.8	0.0	8.0	14.7	0.0	14.5	26.6	14.0	0.0	20.5	14.2	14.5
LnGrp LOS	B	A	A	B	A	B	C	B		C	B	B
Approach Vol, veh/h		219			34			268			416	
Approach Delay, s/veh		19.0			14.7			15.2			14.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.1	5.9	15.3	9.1	13.0	6.4	14.8
Change Period (Y+Rc), s	5.0	4.5	5.4	4.5	5.0	4.5	5.4
Max Green Setting (Gmax), s	28.0	5.7	21.4	5.5	18.0	10.0	17.1
Max Q Clear Time (g_c+I1), s	2.2	2.6	5.0	4.4	2.7	2.2	3.7
Green Ext Time (p_c), s	0.0	0.0	2.1	0.1	0.0	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	15.7
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	735	251	74	1078	192	326	62	44	162	131	71
Future Volume (veh/h)	40	735	251	74	1078	192	326	62	44	162	131	71
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	43	799	0	80	1172	0	354	67	5	176	142	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	1145	904		621	1387		456	92	7	496	231	5
Arrive On Green	0.33	0.25	0.00	0.35	0.27	0.00	0.13	0.05	0.05	0.14	0.06	0.06
Sat Flow, veh/h	3456	3554	1585	1781	5106	1585	3456	1719	128	3456	3559	75
Grp Volume(v), veh/h	43	799	0	80	1172	0	354	0	72	176	71	74
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1702	1585	1728	0	1847	1728	1777	1857
Q Serve(g_s), s	0.8	19.5	0.0	2.8	19.5	0.0	8.9	0.0	3.5	4.1	3.5	3.5
Cycle Q Clear(g_c), s	0.8	19.5	0.0	2.8	19.5	0.0	8.9	0.0	3.5	4.1	3.5	3.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		0.04
Lane Grp Cap(c), veh/h	1145	904		621	1387		456	0	99	496	115	121
V/C Ratio(X)	0.04	0.88		0.13	0.85		0.78	0.00	0.73	0.35	0.61	0.62
Avail Cap(c_a), veh/h	1145	967		621	1492		872	0	651	496	355	371
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	0.00	1.00	1.00	0.00	0.96	0.00	0.96	0.92	0.92	0.92
Uniform Delay (d), s/veh	20.4	32.3	0.0	20.0	31.0	0.0	37.8	0.0	42.0	34.8	41.0	41.0
Incr Delay (d2), s/veh	0.0	12.3	0.0	0.1	6.5	0.0	2.8	0.0	9.5	0.4	4.8	4.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	9.3	0.0	1.1	8.3	0.0	3.8	0.0	1.8	1.7	1.6	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.4	44.5	0.0	20.1	37.5	0.0	40.5	0.0	51.4	35.2	45.7	45.6
LnGrp LOS	C	D		C	D		D	A	D	D	D	D
Approach Vol, veh/h		842			1252			426			321	
Approach Delay, s/veh		43.3			36.4			42.4			39.9	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	35.9	27.4	16.4	10.3	34.3	28.9	17.4	9.3
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	6.8	24.5	22.7	18.0	5.0	26.3	9.0	31.7
Max Q Clear Time (g_c+I1), s	4.8	21.5	10.9	5.5	2.8	21.5	6.1	5.5
Green Ext Time (p_c), s	0.0	1.4	1.0	0.5	0.0	2.9	0.1	0.3

Intersection Summary	
HCM 6th Ctrl Delay	39.7
HCM 6th LOS	D

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	406	50	167	383	50	387
Future Volume (veh/h)	406	50	167	383	50	387
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	480	0	182	355	54	421
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	590	263	1235	1309	69	1392
Arrive On Green	0.17	0.00	0.66	0.66	0.04	0.74
Sat Flow, veh/h	3563	1585	1870	1585	1781	1870
Grp Volume(v), veh/h	480	0	182	355	54	421
Grp Sat Flow(s),veh/h/ln	1781	1585	1870	1585	1781	1870
Q Serve(g_s), s	13.0	0.0	3.7	5.0	3.0	7.4
Cycle Q Clear(g_c), s	13.0	0.0	3.7	5.0	3.0	7.4
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	590	263	1235	1309	69	1392
V/C Ratio(X)	0.81	0.00	0.15	0.27	0.78	0.30
Avail Cap(c_a), veh/h	1122	499	1235	1309	89	1392
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.00	1.00	1.00	0.99	0.99
Uniform Delay (d), s/veh	40.2	0.0	6.4	1.9	47.6	4.2
Incr Delay (d2), s/veh	2.5	0.0	0.3	0.5	27.3	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	0.0	1.3	3.0	1.8	2.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	42.7	0.0	6.6	2.5	75.0	4.8
LnGrp LOS	D	A	A	A	E	A
Approach Vol, veh/h	480		537			475
Approach Delay, s/veh	42.7		3.9			12.8
Approach LOS	D		A			B

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	8.4	70.5			78.9	21.1
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	5.9	49.5			49.5	31.5
Max Q Clear Time (g_c+I1), s	5.0	7.0			9.4	15.0
Green Ext Time (p_c), s	0.0	2.3			2.6	1.6

Intersection Summary	
HCM 6th Ctrl Delay	19.2
HCM 6th LOS	B

Notes

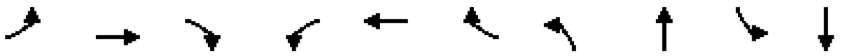
User approved volume balancing among the lanes for turning movement.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	205	30	27	16	27	241	51	8	618
v/c Ratio	0.44	0.04	0.10	0.05	0.11	0.19	0.10	0.02	0.43
Control Delay (s/veh)	21.4	5.3	17.2	12.0	18.9	14.0	0.4	14.9	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	21.4	5.3	17.2	12.0	18.9	14.0	0.4	14.9	8.2
Queue Length 50th (ft)	21	0	5	1	5	14	0	1	20
Queue Length 95th (ft)	#60	14	25	15	26	41	0	11	56
Internal Link Dist (ft)		206		308		483			447
Turn Bay Length (ft)					200		100	260	
Base Capacity (vph)	462	1113	605	742	252	2128	761	433	2617
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.03	0.04	0.02	0.11	0.11	0.07	0.02	0.24

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	43	799	273	80	1172	209	354	115	176	219
v/c Ratio	0.22	0.47	0.30	0.62	0.44	0.23	0.64	0.53	0.28	0.53
Control Delay (s/veh)	43.5	18.3	3.4	61.6	15.8	3.2	40.5	32.4	33.5	29.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	43.5	18.3	3.4	61.6	15.8	3.2	40.5	32.4	33.5	29.0
Queue Length 50th (ft)	12	160	0	45	159	0	97	39	45	40
Queue Length 95th (ft)	29	247	48	#107	229	41	135	86	73	73
Internal Link Dist (ft)		785			293			483		483
Turn Bay Length (ft)				200			200		220	
Base Capacity (vph)	193	1718	909	133	2654	926	865	643	626	732
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.47	0.30	0.60	0.44	0.23	0.41	0.18	0.28	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	WBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	495	182	416	54	421
v/c Ratio	0.70	0.17	0.30	0.35	0.32
Control Delay (s/veh)	40.7	11.8	1.4	48.2	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	40.7	11.8	1.4	48.2	7.0
Queue Length 50th (ft)	147	51	14	33	88
Queue Length 95th (ft)	187	105	36	69	162
Internal Link Dist (ft)	483	662			1291
Turn Bay Length (ft)					
Base Capacity (vph)	1086	1106	1489	154	1311
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.46	0.16	0.28	0.35	0.32

Intersection Summary

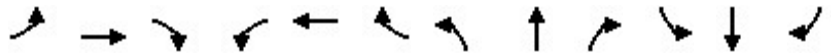
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	598	26	130	183	21	42	95	416	177	62	412	410
Future Volume (veh/h)	598	26	130	183	21	42	95	416	177	62	412	410
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	650	28	70	199	23	11	103	452	0	67	448	289
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	762	224	559	346	224	107	134	762		320	863	402
Arrive On Green	0.22	0.47	0.47	0.19	0.19	0.19	0.08	0.15	0.00	0.18	0.25	0.25
Sat Flow, veh/h	3456	474	1184	1297	1196	572	1781	5106	1585	1781	3404	1585
Grp Volume(v), veh/h	650	0	98	199	0	34	103	452	0	67	448	289
Grp Sat Flow(s),veh/h/ln	1728	0	1657	1297	0	1767	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	12.6	0.0	2.3	10.3	0.0	1.1	4.0	5.8	0.0	2.2	7.9	11.6
Cycle Q Clear(g_c), s	12.6	0.0	2.3	10.3	0.0	1.1	4.0	5.8	0.0	2.2	7.9	11.6
Prop In Lane	1.00		0.71	1.00		0.32	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	762	0	783	346	0	331	134	762		320	863	402
V/C Ratio(X)	0.85	0.00	0.13	0.58	0.00	0.10	0.77	0.59		0.21	0.52	0.72
Avail Cap(c_a), veh/h	864	0	1388	782	0	925	374	1788		458	1353	630
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.2	0.0	10.4	27.3	0.0	23.6	31.7	27.8	0.0	24.5	22.4	23.8
Incr Delay (d2), s/veh	7.5	0.0	0.1	1.5	0.0	0.1	8.8	0.7	0.0	0.3	0.5	2.4
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	5.7	0.0	0.8	3.2	0.0	0.5	1.9	2.3	0.0	0.9	3.0	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.7	0.0	10.4	28.8	0.0	23.7	40.5	28.5	0.0	24.8	22.9	26.3
LnGrp LOS	C	A	B	C	A	C	D	C		C	C	C
Approach Vol, veh/h		748			233			555			804	
Approach Delay, s/veh		30.6			28.1			30.7			24.3	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	37.5	9.8	22.6	19.9	17.6	17.1	15.3
Change Period (Y+Rc), s	4.5	4.5	4.9	4.5	4.5	4.5	4.9
Max Green Setting (Gmax), s	58.6	14.7	27.8	17.5	36.6	18.0	24.5
Max Q Clear Time (g_c+I1), s	4.3	6.0	13.6	14.6	12.3	4.2	7.8
Green Ext Time (p_c), s	0.6	0.1	4.1	0.8	0.8	0.1	2.7

Intersection Summary	
HCM 6th Ctrl Delay	28.2
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	139	1162	392	62	766	359	434	190	109	394	321	11
Future Volume (veh/h)	139	1162	392	62	766	359	434	190	109	394	321	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	151	1263	0	67	833	0	472	207	101	428	349	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	224	1469		86	2082		537	241	118	496	675	19
Arrive On Green	0.06	0.41	0.00	0.05	0.41	0.00	0.16	0.20	0.20	0.14	0.19	0.19
Sat Flow, veh/h	3456	3554	1585	1781	5106	1585	3456	1187	579	3456	3528	101
Grp Volume(v), veh/h	151	1263	0	67	833	0	472	0	308	428	175	184
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1702	1585	1728	0	1766	1728	1777	1852
Q Serve(g_s), s	4.6	35.1	0.0	4.0	12.5	0.0	14.5	0.0	18.3	13.1	9.6	9.7
Cycle Q Clear(g_c), s	4.6	35.1	0.0	4.0	12.5	0.0	14.5	0.0	18.3	13.1	9.6	9.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.33	1.00		0.05
Lane Grp Cap(c), veh/h	224	1469		86	2082		537	0	359	496	340	354
V/C Ratio(X)	0.67	0.86		0.78	0.40		0.88	0.00	0.86	0.86	0.52	0.52
Avail Cap(c_a), veh/h	1201	1746		103	2082		583	0	703	561	696	726
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	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.6	29.0	0.0	51.0	22.7	0.0	44.8	0.0	41.7	45.4	39.4	39.4
Incr Delay (d2), s/veh	3.5	4.0	0.0	26.2	0.1	0.0	13.7	0.0	6.0	12.1	1.2	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	2.1	14.7	0.0	2.4	4.8	0.0	7.1	0.0	8.4	6.4	4.3	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.1	33.0	0.0	77.2	22.9	0.0	58.5	0.0	47.7	57.5	40.6	40.5
LnGrp LOS	D	C		E	C		E	A	D	E	D	D
Approach Vol, veh/h		1414			900			780			787	
Approach Delay, s/veh		35.1			26.9			54.2			49.8	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.9	50.5	21.4	25.7	11.5	49.9	20.1	27.0
Change Period (Y+Rc), s	5.7	* 5.7	4.5	4.9	4.5	5.7	4.5	4.9
Max Green Setting (Gmax), s	6.3	* 53	18.3	42.5	37.7	21.9	17.6	43.2
Max Q Clear Time (g_c+I1), s	16.0	37.1	16.5	11.7	6.6	14.5	15.1	20.3
Green Ext Time (p_c), s	0.0	7.7	0.4	2.1	0.5	3.0	0.4	1.8

Intersection Summary	
HCM 6th Ctrl Delay	40.0
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	675	100	472	607	125	761
Future Volume (veh/h)	675	100	472	607	125	761
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	827	0	513	658	136	827
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	912	406	1125	1359	69	1262
Arrive On Green	0.26	0.00	0.60	0.60	0.04	0.67
Sat Flow, veh/h	3563	1585	1870	1585	1781	1870
Grp Volume(v), veh/h	827	0	513	658	136	827
Grp Sat Flow(s),veh/h/ln	1781	1585	1870	1585	1781	1870
Q Serve(g_s), s	29.2	0.0	19.6	13.1	5.0	33.5
Cycle Q Clear(g_c), s	29.2	0.0	19.6	13.1	5.0	33.5
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	912	406	1125	1359	69	1262
V/C Ratio(X)	0.91	0.00	0.46	0.48	1.99	0.66
Avail Cap(c_a), veh/h	1055	469	1125	1359	69	1262
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.85	0.00	1.00	1.00	0.81	0.81
Uniform Delay (d), s/veh	46.8	0.0	14.2	2.3	62.5	12.3
Incr Delay (d2), s/veh	8.9	0.0	1.3	1.2	482.7	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.9	0.0	8.2	12.9	11.4	13.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	55.7	0.0	15.5	3.5	545.2	14.5
LnGrp LOS	E	A	B	A	F	B
Approach Vol, veh/h	827		1171			963
Approach Delay, s/veh	55.7		8.8			89.4
Approach LOS	E		A			F

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	9.5	82.7				92.2	37.8
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5
Max Green Setting (Gmax), s	5.0	72.5				72.5	38.5
Max Q Clear Time (g_c+I1), s	7.0	21.6				35.5	31.2
Green Ext Time (p_c), s	0.0	6.8				6.8	2.1

Intersection Summary	
HCM 6th Ctrl Delay	48.1
HCM 6th LOS	D

Notes

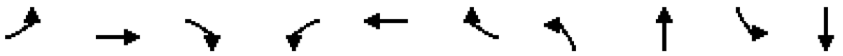
User approved volume balancing among the lanes for turning movement.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	650	169	199	69	103	452	192	67	894
v/c Ratio	0.88	0.19	0.70	0.16	0.47	0.48	0.43	0.20	0.69
Control Delay (s/veh)	52.4	4.5	46.4	14.3	47.8	36.1	9.0	34.8	26.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	52.4	4.5	46.4	14.3	47.8	36.1	9.0	34.8	26.8
Queue Length 50th (ft)	185	8	102	10	54	85	0	31	127
Queue Length 95th (ft)	#403	46	199	46	123	141	61	81	210
Internal Link Dist (ft)		206		308		483			447
Turn Bay Length (ft)					200		100	260	
Base Capacity (vph)	735	1193	542	775	318	1524	608	412	1736
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.14	0.37	0.09	0.32	0.30	0.32	0.16	0.51

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	151	1263	426	67	833	390	472	325	428	361
v/c Ratio	0.49	0.86	0.51	0.72	0.43	0.46	0.90	0.81	0.85	0.48
Control Delay (s/veh)	59.4	39.5	10.6	97.8	29.6	4.8	72.1	58.0	67.5	43.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	59.4	39.5	10.6	97.8	29.6	4.8	72.1	58.0	67.5	43.5
Queue Length 50th (ft)	60	459	65	54	173	0	193	234	174	133
Queue Length 95th (ft)	100	#638	178	#147	252	71	#331	341	#296	181
Internal Link Dist (ft)		785			293			483		483
Turn Bay Length (ft)				200			200		220	
Base Capacity (vph)	1084	1580	869	93	1929	842	526	651	506	1255
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.80	0.49	0.72	0.43	0.46	0.90	0.50	0.85	0.29

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



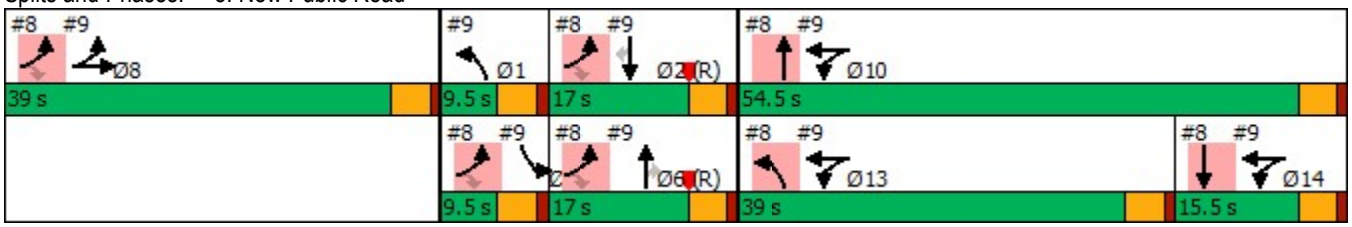
Lane Group	WBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	843	513	660	136	827
v/c Ratio	0.87	0.64	0.56	0.42	0.69
Control Delay (s/veh)	53.9	32.7	8.5	54.0	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	53.9	32.7	8.5	54.0	18.6
Queue Length 50th (ft)	335	330	187	105	429
Queue Length 95th (ft)	417	424	218	179	581
Internal Link Dist (ft)	483	662			1291
Turn Bay Length (ft)					
Base Capacity (vph)	1018	1042	1210	321	1206
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.83	0.49	0.55	0.42	0.69

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø1	Ø2	Ø5	Ø6	Ø8
Lane Configurations											
Traffic Volume (vph)	40	298	165	100	100	100					
Future Volume (vph)	40	298	165	100	100	100					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900					
Right Turn on Red		Yes				Yes					
Link Speed (mph)	30			30	30						
Link Distance (ft)	152			899	1223						
Travel Time (s)	3.5			20.4	27.8						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92					
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%					
Shared Lane Traffic (%)											
Turn Type	Prot	Perm	Prot	NA	NA						
Protected Phases	2 5 6 8		13	10	14		1	2	5	6	8
Permitted Phases		2 5 6 8									
Detector Phase			13	10	14						
Switch Phase											
Minimum Initial (s)			5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0
Minimum Split (s)			39.0	39.0	15.5		9.5	12.5	9.5	12.5	39.0
Total Split (s)			39.0	54.5	15.5		9.5	17.0	9.5	17.0	39.0
Total Split (%)			32.5%	45.4%	12.9%		8%	14%	8%	14%	33%
Maximum Green (s)			34.5	50.0	11.0		5.0	12.5	5.0	12.5	34.5
Yellow Time (s)			3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5
All-Red Time (s)			1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)			0.0	0.0	0.0						
Total Lost Time (s)			4.5	4.5	4.5						
Lead/Lag			Lead		Lag		Lead	Lag	Lead	Lag	
Lead-Lag Optimize?			Yes		Yes		Yes	Yes	Yes	Yes	
Vehicle Extension (s)			3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode			None	None	None		None	C-Min	None	C-Min	None

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:EBL and 6:EBL, Start of Yellow	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	

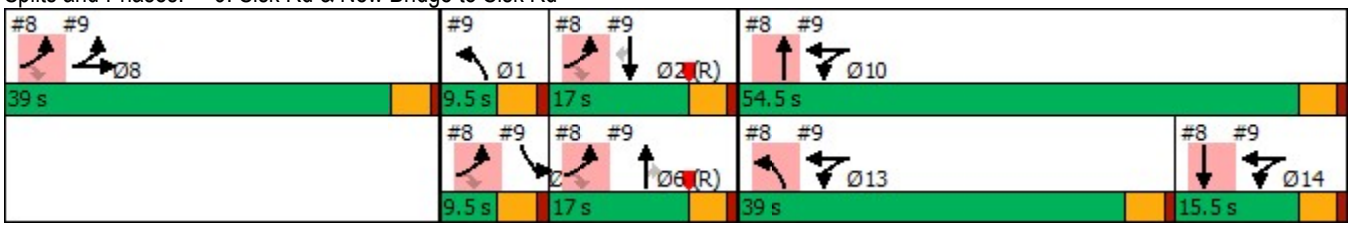
Splits and Phases: 8: New Public Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	298	0	29	230	5	10	287	27	13	215	112
Future Volume (vph)	88	298	0	29	230	5	10	287	27	13	215	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	0		0	250		240	280		300
Storage Lanes	0		0	0		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			30			40			40	
Link Distance (ft)		1298			152			1020			1286	
Travel Time (s)		19.7			3.5			17.4			21.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Turn Type	Split	NA		Split	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	8	8		13 14 10 13 14 10			1	6		5	2	
Permitted Phases									6			2
Detector Phase	8	8					1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	5.0	5.0					5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	39.0	39.0					9.5	12.5	12.5	9.5	12.5	12.5
Total Split (s)	39.0	39.0					9.5	17.0	17.0	9.5	17.0	17.0
Total Split (%)	32.5%	32.5%					7.9%	14.2%	14.2%	7.9%	14.2%	14.2%
Maximum Green (s)	34.5	34.5					5.0	12.5	12.5	5.0	12.5	12.5
Yellow Time (s)	3.5	3.5					3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0					1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5					4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0					3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None					None	C-Min	C-Min	None	C-Min	C-Min

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:EBL and 6:EBL, Start of Yellow	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	

Splits and Phases: 9: Sisk Rd & New Bridge to Sisk Rd



8: New Public Road Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.3	0.2	0.1	0.1	0.1
Total Delay (hr)	0.0	0.0	0.4	0.2	0.2	0.1	0.9
Total Del/Veh (s)	1.6	2.4	43.7	30.9	41.0	19.5	23.0
Stop Delay (hr)	0.0	0.0	0.4	0.2	0.2	0.1	0.8
Stop Del/Veh (s)	0.1	0.3	39.9	27.6	37.6	18.3	20.3
Total Stops	0	1	26	13	13	15	68
Stop/Veh	0.00	0.02	0.76	0.65	0.72	0.79	0.47
Travel Dist (mi)	0.2	1.5	2.2	1.3	3.2	3.6	12.1
Travel Time (hr)	0.0	0.1	0.5	0.2	0.3	0.2	1.4
Avg Speed (mph)	17	12	4	6	10	15	9
Fuel Used (gal)	0.0	0.1	0.2	0.1	0.1	0.1	0.6
Fuel Eff. (mpg)	18.3	24.8	12.3	15.8	22.2	28.6	19.9
HC Emissions (g)	0	1	1	0	1	1	4
CO Emissions (g)	4	16	39	18	28	29	134
NOx Emissions (g)	0	2	3	1	2	3	13
Vehicles Entered	7	49	29	17	15	16	133
Vehicles Exited	7	49	28	17	16	17	134
Hourly Exit Rate	42	294	168	102	96	102	804
Input Volume	40	298	165	100	100	100	803
% of Volume	105	99	102	102	96	102	100
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0
Density (ft/veh)							536
Occupancy (veh)	0	1	3	1	2	1	8

9: Sisk Rd & New Bridge to Sisk Rd Performance by movement

Movement	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.1	3.5	0.3	3.5	0.4
Total Delay (hr)	0.2	0.8	0.0	0.1	0.0	0.0	0.4	0.0	0.0	0.2	0.0	1.8
Total Del/Veh (s)	34.2	49.2	8.3	9.7	14.1	79.0	32.3	11.6	62.9	21.3	4.3	28.3
Stop Delay (hr)	0.1	0.6	0.0	0.1	0.0	0.0	0.3	0.0	0.0	0.2	0.0	1.5
Stop Del/Veh (s)	31.7	39.4	8.2	9.5	14.3	74.2	25.5	7.9	61.4	17.0	2.7	23.4
Total Stops	10	46	1	5	0	2	32	3	2	19	10	130
Stop/Veh	0.62	0.81	0.25	0.12	0.00	1.00	0.65	0.60	1.00	0.49	0.59	0.56
Travel Dist (mi)	3.1	11.5	0.1	0.8	0.0	0.4	9.6	0.9	0.4	8.8	3.9	39.7
Travel Time (hr)	0.2	1.0	0.0	0.2	0.0	0.1	0.7	0.0	0.1	0.5	0.2	2.9
Avg Speed (mph)	13	11	6	5	4	7	14	20	9	19	28	14
Fuel Used (gal)	0.1	0.5	0.0	0.1	0.0	0.0	0.5	0.0	0.0	0.3	0.1	1.8
Fuel Eff. (mpg)	23.3	22.5	12.1	9.5	11.0	14.7	18.8	21.5	22.7	29.8	31.5	22.5
HC Emissions (g)	1	6	0	1	0	0	6	1	0	3	2	20
CO Emissions (g)	67	261	1	24	0	11	299	43	4	108	78	896
NOx Emissions (g)	5	17	0	3	0	1	21	4	0	11	6	67
Vehicles Entered	13	49	4	41	1	2	48	5	2	37	17	219
Vehicles Exited	15	50	4	41	1	2	48	5	2	38	16	222
Hourly Exit Rate	90	300	24	246	6	12	288	30	12	228	96	1332
Input Volume	88	298	29	232	5	10	288	27	13	215	112	1317
% of Volume	102	101	83	106	120	120	100	111	92	106	86	101
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0
Density (ft/veh)												655
Occupancy (veh)	1	6	0	1	0	0	4	0	0	3	1	17

Intersection: 8: New Public Road

Movement	EB	NB	NB	SB	SB
Directions Served	R	L	T	T	TR
Maximum Queue (ft)	30	180	123	97	125
Average Queue (ft)	8	142	79	67	74
95th Queue (ft)	34	207	141	108	154
Link Distance (ft)	42			1173	1173
Upstream Blk Time (%)	0				
Queuing Penalty (veh)	1				
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

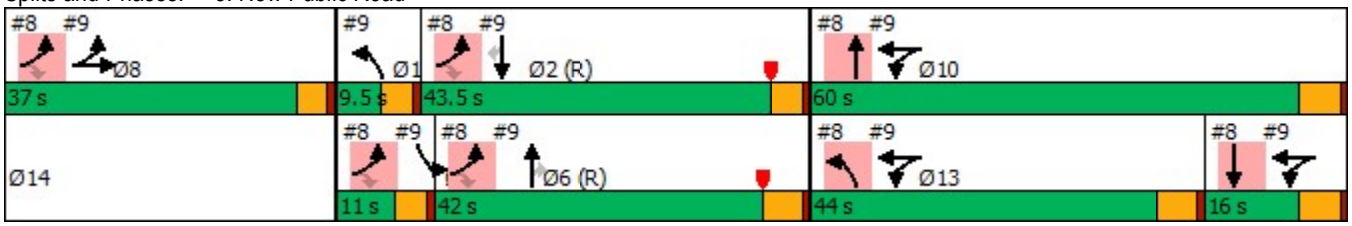
Intersection: 9: Sisk Rd & New Bridge to Sisk Rd

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	LT	TR	L	T	T	R	L	T	T	R
Maximum Queue (ft)	86	276	25	49	25	117	129	40	21	64	107	44
Average Queue (ft)	48	189	6	38	8	59	77	16	8	19	69	29
95th Queue (ft)	94	320	29	63	32	129	146	46	28	70	123	54
Link Distance (ft)	1222	1222	42	42		916	916			1220	1220	
Upstream Blk Time (%)			1	24								
Queuing Penalty (veh)			2	33								
Storage Bay Dist (ft)					250			240	280			300
Storage Blk Time (%)												
Queuing Penalty (veh)												

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø1	Ø2	Ø5	Ø6	Ø8
Lane Configurations											
Traffic Volume (vph)	357	314	478	200	200	200					
Future Volume (vph)	357	314	478	200	200	200					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900					
Right Turn on Red		Yes				Yes					
Link Speed (mph)	30			30	30						
Link Distance (ft)	152			899	1223						
Travel Time (s)	3.5			20.4	27.8						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92					
Shared Lane Traffic (%)											
Turn Type	Prot	Perm	Prot	NA	NA						
Protected Phases	2 5 6 8		13	10	14		1	2	5	6	8
Permitted Phases		2 5 6 8									
Detector Phase			13	10	14						
Switch Phase											
Minimum Initial (s)			5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0
Minimum Split (s)			39.0	39.0	15.5		9.5	12.5	9.5	39.0	12.5
Total Split (s)			44.0	60.0	16.0		9.5	43.5	11.0	42.0	37.0
Total Split (%)			29.3%	40.0%	10.7%		6%	29%	7%	28%	25%
Maximum Green (s)			38.5	54.5	10.5		5.0	39.0	6.5	36.5	32.5
Yellow Time (s)			4.5	4.5	4.5		3.5	3.5	3.5	4.5	3.5
All-Red Time (s)			1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)			0.0	0.0	0.0						
Total Lost Time (s)			5.5	5.5	5.5						
Lead/Lag			Lead		Lag		Lead	Lag	Lead	Lag	
Lead-Lag Optimize?			Yes		Yes		Yes	Yes	Yes	Yes	
Vehicle Extension (s)			4.0	4.0	4.0		3.0	3.5	3.0	4.0	3.5
Recall Mode			None	None	None		None	C-Min	None	C-Min	None

Intersection Summary	
Area Type:	Other
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 0 (0%), Referenced to phase 2:EBL and 6:EBL, Start of Yellow	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	

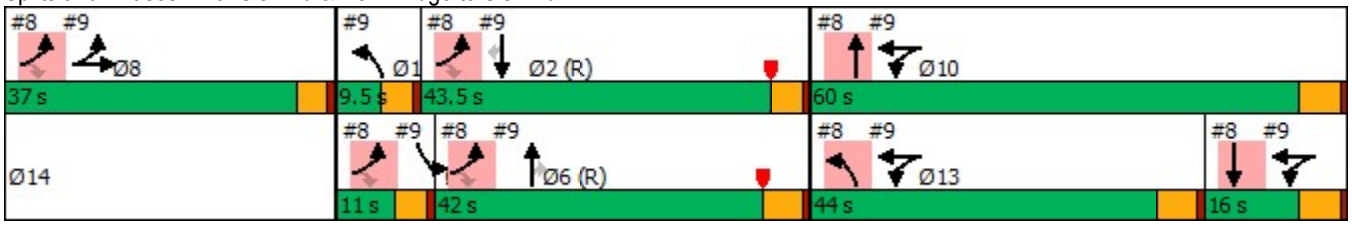
Splits and Phases: 8: New Public Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	447	314	0	278	346	54	10	542	272	85	429	296
Future Volume (vph)	447	314	0	278	346	54	10	542	272	85	429	296
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	0		0	250		240	280		300
Storage Lanes	0		0	0		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			30			40			40	
Link Distance (ft)		1298			152			1020			1286	
Travel Time (s)		19.7			3.5			17.4			21.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Turn Type	Split	NA		Split	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	8	8		13 14 10	13 14 10		1	6		5	2	
Permitted Phases									6			2
Detector Phase	8	8					1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	5.0	5.0					5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	12.5	12.5					9.5	39.0	39.0	9.5	12.5	12.5
Total Split (s)	37.0	37.0					9.5	42.0	42.0	11.0	43.5	43.5
Total Split (%)	24.7%	24.7%					6.3%	28.0%	28.0%	7.3%	29.0%	29.0%
Maximum Green (s)	32.5	32.5					5.0	36.5	36.5	6.5	39.0	39.0
Yellow Time (s)	3.5	3.5					3.5	4.5	4.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0					1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5					4.5	5.5	5.5	4.5	4.5	4.5
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.5	3.5					3.0	4.0	4.0	3.0	3.5	3.5
Recall Mode	None	None					None	C-Min	C-Min	None	C-Min	C-Min

Intersection Summary	
Area Type:	Other
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 0 (0%), Referenced to phase 2:EBL and 6:EBL, Start of Yellow	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	

Splits and Phases: 9: Sisk Rd & New Bridge to Sisk Rd



8: New Public Road Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.6	0.2	0.0	0.0	0.9
Denied Del/Veh (s)	0.0	0.0	27.7	24.5	0.1	0.2	10.6
Total Delay (hr)	0.1	0.0	2.2	0.4	1.6	1.6	5.8
Total Del/Veh (s)	3.7	1.5	95.3	40.1	134.8	141.0	67.3
Stop Delay (hr)	0.1	0.0	2.0	0.3	1.5	1.5	5.4
Stop Del/Veh (s)	3.0	0.8	87.2	36.7	129.8	138.4	63.5
Total Stops	3	5	73	18	41	33	173
Stop/Veh	0.05	0.10	0.88	0.56	0.98	0.82	0.56
Travel Dist (mi)	1.5	1.2	5.3	2.2	7.1	6.8	24.2
Travel Time (hr)	0.2	0.1	3.0	0.6	1.8	1.8	7.6
Avg Speed (mph)	10	12	2	5	4	4	4
Fuel Used (gal)	0.1	0.1	0.8	0.2	0.6	0.6	2.3
Fuel Eff. (mpg)	16.2	22.5	6.4	10.7	12.3	12.3	10.4
HC Emissions (g)	1	0	3	1	3	4	12
CO Emissions (g)	22	11	87	40	92	112	366
NOx Emissions (g)	3	2	7	4	7	9	32
Vehicles Entered	60	51	72	28	34	33	278
Vehicles Exited	60	51	65	27	26	24	253
Hourly Exit Rate	360	306	390	162	156	144	1518
Input Volume	357	314	478	200	200	200	1749
% of Volume	101	97	82	81	78	72	87
Denied Entry Before	0	0	1	0	0	0	1
Denied Entry After	0	0	11	4	0	0	15
Density (ft/veh)							112
Occupancy (veh)	1	1	14	3	11	11	40

9: Sisk Rd & New Bridge to Sisk Rd Performance by movement

Movement	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.5	3.0	0.6
Total Delay (hr)	2.0	0.9	0.1	0.2	0.0	0.0	1.3	0.4	0.7	1.0	0.1	6.7
Total Del/Veh (s)	76.9	49.4	12.5	12.0	1.8	74.2	55.4	29.8	139.5	45.7	9.2	45.5
Stop Delay (hr)	1.7	0.7	0.1	0.2	0.0	0.0	1.1	0.3	0.7	0.8	0.1	5.6
Stop Del/Veh (s)	65.3	39.9	12.2	11.7	1.7	69.0	44.1	21.4	135.8	38.0	5.8	38.1
Total Stops	82	41	4	4	0	1	67	37	16	55	32	339
Stop/Veh	0.89	0.66	0.11	0.08	0.00	0.50	0.77	0.82	0.89	0.71	0.65	0.64
Travel Dist (mi)	17.3	12.1	0.8	1.0	0.1	0.3	17.0	8.8	3.4	17.2	10.7	88.7
Travel Time (hr)	2.4	1.1	0.2	0.2	0.0	0.0	1.8	0.7	0.8	1.4	0.5	9.2
Avg Speed (mph)	7	11	4	4	10	5	9	13	4	12	24	10
Fuel Used (gal)	0.9	0.5	0.1	0.1	0.0	0.0	1.0	0.4	0.3	0.7	0.3	4.5
Fuel Eff. (mpg)	18.7	22.1	11.0	10.1	21.7	14.0	17.0	20.3	12.7	23.3	31.6	19.9
HC Emissions (g)	6	6	1	1	0	0	11	5	1	8	4	41
CO Emissions (g)	301	267	14	24	1	6	459	209	64	312	175	1831
NOx Emissions (g)	17	18	2	3	0	0	37	17	4	26	12	137
Vehicles Entered	75	51	36	47	6	1	85	44	15	74	46	480
Vehicles Exited	75	54	36	47	7	2	86	44	13	76	47	487
Hourly Exit Rate	450	324	216	282	42	12	516	264	78	456	282	2922
Input Volume	447	314	278	346	54	10	543	272	85	429	296	3074
% of Volume	101	103	78	82	78	120	95	97	92	106	95	95
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0
Density (ft/veh)												208
Occupancy (veh)	15	7	1	1	0	0	11	4	5	9	3	55

Intersection: 8: New Public Road

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	TR
Maximum Queue (ft)	51	38	433	306	345	420
Average Queue (ft)	30	19	411	166	270	331
95th Queue (ft)	66	47	474	374	442	520
Link Distance (ft)	42	42			1173	1173
Upstream Blk Time (%)	13	1				
Queuing Penalty (veh)	43	3				
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 9: Sisk Rd & New Bridge to Sisk Rd

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	LT	TR	L	T	T	R	L	T	T	R
Maximum Queue (ft)	563	334	50	51	44	247	253	228	154	206	261	99
Average Queue (ft)	429	222	33	41	10	183	188	138	119	139	192	62
95th Queue (ft)	692	360	63	60	69	274	283	255	206	240	279	108
Link Distance (ft)	1222	1222	42	42		916	916			1220	1220	
Upstream Blk Time (%)			28	43								
Queuing Penalty (veh)			96	146								
Storage Bay Dist (ft)					250			240	280			300
Storage Blk Time (%)						3	3	0			0	
Queuing Penalty (veh)						0	8	0			1	

MOVEMENT SUMMARY

Site: M2 [5: Dale Road & Vintage Faire AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Alternative M2
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Dale Road															
3	L2	All MCs	27	3.0	27	3.0	0.143	11.0	LOS B	0.7	17.1	0.36	0.47	0.36	34.5
8	T1	All MCs	250	3.0	250	3.0	0.143	4.5	LOS A	0.7	17.2	0.36	0.46	0.36	35.5
18	R2	All MCs	51	3.0	51	3.0	0.143	4.6	LOS A	0.7	17.2	0.36	0.44	0.36	35.4
Approach			328	3.0	328	3.0	0.143	5.0	LOS A	0.7	17.2	0.36	0.45	0.36	35.4
East: Vintage Faire															
1	L2	All MCs	27	3.0	27	3.0	0.026	11.6	LOS B	0.1	2.6	0.43	0.67	0.43	32.1
6	T1	All MCs	5	3.0	5	3.0	0.019	5.4	LOS A	0.1	1.8	0.45	0.53	0.45	35.5
16	R2	All MCs	11	3.0	11	3.0	0.019	5.6	LOS A	0.1	1.8	0.45	0.53	0.45	35.2
Approach			43	3.0	43	3.0	0.026	9.3	LOS A	0.1	2.6	0.44	0.62	0.44	33.2
North: Dale Road															
7	L2	All MCs	8	3.0	8	3.0	0.241	10.4	LOS B	1.2	30.1	0.19	0.35	0.19	35.5
4	T1	All MCs	341	3.0	341	3.0	0.241	3.9	LOS A	1.2	30.2	0.19	0.36	0.19	36.3
14	R2	All MCs	277	3.0	277	3.0	0.241	4.0	LOS A	1.2	30.2	0.19	0.41	0.19	36.0
Approach			626	3.0	626	3.0	0.241	4.0	LOS A	1.2	30.2	0.19	0.38	0.19	36.1
West: Vintage Faire															
5	L2	All MCs	205	3.0	205	3.0	0.190	11.6	LOS B	0.8	21.6	0.44	0.67	0.44	32.1
2	T1	All MCs	3	3.0	3	3.0	0.046	6.1	LOS A	0.2	4.5	0.46	0.58	0.46	35.5
12	R2	All MCs	27	3.0	27	3.0	0.046	6.2	LOS A	0.2	4.5	0.46	0.58	0.46	35.1
Approach			236	3.0	236	3.0	0.190	10.9	LOS B	0.8	21.6	0.44	0.66	0.44	32.4
All Vehicles			1234	3.0	1234	3.0	0.241	5.8	LOS A	1.2	30.2	0.29	0.46	0.29	35.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: M2 [6: Dale Rd & Standiford Ave AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Alternative M2
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Dale Road															
3	L2	All MCs	16	3.0	16	3.0	0.084	13.7	LOS B	0.3	8.9	0.64	0.71	0.64	33.3
8	T1	All MCs	66	3.0	66	3.0	0.084	6.4	LOS A	0.4	9.4	0.64	0.68	0.64	34.4
18	R2	All MCs	37	3.0	37	3.0	0.084	6.3	LOS A	0.4	9.4	0.63	0.64	0.63	34.7
Approach			120	3.0	120	3.0	0.084	7.4	LOS A	0.4	9.4	0.64	0.67	0.64	34.4
East: Beckwith-Standiford Road															
1	L2	All MCs	73	3.0	73	3.0	0.610	11.3	LOS B	4.8	123.2	0.48	0.44	0.48	34.4
6	T1	All MCs	1228	3.0	1228	3.0	0.610	4.3	LOS A	4.8	123.7	0.47	0.43	0.47	35.4
16	R2	All MCs	209	3.0	209	3.0	0.610	4.6	LOS A	4.8	123.7	0.47	0.43	0.47	35.2
Approach			1510	3.0	1510	3.0	0.610	4.7	LOS A	4.8	123.7	0.47	0.43	0.47	35.3
North: Dale Road															
7	L2	All MCs	176	3.0	176	3.0	0.345	16.0	LOS B	1.6	41.7	0.76	0.91	0.83	30.8
4	T1	All MCs	142	3.0	142	3.0	0.345	7.7	LOS A	1.8	45.0	0.76	0.78	0.80	34.3
14	R2	All MCs	104	3.0	104	3.0	0.345	7.9	LOS A	1.8	45.0	0.76	0.77	0.80	34.2
Approach			423	3.0	423	3.0	0.345	11.2	LOS B	1.8	45.0	0.76	0.83	0.81	32.7
West: Beckwith-Standiford Road															
5	L2	All MCs	53	3.0	53	3.0	0.433	12.2	LOS B	2.4	61.5	0.58	0.53	0.58	34.0
2	T1	All MCs	799	3.0	799	3.0	0.433	5.1	LOS A	2.5	62.9	0.58	0.51	0.58	34.9
12	R2	All MCs	27	3.0	27	3.0	0.433	5.3	LOS A	2.5	62.9	0.57	0.48	0.57	34.7
Approach			879	3.0	879	3.0	0.433	5.5	LOS A	2.5	62.9	0.58	0.51	0.58	34.9
All Vehicles			2932	3.0	2932	3.0	0.610	6.0	LOS A	4.8	123.7	0.55	0.52	0.56	34.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: M2 [7: Sisk Road & Dale Road Extension AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Alternative M2
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Sisk Road / Dale Road															
3a	L1	All MCs	504	3.0	504	3.0	0.223	8.9	LOS A	1.1	28.8	0.12	0.56	0.12	33.6
18a	R1	All MCs	93	3.0	93	3.0	0.223	3.3	LOS A	1.1	28.8	0.12	0.53	0.12	34.9
Approach			598	3.0	598	3.0	0.223	8.0	LOS A	1.1	28.8	0.12	0.56	0.12	33.8
NorthEast: Dale Road															
1ax	L1	All MCs	215	3.0	215	3.0	0.122	10.5	LOS B	0.5	12.0	0.45	0.68	0.45	32.8
16x	R2	All MCs	27	3.0	27	3.0	0.122	5.3	LOS A	0.5	12.0	0.44	0.67	0.44	33.5
Approach			242	3.0	242	3.0	0.122	9.9	LOS A	0.5	12.0	0.45	0.68	0.45	32.8
NorthWest: Sisk Road															
7x	L2	All MCs	27	3.0	27	3.0	0.170	10.9	LOS B	0.8	19.6	0.35	0.47	0.35	34.9
14ax	R1	All MCs	485	3.0	485	3.0	0.170	3.5	LOS A	0.8	19.6	0.13	0.39	0.13	36.7
Approach			512	3.0	512	3.0	0.170	3.9	LOS A	0.8	19.6	0.14	0.39	0.14	36.6
All Vehicles			1352	3.0	1352	3.0	0.223	6.8	LOS A	1.1	28.8	0.19	0.52	0.19	34.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: M2 [8: SR-99 Ramps & New Public Road AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Alternative M2
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: New Public Road															
3	L2	All MCs	179	3.0	179	3.0	0.143	9.8	LOS A	0.6	16.5	0.15	0.62	0.15	32.7
8	T1	All MCs	109	3.0	109	3.0	0.096	4.7	LOS A	0.4	10.5	0.15	0.40	0.15	35.7
Approach			288	3.0	288	3.0	0.143	7.9	LOS A	0.6	16.5	0.15	0.54	0.15	33.7
North: New Public Road															
4	T1	All MCs	109	3.0	109	3.0	0.101	5.3	LOS A	0.4	11.4	0.31	0.46	0.31	35.2
14	R2	All MCs	109	3.0	109	3.0	0.106	5.3	LOS A	0.4	11.5	0.32	0.52	0.32	35.1
Approach			217	3.0	217	3.0	0.106	5.3	LOS A	0.4	11.5	0.32	0.49	0.32	35.1
West: SR-99 Ramps															
5	L2	All MCs	43	3.0	43	3.0	0.154	10.1	LOS B	0.7	18.3	0.26	0.53	0.26	34.3
12	R2	All MCs	324	3.0	324	3.0	0.154	4.9	LOS A	0.7	18.3	0.26	0.50	0.26	34.9
Approach			367	3.0	367	3.0	0.154	5.5	LOS A	0.7	18.3	0.26	0.51	0.26	34.9
All Vehicles			873	3.0	873	3.0	0.154	6.2	LOS A	0.7	18.3	0.24	0.51	0.24	34.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: M2 [9: Sisk Rd & New Bridge to Sisk Rd AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Alternative M2
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Sisk Road															
3	L2	All MCs	11	3.0	11	3.0	0.173	11.8	LOS B	0.7	18.3	0.47	0.49	0.47	34.5
8	T1	All MCs	312	3.0	312	3.0	0.173	4.8	LOS A	0.7	18.6	0.46	0.47	0.46	35.4
18	R2	All MCs	29	3.0	29	3.0	0.173	5.0	LOS A	0.7	18.6	0.45	0.46	0.45	35.2
Approach			352	3.0	352	3.0	0.173	5.0	LOS A	0.7	18.6	0.46	0.47	0.46	35.4
East: SR-99 Ramp															
1	L2	All MCs	32	3.0	32	3.0	0.139	11.8	LOS B	0.6	14.8	0.45	0.53	0.45	34.2
6	T1	All MCs	250	3.0	250	3.0	0.139	4.7	LOS A	0.6	15.0	0.45	0.48	0.45	35.3
16	R2	All MCs	5	3.0	5	3.0	0.139	4.9	LOS A	0.6	15.0	0.44	0.44	0.44	35.2
Approach			287	3.0	287	3.0	0.139	5.5	LOS A	0.6	15.0	0.45	0.49	0.45	35.2
North: Sisk Road															
7	L2	All MCs	14	3.0	14	3.0	0.167	11.4	LOS B	0.7	18.4	0.40	0.45	0.40	34.7
4	T1	All MCs	234	3.0	234	3.0	0.167	4.4	LOS A	0.7	18.6	0.40	0.45	0.40	35.6
14	R2	All MCs	122	3.0	122	3.0	0.167	4.6	LOS A	0.7	18.6	0.39	0.47	0.39	35.5
Approach			370	3.0	370	3.0	0.167	4.7	LOS A	0.7	18.6	0.40	0.46	0.40	35.6
West: SR-99 Ramp															
5	L2	All MCs	96	3.0	96	3.0	0.188	11.4	LOS B	0.8	21.5	0.40	0.56	0.40	33.8
2	T1	All MCs	324	3.0	324	3.0	0.188	4.3	LOS A	0.8	21.7	0.39	0.46	0.39	35.3
12	R2	All MCs	1	3.0	1	3.0	0.188	4.6	LOS A	0.8	21.7	0.39	0.41	0.39	35.4
Approach			421	3.0	421	3.0	0.188	5.9	LOS A	0.8	21.7	0.40	0.48	0.40	35.0
All Vehicles			1429	3.0	1429	3.0	0.188	5.3	LOS A	0.8	21.7	0.42	0.47	0.42	35.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: M2 [10: Sisk Rd & Standiford Ave AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Alternative M2
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Sisk Road															
3	L2	All MCs	307	3.0	307	3.0	0.362	13.1	LOS B	1.8	45.0	0.65	0.78	0.67	31.9
8	T1	All MCs	242	3.0	242	3.0	0.362	6.4	LOS A	1.8	45.0	0.66	0.67	0.70	34.8
18	R2	All MCs	49	3.0	49	3.0	0.362	6.9	LOS A	1.7	43.3	0.66	0.66	0.70	34.7
Approach			598	3.0	598	3.0	0.362	9.9	LOS A	1.8	45.0	0.66	0.73	0.68	33.2
East: Beckwith-Standiford Road															
1	L2	All MCs	8	3.0	8	3.0	0.731	16.4	LOS B	6.6	169.5	0.83	0.87	1.11	33.5
6	T1	All MCs	1265	3.0	1265	3.0	0.731	8.4	LOS A	6.9	176.1	0.82	0.85	1.09	34.3
16	R2	All MCs	76	3.0	76	3.0	0.731	8.4	LOS A	6.9	176.1	0.82	0.84	1.07	34.1
Approach			1349	3.0	1349	3.0	0.731	8.5	LOS A	6.9	176.1	0.82	0.85	1.09	34.3
North: Sisk Road															
7	L2	All MCs	22	3.0	22	3.0	0.181	15.4	LOS B	0.9	23.7	0.82	0.80	0.82	33.0
4	T1	All MCs	212	3.0	212	3.0	0.181	7.0	LOS A	1.1	28.9	0.85	0.69	0.85	34.0
14	R2	All MCs	32	3.0	32	3.0	0.019	4.7	LOS A	0.0	0.0	0.00	0.38	0.00	37.2
Approach			265	3.0	265	3.0	0.181	7.4	LOS A	1.1	28.9	0.74	0.66	0.74	34.3
West: Beckwith-Standiford Road															
5	L2	All MCs	34	3.0	34	3.0	0.312	11.3	LOS B	1.7	44.8	0.45	0.40	0.45	34.8
2	T1	All MCs	809	3.0	809	3.0	0.312	3.7	LOS A	1.8	47.1	0.43	0.37	0.43	35.8
12	R2	All MCs	273	3.0	273	3.0	0.181	3.8	LOS A	1.0	24.8	0.37	0.45	0.37	35.9
Approach			1115	3.0	1115	3.0	0.312	3.9	LOS A	1.8	47.1	0.42	0.39	0.42	35.8
All Vehicles			3327	3.0	3327	3.0	0.731	7.1	LOS A	6.9	176.1	0.65	0.66	0.76	34.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: M2 [5: Dale Road & Vintage Faire PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build M2
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Dale Road															
3	L2	All MCs	111	2.0	111	2.0	0.532	16.1	LOS B	4.0	100.7	0.84	0.84	1.00	32.3
8	T1	All MCs	475	2.0	475	2.0	0.532	9.2	LOS A	4.2	105.7	0.84	0.82	0.99	33.4
18	R2	All MCs	178	2.0	178	2.0	0.532	9.0	LOS A	4.2	105.7	0.84	0.80	0.98	33.6
Approach			764	2.0	764	2.0	0.532	10.2	LOS B	4.2	105.7	0.84	0.82	0.99	33.3
East: Vintage Faire															
1	L2	All MCs	199	2.0	199	2.0	0.326	15.6	LOS B	1.9	47.4	0.82	0.84	0.83	30.8
6	T1	All MCs	23	2.0	23	2.0	0.168	10.9	LOS B	0.8	19.9	0.77	0.82	0.77	33.1
16	R2	All MCs	46	2.0	46	2.0	0.168	11.0	LOS B	0.8	19.9	0.77	0.82	0.77	32.8
Approach			267	2.0	267	2.0	0.326	14.4	LOS B	1.9	47.4	0.81	0.84	0.81	31.2
North: Dale Road															
7	L2	All MCs	67	2.0	67	2.0	0.456	12.0	LOS B	2.8	70.4	0.57	0.55	0.57	33.9
4	T1	All MCs	448	2.0	448	2.0	0.456	5.4	LOS A	2.8	71.5	0.57	0.55	0.57	34.6
14	R2	All MCs	446	2.0	446	2.0	0.456	5.4	LOS A	2.8	71.5	0.57	0.57	0.57	35.0
Approach			961	2.0	961	2.0	0.456	5.9	LOS A	2.8	71.5	0.57	0.56	0.57	34.7
West: Vintage Faire															
5	L2	All MCs	650	2.0	650	2.0	0.751	18.6	LOS B	8.1	206.4	0.89	0.99	1.31	29.6
2	T1	All MCs	28	2.0	28	2.0	0.323	9.0	LOS A	1.5	39.0	0.69	0.75	0.69	33.9
12	R2	All MCs	141	2.0	141	2.0	0.323	9.2	LOS A	1.5	39.0	0.69	0.75	0.69	33.6
Approach			820	2.0	820	2.0	0.751	16.7	LOS B	8.1	206.4	0.85	0.94	1.18	30.3
All Vehicles			2812	2.0	2812	2.0	0.751	11.0	LOS B	8.1	206.4	0.75	0.77	0.89	32.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: M2 [6: Dale Rd & Standiford Ave PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build M2
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Dale Road															
3	L2	All MCs	16	2.0	16	2.0	0.384	21.4	LOS C	2.0	51.0	0.89	0.96	1.01	30.7
8	T1	All MCs	116	2.0	116	2.0	0.384	13.9	LOS B	2.3	59.0	0.89	0.95	1.01	31.5
18	R2	All MCs	135	2.0	135	2.0	0.384	11.8	LOS B	2.3	59.0	0.92	0.93	1.03	32.4
Approach			267	2.0	267	2.0	0.384	13.3	LOS B	2.3	59.0	0.91	0.94	1.02	31.9
East: Beckwith-Standiford Road															
1	L2	All MCs	51	2.0	51	2.0	0.645	14.1	LOS B	5.8	146.3	0.75	0.70	0.86	33.5
6	T1	All MCs	867	2.0	867	2.0	0.645	6.9	LOS A	5.9	148.6	0.75	0.69	0.86	34.4
16	R2	All MCs	390	2.0	390	2.0	0.645	6.9	LOS A	5.9	148.6	0.74	0.69	0.84	34.4
Approach			1309	2.0	1309	2.0	0.645	7.2	LOS A	5.9	148.6	0.74	0.69	0.85	34.4
North: Dale Road															
7	L2	All MCs	428	2.0	428	2.0	0.581	15.5	LOS B	4.2	106.4	0.83	0.91	1.03	31.0
4	T1	All MCs	349	2.0	349	2.0	0.581	9.6	LOS A	4.2	106.4	0.83	0.88	1.05	33.8
14	R2	All MCs	39	2.0	39	2.0	0.581	9.9	LOS A	3.9	99.5	0.83	0.88	1.05	33.6
Approach			816	2.0	816	2.0	0.581	12.7	LOS B	4.2	106.4	0.83	0.90	1.04	32.2
West: Beckwith-Standiford Road															
5	L2	All MCs	258	2.0	258	2.0	0.998	38.5	LOS D	19.7	500.6	1.00	1.64	2.82	24.7
2	T1	All MCs	1199	2.0	1199	2.0	0.998	29.9	LOS C	21.7	551.4	1.00	1.65	2.81	25.9
12	R2	All MCs	54	2.0	54	2.0	0.998	29.3	LOS C	21.7	551.4	1.00	1.66	2.81	26.2
Approach			1511	2.0	1511	2.0	0.998	31.4	LOS C	21.7	551.4	1.00	1.65	2.81	25.7
All Vehicles			3903	2.0	3903	2.0	0.998	18.1	LOS B	21.7	551.4	0.87	1.12	1.66	29.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: M2 [7: Sisk Road & Dale Road Extension PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build M2
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Sisk Road / Dale Road															
3a	L1	All MCs	933	2.0	933	2.0	0.435	9.0	LOS A	3.1	78.3	0.17	0.54	0.17	33.6
18a	R1	All MCs	240	2.0	240	2.0	0.435	3.4	LOS A	3.1	78.3	0.17	0.50	0.17	35.0
Approach			1173	2.0	1173	2.0	0.435	7.8	LOS A	3.1	78.3	0.17	0.54	0.17	33.9
NorthEast: Dale Road															
1ax	L1	All MCs	400	2.0	400	2.0	0.279	12.1	LOS B	1.2	31.2	0.62	0.78	0.62	32.3
16x	R2	All MCs	54	2.0	54	2.0	0.279	6.8	LOS A	1.2	31.2	0.62	0.76	0.62	33.1
Approach			454	2.0	454	2.0	0.279	11.5	LOS B	1.2	31.2	0.62	0.78	0.62	32.4
NorthWest: Sisk Road															
7x	L2	All MCs	27	2.0	27	2.0	0.320	11.6	LOS B	1.6	40.8	0.52	0.53	0.52	34.5
14ax	R1	All MCs	900	2.0	900	2.0	0.320	3.8	LOS A	1.6	40.8	0.18	0.40	0.18	36.5
Approach			927	2.0	927	2.0	0.320	4.0	LOS A	1.6	40.8	0.19	0.41	0.19	36.5
All Vehicles			2554	2.0	2554	2.0	0.435	7.1	LOS A	3.1	78.3	0.26	0.53	0.26	34.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: M2 [8: SR-99 Ramps & New Public Road PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build M2
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: New Public Road															
3	L2	All MCs	520	2.0	520	2.0	0.546	12.8	LOS B	4.1	104.1	0.68	0.73	0.74	31.6
8	T1	All MCs	217	2.0	217	2.0	0.300	7.3	LOS A	1.6	39.6	0.58	0.61	0.58	34.3
Approach			737	2.0	737	2.0	0.546	11.2	LOS B	4.1	104.1	0.65	0.70	0.69	32.3
North: New Public Road															
4	T1	All MCs	217	2.0	217	2.0	0.287	7.6	LOS A	1.7	42.6	0.66	0.65	0.66	34.0
14	R2	All MCs	217	2.0	217	2.0	0.295	7.6	LOS A	1.7	42.9	0.67	0.68	0.67	34.1
Approach			435	2.0	435	2.0	0.295	7.6	LOS A	1.7	42.9	0.67	0.67	0.67	34.0
West: SR-99 Ramps															
5	L2	All MCs	388	2.0	388	2.0	0.360	10.8	LOS B	2.2	55.7	0.47	0.64	0.47	32.0
12	R2	All MCs	341	2.0	341	2.0	0.326	5.6	LOS A	1.9	48.3	0.46	0.54	0.46	34.7
Approach			729	2.0	729	2.0	0.360	8.4	LOS A	2.2	55.7	0.46	0.59	0.46	33.2
All Vehicles			1901	2.0	1901	2.0	0.546	9.3	LOS A	4.1	104.1	0.58	0.65	0.60	33.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: M2 [9: Sisk Rd & New Bridge to Sisk Rd PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build M2
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Sisk Road															
3	L2	All MCs	11	2.0	11	2.0	0.623	16.7	LOS B	4.4	110.9	0.84	0.90	1.09	33.1
8	T1	All MCs	589	2.0	589	2.0	0.623	9.4	LOS A	4.7	118.4	0.84	0.90	1.08	33.9
18	R2	All MCs	296	2.0	296	2.0	0.623	8.9	LOS A	4.7	118.4	0.84	0.89	1.06	33.8
Approach			896	2.0	896	2.0	0.623	9.3	LOS A	4.7	118.4	0.84	0.89	1.07	33.9
East: SR-99 Ramp															
1	L2	All MCs	302	2.0	302	2.0	0.575	19.1	LOS B	4.0	102.7	0.86	0.97	1.14	29.7
6	T1	All MCs	376	2.0	376	2.0	0.575	10.8	LOS B	4.4	112.1	0.87	0.91	1.13	33.1
16	R2	All MCs	59	2.0	59	2.0	0.575	11.0	LOS B	4.4	112.1	0.87	0.90	1.13	33.1
Approach			737	2.0	737	2.0	0.575	14.2	LOS B	4.4	112.1	0.86	0.93	1.14	31.6
North: Sisk Road															
7	L2	All MCs	92	2.0	92	2.0	0.528	14.1	LOS B	3.3	83.8	0.74	0.76	0.86	33.2
4	T1	All MCs	466	2.0	466	2.0	0.528	6.9	LOS A	3.4	87.0	0.74	0.75	0.85	34.2
14	R2	All MCs	322	2.0	322	2.0	0.528	6.8	LOS A	3.4	87.0	0.74	0.73	0.84	34.5
Approach			880	2.0	880	2.0	0.528	7.6	LOS A	3.4	87.0	0.74	0.75	0.85	34.2
West: SR-99 Ramp															
5	L2	All MCs	486	2.0	486	2.0	0.592	16.0	LOS B	4.6	116.6	0.82	0.91	1.04	30.7
2	T1	All MCs	341	2.0	341	2.0	0.510	9.2	LOS A	3.3	83.6	0.79	0.82	0.95	34.1
12	R2	All MCs	1	2.0	1	2.0	0.510	9.5	LOS A	3.3	83.6	0.79	0.82	0.95	33.8
Approach			828	2.0	828	2.0	0.592	13.2	LOS B	4.6	116.6	0.81	0.87	1.00	32.0
All Vehicles			3341	2.0	3341	2.0	0.623	10.9	LOS B	4.7	118.4	0.81	0.86	1.01	32.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: M2 [10: Sisk Rd & Standiford Ave PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build M2
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Sisk Road															
3	L2	All MCs	433	2.0	433	2.0	1.089	75.0	LOS F	21.8	552.5	1.00	1.98	4.22	17.7
8	T1	All MCs	632	2.0	632	2.0	1.089	63.0	LOS F	28.4	720.7	1.00	2.17	4.59	19.0
18	R2	All MCs	43	2.0	43	2.0	1.089	63.3	LOS F	28.4	720.7	1.00	2.18	4.61	19.0
Approach			1108	2.0	1108	2.0	1.089	67.7	LOS E	28.4	720.7	1.00	2.10	4.45	18.5
East: Beckwith-Standiford Road															
1	L2	All MCs	16	2.0	16	2.0	0.749	19.2	LOS B	5.5	139.8	0.91	1.03	1.31	32.2
6	T1	All MCs	766	2.0	766	2.0	0.749	10.8	LOS B	6.1	155.0	0.92	1.02	1.29	33.3
16	R2	All MCs	139	2.0	139	2.0	0.749	10.3	LOS B	6.1	155.0	0.92	1.00	1.28	33.5
Approach			922	2.0	922	2.0	0.749	10.9	LOS B	6.1	155.0	0.92	1.02	1.29	33.3
North: Sisk Road															
7	L2	All MCs	177	2.0	177	2.0	0.404	15.1	LOS B	2.4	60.4	0.82	0.85	0.90	31.9
4	T1	All MCs	474	2.0	474	2.0	0.404	6.3	LOS A	2.7	69.3	0.83	0.65	0.87	34.0
14	R2	All MCs	117	2.0	117	2.0	0.072	3.9	LOS A	0.0	0.0	0.00	0.38	0.00	37.2
Approach			768	2.0	768	2.0	0.404	8.0	LOS A	2.7	69.3	0.70	0.65	0.75	33.9
West: Beckwith-Standiford Road															
5	L2	All MCs	125	2.0	125	2.0	0.654	14.6	LOS B	5.2	133.3	0.80	0.80	0.99	33.2
2	T1	All MCs	1289	2.0	1289	2.0	0.654	6.3	LOS A	5.7	143.8	0.79	0.69	0.95	34.3
12	R2	All MCs	426	2.0	426	2.0	0.321	4.6	LOS A	1.9	49.2	0.58	0.54	0.58	35.3
Approach			1840	2.0	1840	2.0	0.654	6.5	LOS A	5.7	143.8	0.74	0.66	0.86	34.4
All Vehicles			4638	2.0	4638	2.0	1.089	22.2	LOS C	28.4	720.7	0.83	1.07	1.79	28.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: M3 [5: Dale Road & Vintage Faire AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build M3
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Dale Road															
3	L2	All MCs	27	3.0	27	3.0	0.140	11.0	LOS B	0.6	16.6	0.36	0.47	0.36	34.5
8	T1	All MCs	241	3.0	241	3.0	0.140	4.5	LOS A	0.7	16.7	0.36	0.46	0.36	35.5
18	R2	All MCs	51	3.0	51	3.0	0.140	4.6	LOS A	0.7	16.7	0.36	0.44	0.36	35.4
Approach			320	3.0	320	3.0	0.140	5.0	LOS A	0.7	16.7	0.36	0.46	0.36	35.4
East: Vintage Faire															
1	L2	All MCs	27	3.0	27	3.0	0.026	11.6	LOS B	0.1	2.6	0.43	0.66	0.43	32.1
6	T1	All MCs	5	3.0	5	3.0	0.019	5.4	LOS A	0.1	1.8	0.45	0.53	0.45	35.5
16	R2	All MCs	11	3.0	11	3.0	0.019	5.6	LOS A	0.1	1.8	0.45	0.53	0.45	35.2
Approach			43	3.0	43	3.0	0.026	9.3	LOS A	0.1	2.6	0.44	0.61	0.44	33.2
North: Dale Road															
7	L2	All MCs	8	3.0	8	3.0	0.241	10.4	LOS B	1.2	30.1	0.19	0.35	0.19	35.5
4	T1	All MCs	341	3.0	341	3.0	0.241	3.9	LOS A	1.2	30.1	0.19	0.36	0.19	36.3
14	R2	All MCs	277	3.0	277	3.0	0.241	4.0	LOS A	1.2	30.1	0.19	0.41	0.19	36.0
Approach			626	3.0	626	3.0	0.241	4.0	LOS A	1.2	30.1	0.19	0.38	0.19	36.1
West: Vintage Faire															
5	L2	All MCs	205	3.0	205	3.0	0.190	11.6	LOS B	0.8	21.6	0.44	0.67	0.44	32.1
2	T1	All MCs	3	3.0	3	3.0	0.046	6.1	LOS A	0.2	4.5	0.46	0.58	0.46	35.5
12	R2	All MCs	27	3.0	27	3.0	0.046	6.2	LOS A	0.2	4.5	0.46	0.58	0.46	35.1
Approach			236	3.0	236	3.0	0.190	10.9	LOS B	0.8	21.6	0.44	0.66	0.44	32.4
All Vehicles			1225	3.0	1225	3.0	0.241	5.8	LOS A	1.2	30.1	0.29	0.46	0.29	35.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: M3 [6: Dale Rd & Standiford Ave AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build M3
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Dale Road															
3	L2	All MCs	354	3.0	354	3.0	0.447	14.9	LOS B	2.7	70.0	0.77	0.86	0.88	31.3
8	T1	All MCs	67	3.0	67	3.0	0.219	8.0	LOS A	1.0	24.6	0.70	0.75	0.70	34.7
18	R2	All MCs	48	3.0	48	3.0	0.219	8.5	LOS A	1.0	24.6	0.70	0.75	0.70	34.3
Approach			470	3.0	470	3.0	0.447	13.3	LOS B	2.7	70.0	0.76	0.83	0.84	32.0
East: Beckwith-Standiford Road															
1	L2	All MCs	80	3.0	80	3.0	0.749	16.4	LOS B	8.0	203.6	0.85	0.84	1.11	33.1
6	T1	All MCs	1172	3.0	1172	3.0	0.749	8.5	LOS A	8.2	210.1	0.85	0.83	1.09	34.1
16	R2	All MCs	209	3.0	209	3.0	0.749	8.5	LOS A	8.2	210.1	0.84	0.81	1.07	34.0
Approach			1461	3.0	1461	3.0	0.749	9.0	LOS A	8.2	210.1	0.85	0.83	1.09	34.0
North: Dale Road															
7	L2	All MCs	176	3.0	176	3.0	0.472	21.0	LOS C	2.7	68.7	0.88	1.00	1.09	29.0
4	T1	All MCs	142	3.0	142	3.0	0.425	10.3	LOS B	2.7	68.4	0.90	0.90	1.04	33.6
14	R2	All MCs	77	3.0	77	3.0	0.425	10.7	LOS B	2.7	68.4	0.90	0.90	1.04	33.3
Approach			396	3.0	396	3.0	0.472	15.1	LOS B	2.7	68.7	0.89	0.94	1.06	31.3
West: Beckwith-Standiford Road															
5	L2	All MCs	43	3.0	43	3.0	0.407	11.5	LOS B	2.5	63.2	0.55	0.42	0.55	34.5
2	T1	All MCs	799	3.0	799	3.0	0.407	4.4	LOS A	2.5	63.2	0.56	0.43	0.57	35.3
12	R2	All MCs	273	3.0	273	3.0	0.168	3.2	LOS A	0.0	0.0	0.00	0.38	0.00	37.2
Approach			1115	3.0	1115	3.0	0.407	4.6	LOS A	2.5	63.2	0.42	0.42	0.43	35.7
All Vehicles			3441	3.0	3441	3.0	0.749	8.8	LOS A	8.2	210.1	0.70	0.71	0.84	33.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: M3 [7: Sisk Road & Dale Road Extension AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build M3
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Sisk Road / Dale Road															
3a	L1	All MCs	182	3.0	182	3.0	0.169	9.1	LOS A	0.8	20.9	0.20	0.58	0.20	33.1
18a	R1	All MCs	416	3.0	416	3.0	0.315	3.5	LOS A	1.8	46.3	0.21	0.35	0.21	36.6
Approach			598	3.0	598	3.0	0.315	5.2	LOS A	1.8	46.3	0.21	0.42	0.21	35.4
NorthEast: Dale Road															
1ax	L1	All MCs	441	3.0	441	3.0	0.209	9.6	LOS A	1.0	25.2	0.33	0.59	0.33	33.0
16x	R2	All MCs	54	3.0	54	3.0	0.209	4.6	LOS A	1.0	25.2	0.33	0.58	0.33	33.7
Approach			496	3.0	496	3.0	0.209	9.1	LOS A	1.0	25.2	0.33	0.59	0.33	33.1
NorthWest: Sisk Road															
7x	L2	All MCs	54	3.0	54	3.0	0.165	11.6	LOS B	0.7	17.6	0.45	0.58	0.45	34.1
14ax	R1	All MCs	421	3.0	421	3.0	0.165	3.6	LOS A	0.7	17.6	0.13	0.41	0.13	36.5
Approach			475	3.0	475	3.0	0.165	4.6	LOS A	0.7	17.6	0.17	0.43	0.17	36.2
All Vehicles			1568	3.0	1568	3.0	0.315	6.2	LOS A	1.8	46.3	0.23	0.48	0.23	34.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: M3 [8: SR-99 Ramps & New Public Road AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build M3
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: New Public Road															
3	L2	All MCs	179	3.0	179	3.0	0.140	10.0	LOS A	0.6	16.0	0.15	0.62	0.15	32.7
8	T1	All MCs	109	3.0	109	3.0	0.095	4.4	LOS A	0.4	10.3	0.15	0.38	0.15	36.0
Approach			288	3.0	288	3.0	0.140	7.8	LOS A	0.6	16.0	0.15	0.53	0.15	33.8
North: New Public Road															
4	T1	All MCs	109	3.0	109	3.0	0.095	5.1	LOS A	0.4	10.2	0.30	0.44	0.30	35.3
14	R2	All MCs	109	3.0	109	3.0	0.095	5.0	LOS A	0.4	10.2	0.30	0.50	0.30	35.2
Approach			217	3.0	217	3.0	0.095	5.1	LOS A	0.4	10.2	0.30	0.47	0.30	35.2
West: SR-99 Ramps															
5	L2	All MCs	43	3.0	43	3.0	0.152	10.2	LOS B	0.7	17.8	0.25	0.52	0.25	34.4
12	R2	All MCs	324	3.0	324	3.0	0.152	4.7	LOS A	0.7	17.8	0.25	0.49	0.25	35.1
Approach			367	3.0	367	3.0	0.152	5.3	LOS A	0.7	17.8	0.25	0.50	0.25	35.0
All Vehicles			873	3.0	873	3.0	0.152	6.1	LOS A	0.7	17.8	0.23	0.50	0.23	34.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: M3 [9: Sisk Rd & New Bridge to Sisk Rd AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build M3
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Sisk Road															
3	L2	All MCs	11	3.0	11	3.0	0.186	11.5	LOS B	0.8	19.9	0.48	0.57	0.48	33.9
8	T1	All MCs	312	3.0	312	3.0	0.186	5.9	LOS A	0.8	19.9	0.47	0.56	0.47	34.7
18	R2	All MCs	29	3.0	29	3.0	0.186	5.8	LOS A	0.8	19.9	0.47	0.56	0.47	34.5
Approach			352	3.0	352	3.0	0.186	6.1	LOS A	0.8	19.9	0.47	0.56	0.47	34.7
East: SR-99 Ramp															
1	L2	All MCs	32	3.0	32	3.0	0.150	11.4	LOS B	0.6	16.0	0.46	0.60	0.46	33.7
6	T1	All MCs	250	3.0	250	3.0	0.150	5.8	LOS A	0.6	16.1	0.46	0.57	0.46	34.6
16	R2	All MCs	5	3.0	5	3.0	0.150	5.8	LOS A	0.6	16.1	0.46	0.54	0.46	34.5
Approach			287	3.0	287	3.0	0.150	6.5	LOS A	0.6	16.1	0.46	0.57	0.46	34.5
North: Sisk Road															
7	L2	All MCs	14	3.0	14	3.0	0.178	10.9	LOS B	0.8	19.8	0.41	0.52	0.41	34.1
4	T1	All MCs	234	3.0	234	3.0	0.178	5.4	LOS A	0.8	19.9	0.41	0.53	0.41	34.9
14	R2	All MCs	122	3.0	122	3.0	0.178	5.4	LOS A	0.8	19.9	0.41	0.54	0.41	34.9
Approach			370	3.0	370	3.0	0.178	5.6	LOS A	0.8	19.9	0.41	0.53	0.41	34.9
West: SR-99 Ramp															
5	L2	All MCs	96	3.0	96	3.0	0.200	10.9	LOS B	0.9	23.1	0.41	0.59	0.41	33.4
2	T1	All MCs	324	3.0	324	3.0	0.200	5.4	LOS A	0.9	23.2	0.41	0.53	0.41	34.6
12	R2	All MCs	1	3.0	1	3.0	0.200	5.4	LOS A	0.9	23.2	0.41	0.50	0.41	34.6
Approach			421	3.0	421	3.0	0.200	6.7	LOS A	0.9	23.2	0.41	0.55	0.41	34.3
All Vehicles			1429	3.0	1429	3.0	0.200	6.2	LOS A	0.9	23.2	0.44	0.55	0.44	34.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: M3 [5: Dale Road & Vintage Faire PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build M3
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Dale Road															
3	L2	All MCs	103	2.0	103	2.0	0.520	16.0	LOS B	3.8	97.0	0.83	0.83	0.98	32.4
8	T1	All MCs	452	2.0	452	2.0	0.520	9.1	LOS A	4.0	101.8	0.84	0.82	0.98	33.5
18	R2	All MCs	192	2.0	192	2.0	0.520	8.9	LOS A	4.0	101.8	0.84	0.80	0.97	33.7
Approach			748	2.0	748	2.0	0.520	10.0	LOS A	4.0	101.8	0.84	0.81	0.97	33.4
East: Vintage Faire															
1	L2	All MCs	199	2.0	199	2.0	0.324	15.5	LOS B	1.9	47.3	0.82	0.84	0.82	30.8
6	T1	All MCs	23	2.0	23	2.0	0.167	10.8	LOS B	0.8	19.9	0.77	0.82	0.77	33.1
16	R2	All MCs	46	2.0	46	2.0	0.167	10.9	LOS B	0.8	19.9	0.77	0.82	0.77	32.8
Approach			267	2.0	267	2.0	0.324	14.3	LOS B	1.9	47.3	0.81	0.83	0.81	31.3
North: Dale Road															
7	L2	All MCs	67	2.0	67	2.0	0.454	11.9	LOS B	2.8	70.2	0.57	0.54	0.57	33.9
4	T1	All MCs	448	2.0	448	2.0	0.454	5.4	LOS A	2.8	71.3	0.57	0.54	0.57	34.7
14	R2	All MCs	446	2.0	446	2.0	0.454	5.4	LOS A	2.8	71.3	0.56	0.56	0.56	35.0
Approach			961	2.0	961	2.0	0.454	5.8	LOS A	2.8	71.3	0.57	0.55	0.57	34.7
West: Vintage Faire															
5	L2	All MCs	650	2.0	650	2.0	0.750	18.6	LOS B	8.1	206.1	0.89	0.99	1.31	29.6
2	T1	All MCs	28	2.0	28	2.0	0.323	9.0	LOS A	1.5	38.9	0.69	0.75	0.69	33.9
12	R2	All MCs	141	2.0	141	2.0	0.323	9.2	LOS A	1.5	38.9	0.69	0.75	0.69	33.6
Approach			820	2.0	820	2.0	0.750	16.7	LOS B	8.1	206.1	0.85	0.94	1.18	30.3
All Vehicles			2796	2.0	2796	2.0	0.750	10.9	LOS B	8.1	206.1	0.75	0.76	0.88	32.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: M3 [6: Dale Rd & Standiford Ave PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build M3
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Dale Road															
3	L2	All MCs	472	2.0	472	2.0	1.456	245.0	LOS F	55.7	1414.7	1.00	2.79	6.31	7.9
8	T1	All MCs	207	2.0	207	2.0	1.422	228.7	LOS F	38.0	965.5	1.00	2.35	5.33	8.0
18	R2	All MCs	118	2.0	118	2.0	1.422	229.1	LOS F	38.0	965.5	1.00	2.35	5.33	8.0
Approach			797	2.0	797	2.0	1.456	238.4	LOS F	55.7	1414.7	1.00	2.61	5.91	7.9
East: Beckwith-Standiford Road															
1	L2	All MCs	67	23.0	67	23.0	0.764	20.3	LOS C	7.4	192.7	0.90	0.94	1.26	32.0
6	T1	All MCs	833	2.0	833	2.0	0.764	9.9	LOS A	8.0	204.1	0.90	0.93	1.24	33.5
16	R2	All MCs	390	2.0	390	2.0	0.764	9.5	LOS A	8.0	204.1	0.89	0.91	1.21	33.7
Approach			1290	3.1	1290	3.1	0.764	10.3	LOS B	8.0	204.1	0.90	0.93	1.23	33.5
North: Dale Road															
7	L2	All MCs	428	2.0	428	2.0	0.715	20.8	LOS C	6.3	160.5	0.96	1.05	1.40	29.2
4	T1	All MCs	349	2.0	349	2.0	0.715	15.4	LOS B	6.3	160.5	0.93	1.05	1.40	31.2
14	R2	All MCs	12	2.0	12	2.0	0.715	16.0	LOS B	5.5	140.9	0.93	1.05	1.40	31.1
Approach			789	2.0	789	2.0	0.715	18.3	LOS B	6.3	160.5	0.95	1.05	1.40	30.1
West: Beckwith-Standiford Road															
5	L2	All MCs	151	2.0	151	2.0	0.938	22.7	LOS C	16.8	426.0	1.00	1.32	1.96	30.5
2	T1	All MCs	1263	2.0	1263	2.0	0.938	15.8	LOS B	16.8	426.0	1.00	1.29	1.89	31.3
12	R2	All MCs	426	2.0	426	2.0	0.260	3.2	LOS A	0.0	0.0	0.00	0.38	0.00	37.2
Approach			1840	2.0	1840	2.0	0.938	14.1	LOS B	16.8	426.0	0.77	1.08	1.46	32.4
All Vehicles			4716	2.3	4716	2.3	1.456	51.4	LOS D	55.7	1414.7	0.87	1.29	2.14	21.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: M3 [7: Sisk Road & Dale Road Extension PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build M3
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Sisk Road / Dale Road															
3a	L1	All MCs	513	2.0	513	2.0	0.446	9.7	LOS A	3.1	77.7	0.42	0.58	0.42	32.6
18a	R1	All MCs	660	2.0	660	2.0	0.531	4.1	LOS A	4.1	105.3	0.46	0.43	0.46	35.7
Approach			1173	2.0	1173	2.0	0.531	6.5	LOS A	4.1	105.3	0.44	0.50	0.44	34.3
NorthEast: Dale Road															
1ax	L1	All MCs	734	2.0	734	2.0	0.460	12.2	LOS B	3.1	78.6	0.70	0.72	0.72	32.3
16x	R2	All MCs	109	2.0	109	2.0	0.460	6.9	LOS A	3.1	78.6	0.69	0.71	0.71	33.0
Approach			842	2.0	842	2.0	0.460	11.5	LOS B	3.1	78.6	0.70	0.72	0.72	32.4
NorthWest: Sisk Road															
7x	L2	All MCs	136	2.0	136	2.0	0.353	12.5	LOS B	1.8	45.8	0.66	0.70	0.66	33.2
14ax	R1	All MCs	827	2.0	827	2.0	0.353	3.8	LOS A	1.8	45.8	0.14	0.42	0.14	36.5
Approach			963	2.0	963	2.0	0.353	5.0	LOS A	1.8	45.8	0.21	0.46	0.21	36.0
All Vehicles			2978	2.0	2978	2.0	0.531	7.4	LOS A	4.1	105.3	0.44	0.55	0.45	34.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: M3 [8: SR-99 Ramps & New Public Road PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build M3
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: New Public Road															
3	L2	All MCs	520	2.0	520	2.0	0.529	12.7	LOS B	3.8	97.3	0.67	0.72	0.70	31.6
8	T1	All MCs	217	2.0	217	2.0	0.291	6.9	LOS A	1.5	38.3	0.57	0.59	0.57	34.5
Approach			737	2.0	737	2.0	0.529	11.0	LOS B	3.8	97.3	0.64	0.68	0.66	32.4
North: New Public Road															
4	T1	All MCs	217	2.0	217	2.0	0.260	7.2	LOS A	1.5	38.8	0.65	0.63	0.65	34.2
14	R2	All MCs	217	2.0	217	2.0	0.260	7.0	LOS A	1.5	38.8	0.65	0.65	0.65	34.3
Approach			435	2.0	435	2.0	0.260	7.1	LOS A	1.5	38.8	0.65	0.64	0.65	34.2
West: SR-99 Ramps															
5	L2	All MCs	388	2.0	388	2.0	0.353	10.9	LOS B	2.1	52.6	0.46	0.64	0.46	32.1
12	R2	All MCs	341	2.0	341	2.0	0.321	5.3	LOS A	1.8	46.2	0.45	0.53	0.45	34.9
Approach			729	2.0	729	2.0	0.353	8.3	LOS A	2.1	52.6	0.45	0.59	0.45	33.3
All Vehicles			1901	2.0	1901	2.0	0.529	9.1	LOS A	3.8	97.3	0.57	0.64	0.58	33.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: M3 [9: Sisk Rd & New Bridge to Sisk Rd PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Future Build M3
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Sisk Road															
3	L2	All MCs	11	2.0	11	2.0	0.688	17.7	LOS B	5.2	131.7	0.87	0.97	1.20	31.7
8	T1	All MCs	589	2.0	589	2.0	0.688	11.9	LOS B	5.4	137.6	0.87	0.97	1.20	32.4
18	R2	All MCs	296	2.0	296	2.0	0.688	11.2	LOS B	5.4	137.6	0.87	0.96	1.19	32.4
Approach			896	2.0	896	2.0	0.688	11.8	LOS B	5.4	137.6	0.87	0.97	1.19	32.4
East: SR-99 Ramp															
1	L2	All MCs	302	2.0	302	2.0	0.640	20.6	LOS C	4.8	122.6	0.89	1.02	1.26	28.8
6	T1	All MCs	376	2.0	376	2.0	0.640	14.1	LOS B	5.1	130.5	0.89	0.98	1.26	31.3
16	R2	All MCs	59	2.0	59	2.0	0.640	13.9	LOS B	5.1	130.5	0.89	0.98	1.26	31.3
Approach			737	2.0	737	2.0	0.640	16.7	LOS B	5.1	130.5	0.89	1.00	1.26	30.2
North: Sisk Road															
7	L2	All MCs	92	2.0	92	2.0	0.576	14.3	LOS B	3.8	96.8	0.77	0.84	0.93	32.7
4	T1	All MCs	466	2.0	466	2.0	0.576	8.7	LOS A	3.9	98.9	0.77	0.84	0.93	33.5
14	R2	All MCs	322	2.0	322	2.0	0.576	8.3	LOS A	3.9	98.9	0.77	0.82	0.92	33.7
Approach			880	2.0	880	2.0	0.576	9.1	LOS A	3.9	98.9	0.77	0.83	0.92	33.5
West: SR-99 Ramp															
5	L2	All MCs	486	2.0	486	2.0	0.672	17.7	LOS B	5.7	144.8	0.87	0.97	1.20	29.7
2	T1	All MCs	341	2.0	341	2.0	0.556	11.4	LOS B	3.8	95.3	0.81	0.88	1.03	32.7
12	R2	All MCs	1	2.0	1	2.0	0.556	11.4	LOS B	3.8	95.3	0.81	0.88	1.03	32.4
Approach			828	2.0	828	2.0	0.672	15.1	LOS B	5.7	144.8	0.84	0.93	1.13	30.9
All Vehicles			3341	2.0	3341	2.0	0.688	13.0	LOS B	5.7	144.8	0.84	0.93	1.12	31.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Appendix K – Year 2050 Build Conditions "B" Alternatives Freeway Analysis Worksheets

FEHR PEERS

HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	3/7/2024
Agency		Analysis Year	2050 With Alternative B1
Jurisdiction		Time Analyzed	AM Peak Hour
Project Description	SR-99/Standiford Improvement (SR-99 NB)	Units	U.S. Customary
Segment Number	1	Segment Name	Briggsmore Avenue On-Ramp to Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	3340	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6247	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2569
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	34.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	55.6
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	2
Free-Flow Speed (FFS), mi/h	61.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1185
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided Two-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6247	765
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	13.50	13.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	0.881
Flow Rate (vi),pc/h	7707	944
Capacity (c), pc/h	6210	3570
Volume-to-Capacity Ratio (v/c)	0.93	0.26

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.383
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2478
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	53.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.450	Outer Lanes Freeway Speed (SO), mi/h	61.2
Flow in Lanes 1 and 2 (v12), pc/h	3305	Ramp Junction Speed (S), mi/h	56.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	34.0
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	22.0

HCS7 Basic Freeway Report

Project Information

Segment Number	3	Segment Name	Beckwith Road Off-Ramp to Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2665	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5482	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1613
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.78
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	58.3
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	27.7
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Basic Freeway Report

Project Information

Segment Number	4	Segment Name	Beckwith Road On-Ramp to Pelandale Avenue Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	5630	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6194	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1429
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.69
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	60.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	23.7
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	3/7/2024
Agency		Analysis Year	2050 With Alternative B1
Jurisdiction		Time Analyzed	AM Peak Hour
Project Description	SR-99/Standiford Improvement (SR-99 SB)	Units	U.S. Customary
Segment Number	1	Segment Name	Pelandale Avenue Off-Ramp to Pelandale Avenue On-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2450	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5913	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2432
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.99
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	45.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	45.3
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Basic Freeway Report

Project Information

Segment Number	2	Segment Name	Pelandale Avenue On-Ramp to Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	5250	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6221	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1919
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.68
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	22.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	63.0
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Basic Freeway Report

Project Information

Segment Number	3	Segment Name	Beckwith Road Off-Ramp to Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2510	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5696	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2343
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.77
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	21.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	75.6
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Freeway Merge Report

Project Information

Segment Number	4	Segment Name	Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	61.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5696	1008
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	13.50	13.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	0.881
Flow Rate (vi),pc/h	7028	1244
Capacity (c), pc/h	6210	1785
Volume-to-Capacity Ratio (v/c)	0.93	0.70

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.412
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1725
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	53.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.620	Outer Lanes Freeway Speed (SO), mi/h	56.6
Flow in Lanes 1 and 2 (v12), pc/h	2814	Ramp Junction Speed (S), mi/h	54.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	4058	Average Density (D), pc/mi/ln	35.6
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	27.2

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	Beckwith Road On-Ramp to Briggsmore Avenue Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	3390	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6704	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1928
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	51.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	37.6
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	3/7/2024
Agency		Analysis Year	2050 With Alternative B1
Jurisdiction		Time Analyzed	PM Peak Hour
Project Description	SR-99/Standiford Improvement (SR-99 NB)	Units	U.S. Customary
Segment Number	1	Segment Name	Briggsmore Avenue On-Ramp to Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	3340	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6186	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2544
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	34.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	55.6
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	2
Free-Flow Speed (FFS), mi/h	61.0	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1185
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided Two-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6186	1255
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	13.50	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	1.000
Flow Rate (vi),pc/h	7632	1364
Capacity (c), pc/h	6210	3570
Volume-to-Capacity Ratio (v/c)	0.93	0.38

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.421
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2430
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	53.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.450	Outer Lanes Freeway Speed (SO), mi/h	61.3
Flow in Lanes 1 and 2 (v12), pc/h	3353	Ramp Junction Speed (S), mi/h	56.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	34.3
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	22.4

HCS7 Basic Freeway Report

Project Information

Segment Number	3	Segment Name	Beckwith Road Off-Ramp to Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2665	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4931	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1473
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.71
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	60.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	24.6
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Basic Freeway Report

Project Information

Segment Number	4	Segment Name	Beckwith Road On-Ramp to Pelandale Avenue Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	5630	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5656	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1328
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.64
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	60.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	21.8
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	3/7/2024
Agency		Analysis Year	2050 With Alternative B1
Jurisdiction		Time Analyzed	PM Peak Hour
Project Description	SR-99/Standiford Improvement (SR-99 SB)	Units	U.S. Customary
Segment Number	1	Segment Name	Pelandale Avenue Off-Ramp to Pelandale Avenue On-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2450	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5683	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2337
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.95
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	38.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	51.6
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Basic Freeway Report

Project Information

Segment Number	2	Segment Name	Pelandale Avenue On-Ramp to Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	5250	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6450	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1989
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.71
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	21.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	69.0
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Basic Freeway Report

Project Information

Segment Number	3	Segment Name	Beckwith Road Off-Ramp to Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2510	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5753	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2366
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.77
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	21.1
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	76.1
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Freeway Merge Report

Project Information

Segment Number	4	Segment Name	Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	61.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5753	1006
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	13.50	13.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	0.881
Flow Rate (vi),pc/h	7098	1241
Capacity (c), pc/h	6210	1785
Volume-to-Capacity Ratio (v/c)	0.93	0.70

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.411
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1726
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	53.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.620	Outer Lanes Freeway Speed (SO), mi/h	56.6
Flow in Lanes 1 and 2 (v12), pc/h	2816	Ramp Junction Speed (S), mi/h	54.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	4057	Average Density (D), pc/mi/ln	35.6
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	27.2

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	Beckwith Road On-Ramp to Briggsmore Avenue Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	3390	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6759	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1928
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	51.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	37.6
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	3/7/2024
Agency		Analysis Year	2050 With Alternative B7
Jurisdiction		Time Analyzed	AM Peak Hour
Project Description	SR-99/Standiford Improvement (SR-99 NB)	Units	U.S. Customary
Segment Number	1	Segment Name	Briggsmore Avenue On-Ramp to Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	3340	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	60.5
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5860	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2410
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2305
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2075
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	34.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	55.3
Total Ramp Density Adjustment	4.5	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	60.5		

HCS7 Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	2
Free-Flow Speed (FFS), mi/h	60.5	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1185
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided Two-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5860	378
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	13.50	13.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	0.881
Flow Rate (vi),pc/h	7230	466
Capacity (c), pc/h	6210	3570
Volume-to-Capacity Ratio (v/c)	0.93	0.13

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.340
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	2478
Distance to Downstream Ramp (LDOWN), ft	1000	Off-Ramp Influence Area Speed (SR), mi/h	54.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.450	Outer Lanes Freeway Speed (SO), mi/h	60.6
Flow in Lanes 1 and 2 (v12), pc/h	3305	Ramp Junction Speed (S), mi/h	56.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	33.9
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	22.0

HCS7 Freeway Diverge Report

Project Information

Segment Number	3	Segment Name	Sisk Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	60.5	45.0
Segment Length (L) / Deceleration Length (LA),ft	1000	150
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5482	387
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	13.50	13.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	0.881
Flow Rate (vi),pc/h	6764	477
Capacity (c), pc/h	6210	1785
Volume-to-Capacity Ratio (v/c)	0.86	0.27

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1000	Speed Index (DS)	0.341
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1912
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	54.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.605	Outer Lanes Freeway Speed (SO), mi/h	62.8
Flow in Lanes 1 and 2 (v12), pc/h	3405	Ramp Junction Speed (S), mi/h	57.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	31.1
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	32.2

HCS7 Basic Freeway Report

Project Information

Segment Number	4	Segment Name	Sisk Road Off-Ramp to Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	1665	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	60.5
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5095	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1613
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2305
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2075
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.78
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	58.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	27.8
Total Ramp Density Adjustment	4.5	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	60.5		

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	Beckwith Road On-Ramp to Pelandale Avenue Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	5630	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	60.5
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5806	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1429
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2305
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2305
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.62
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	60.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	23.6
Total Ramp Density Adjustment	4.5	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	60.5		

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	3/7/2024
Agency		Analysis Year	2050 With Alternative B7
Jurisdiction		Time Analyzed	AM Peak Hour
Project Description	SR-99/Standiford Improvement (SR-99 SB)	Units	U.S. Customary
Segment Number	1	Segment Name	Pelandale Avenue Off-Ramp to Pelandale Avenue On-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2450	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5913	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2432
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.99
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	45.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	45.3
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Basic Freeway Report

Project Information

Segment Number	2	Segment Name	Pelandale Avenue On-Ramp to Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	5250	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6221	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1919
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.68
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	22.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	63.0
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Basic Freeway Report

Project Information

Segment Number	3	Segment Name	Beckwith Road Off-Ramp to Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2510	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5696	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2343
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.77
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	21.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	75.6
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Freeway Merge Report

Project Information

Segment Number	4	Segment Name	Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	61.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5696	998
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	13.50	13.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	0.881
Flow Rate (vi),pc/h	7028	1231
Capacity (c), pc/h	6210	1785
Volume-to-Capacity Ratio (v/c)	0.93	0.69

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.411
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1730
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	53.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.620	Outer Lanes Freeway Speed (SO), mi/h	56.6
Flow in Lanes 1 and 2 (v12), pc/h	2822	Ramp Junction Speed (S), mi/h	54.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	4053	Average Density (D), pc/mi/ln	35.6
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	27.2

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	Beckwith Road On-Ramp to Briggsmore Avenue Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	3390	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6694	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1928
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	51.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	37.6
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	3/7/2024
Agency		Analysis Year	2050 With Alternative B7
Jurisdiction		Time Analyzed	PM Peak Hour
Project Description	SR-99/Standiford Improvement (SR-99 NB)	Units	U.S. Customary
Segment Number	1	Segment Name	Briggsmore Avenue On-Ramp to Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	3340	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	60.5
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5425	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2231
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2305
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2075
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	34.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	55.3
Total Ramp Density Adjustment	4.5	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	60.5		

HCS7 Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	2
Free-Flow Speed (FFS), mi/h	60.5	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1185
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided Two-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5425	494
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	13.50	13.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	0.881
Flow Rate (vi),pc/h	6693	609
Capacity (c), pc/h	6210	3570
Volume-to-Capacity Ratio (v/c)	0.93	0.17

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.353
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	2478
Distance to Downstream Ramp (LDOWN), ft	1000	Off-Ramp Influence Area Speed (SR), mi/h	54.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.450	Outer Lanes Freeway Speed (SO), mi/h	60.6
Flow in Lanes 1 and 2 (v12), pc/h	3305	Ramp Junction Speed (S), mi/h	56.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	34.1
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	22.0

HCS7 Freeway Diverge Report

Project Information

Segment Number	3	Segment Name	Sisk Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	60.5	45.0
Segment Length (L) / Deceleration Length (LA),ft	1000	150
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4931	761
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	13.50	13.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	0.881
Flow Rate (vi),pc/h	6084	939
Capacity (c), pc/h	6210	1785
Volume-to-Capacity Ratio (v/c)	0.83	0.53

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1000	Speed Index (DS)	0.383
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1749
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	53.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.587	Outer Lanes Freeway Speed (SO), mi/h	63.4
Flow in Lanes 1 and 2 (v12), pc/h	3425	Ramp Junction Speed (S), mi/h	56.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	30.6
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	32.4

HCS7 Basic Freeway Report

Project Information

Segment Number	4	Segment Name	Sisk Road Off-Ramp to Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	1665	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	60.5
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4170	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1412
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2305
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2075
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.68
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	60.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	23.5
Total Ramp Density Adjustment	4.5	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	60.5		

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	Beckwith Road On-Ramp to Pelandale Avenue Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	5630	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	60.5
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4895	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1282
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2305
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2075
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.62
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	60.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	21.2
Total Ramp Density Adjustment	4.5	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	60.5		

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	3/7/2024
Agency		Analysis Year	2050 With Alternative B7
Jurisdiction		Time Analyzed	PM Peak Hour
Project Description	SR-99/Standiford Improvement (SR-99 SB)	Units	U.S. Customary
Segment Number	1	Segment Name	Pelandale Avenue Off-Ramp to Pelandale Avenue On-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2450	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5683	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2337
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.95
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	38.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	51.5
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Basic Freeway Report

Project Information

Segment Number	2	Segment Name	Pelandale Avenue On-Ramp to Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	5250	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6450	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1989
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.71
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	21.3
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	69.0
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Basic Freeway Report

Project Information

Segment Number	3	Segment Name	Beckwith Road Off-Ramp to Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2510	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5753	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2366
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.77
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	21.1
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	76.1
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

HCS7 Freeway Merge Report

Project Information

Segment Number	4	Segment Name	Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	61.0	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5753	990
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	13.50	13.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	0.881
Flow Rate (vi),pc/h	7098	1221
Capacity (c), pc/h	6210	1785
Volume-to-Capacity Ratio (v/c)	0.93	0.68

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.410
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1734
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	53.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.620	Outer Lanes Freeway Speed (SO), mi/h	56.6
Flow in Lanes 1 and 2 (v12), pc/h	2828	Ramp Junction Speed (S), mi/h	54.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	4049	Average Density (D), pc/mi/ln	35.6
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	27.2

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	Beckwith Road On-Ramp to Briggsmore Avenue Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	3390	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.30
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	61.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6743	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1928
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2310
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2079
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	51.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	37.6
Total Ramp Density Adjustment	4.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	61.0		

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	3/7/2024
Agency		Analysis Year	2050 With Alternative B5 / B8
Jurisdiction		Time Analyzed	AM Peak Hour
Project Description	SR-99/Standiford Improvement (SR-99 NB)	Units	U.S. Customary
Segment Number	1	Segment Name	Briggsmore Avenue On-Ramp to Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	3340	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	60.5
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5860	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2410
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2305
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2075
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	34.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	55.3
Total Ramp Density Adjustment	4.5	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	60.5		

HCS7 Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	2
Free-Flow Speed (FFS), mi/h	60.5	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1185
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided Two-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5860	378
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	13.50	13.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	0.881
Flow Rate (vi),pc/h	7230	466
Capacity (c), pc/h	6210	3570
Volume-to-Capacity Ratio (v/c)	0.93	0.13

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.340
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	2478
Distance to Downstream Ramp (LDOWN), ft	1000	Off-Ramp Influence Area Speed (SR), mi/h	54.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.450	Outer Lanes Freeway Speed (SO), mi/h	60.6
Flow in Lanes 1 and 2 (v12), pc/h	3305	Ramp Junction Speed (S), mi/h	56.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	33.9
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	22.0

HCS7 Freeway Diverge Report

Project Information

Segment Number	3	Segment Name	Sisk Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	60.5	45.0
Segment Length (L) / Deceleration Length (LA),ft	1000	150
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5482	387
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	13.50	13.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	0.881
Flow Rate (vi),pc/h	6764	477
Capacity (c), pc/h	6210	1785
Volume-to-Capacity Ratio (v/c)	0.86	0.27

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1000	Speed Index (DS)	0.341
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1912
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	54.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.605	Outer Lanes Freeway Speed (SO), mi/h	62.8
Flow in Lanes 1 and 2 (v12), pc/h	3405	Ramp Junction Speed (S), mi/h	57.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	31.1
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	32.2

HCS7 Basic Freeway Report

Project Information

Segment Number	4	Segment Name	Sisk Road Off-Ramp to Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	1665	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	60.5
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5095	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1613
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2305
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2075
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.78
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	58.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	27.8
Total Ramp Density Adjustment	4.5	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	60.5		

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	Beckwith Road On-Ramp to Pelandale Avenue Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	5630	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	60.5
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5803	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1428
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2305
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2075
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.69
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	60.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	23.8
Total Ramp Density Adjustment	4.5	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	60.5		

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	3/7/2024
Agency		Analysis Year	2050 With Alternative B5 / B8
Jurisdiction		Time Analyzed	AM Peak Hour
Project Description	SR-99/Standiford Improvement (SR-99 SB)	Units	U.S. Customary
Segment Number	1	Segment Name	Pelandale Avenue Off-Ramp to Pelandale Avenue On-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2450	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	60.5
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5913	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2432
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2305
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2075
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.95
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	39.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	50.5
Total Ramp Density Adjustment	4.5	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	60.5		

HCS7 Basic Freeway Report

Project Information

Segment Number	2	Segment Name	Pelandale Avenue On-Ramp to Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	5250	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	60.5
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6221	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1919
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2305
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2075
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.64
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	18.6
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	71.9
Total Ramp Density Adjustment	4.5	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	60.5		

HCS7 Basic Freeway Report

Project Information

Segment Number	3	Segment Name	Beckwith Road Off-Ramp to Sisk Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	900	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	60.5
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5696	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2343
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2305
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2075
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.74
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	18.8
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	81.8
Total Ramp Density Adjustment	4.5	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	60.5		

HCS7 Freeway Merge Report

Project Information

Segment Number	4	Segment Name	Sisk Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	60.5	45.0
Segment Length (L) / Acceleration Length (LA),ft	1000	590
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5696	353
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	13.50	13.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	0.881
Flow Rate (vi),pc/h	7028	436
Capacity (c), pc/h	6210	1785
Volume-to-Capacity Ratio (v/c)	0.80	0.24

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	1810.7	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.725
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	2700
Distance to Downstream Ramp (LDOWN), ft	1000	On-Ramp Influence Area Speed (SR), mi/h	47.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.594	Outer Lanes Freeway Speed (SO), mi/h	51.6
Flow in Lanes 1 and 2 (v12), pc/h	4328	Ramp Junction Speed (S), mi/h	22.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	4764	Average Density (D), pc/mi/ln	73.3
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	38.8

HCS7 Freeway Merge Report

Project Information

Segment Number	5	Segment Name	Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	60.5	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6049	655
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	13.50	13.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	0.881
Flow Rate (vi),pc/h	7463	808
Capacity (c), pc/h	6210	1785
Volume-to-Capacity Ratio (v/c)	0.93	0.45

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1000	Speed Index (MS)	0.377
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1891
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	53.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.620	Outer Lanes Freeway Speed (SO), mi/h	55.5
Flow in Lanes 1 and 2 (v12), pc/h	3084	Ramp Junction Speed (S), mi/h	54.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	3892	Average Density (D), pc/mi/ln	35.6
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	26.1

HCS7 Basic Freeway Report

Project Information

Segment Number	6	Segment Name	Beckwith Road On-Ramp to Briggsmore Avenue Off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	1500	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	60.5
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6704	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1928
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2305
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2075
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	50.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	37.9
Total Ramp Density Adjustment	4.5	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	60.5		

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	3/7/2024
Agency		Analysis Year	2050 With Alternative B5 / B8
Jurisdiction		Time Analyzed	PM Peak Hour
Project Description	SR-99/Standiford Improvement (SR-99 NB)	Units	U.S. Customary
Segment Number	1	Segment Name	Briggsmore Avenue On-Ramp to Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	3340	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	60.5
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5425	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2231
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2305
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2075
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	34.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	55.3
Total Ramp Density Adjustment	4.5	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	60.5		

HCS7 Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	2
Free-Flow Speed (FFS), mi/h	60.5	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1185
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided Two-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5425	494
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	13.50	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	1.000
Flow Rate (vi),pc/h	6693	537
Capacity (c), pc/h	6210	3570
Volume-to-Capacity Ratio (v/c)	0.93	0.15

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.346
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	2478
Distance to Downstream Ramp (LDOWN), ft	1000	Off-Ramp Influence Area Speed (SR), mi/h	54.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.450	Outer Lanes Freeway Speed (SO), mi/h	60.6
Flow in Lanes 1 and 2 (v12), pc/h	3305	Ramp Junction Speed (S), mi/h	56.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	34.0
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	22.0

HCS7 Freeway Diverge Report

Project Information

Segment Number	3	Segment Name	Sisk Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.9	45.0
Segment Length (L) / Deceleration Length (LA),ft	1000	150
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4931	761
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	13.50	13.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	0.881
Flow Rate (vi),pc/h	6084	939
Capacity (c), pc/h	6480	1785
Volume-to-Capacity Ratio (v/c)	0.81	0.53

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1000	Speed Index (DS)	0.383
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1783
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	59.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.586	Outer Lanes Freeway Speed (SO), mi/h	74.7
Flow in Lanes 1 and 2 (v12), pc/h	3463	Ramp Junction Speed (S), mi/h	64.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	27.3
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	32.7

HCS7 Basic Freeway Report

Project Information

Segment Number	4	Segment Name	Beckwith Road Off-Ramp to Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2665	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	60.5
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4170	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1436
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2305
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2075
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.69
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	59.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	24.0
Total Ramp Density Adjustment	4.5	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	60.5		

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	Beckwith Road On-Ramp to Pelandale Avenue Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	5630	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	60.5
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4889	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1299
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2305
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2075
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.63
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	60.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	21.5
Total Ramp Density Adjustment	4.5	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	60.5		

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	3/7/2024
Agency		Analysis Year	2050 With Alternative B5 / B8
Jurisdiction		Time Analyzed	PM Peak Hour
Project Description	SR-99/Standiford Improvement (SR-99 SB)	Units	U.S. Customary
Segment Number	1	Segment Name	Pelandale Avenue Off-Ramp to Pelandale Avenue On-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2450	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	60.5
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5683	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2337
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2305
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2075
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.92
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	33.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	56.4
Total Ramp Density Adjustment	4.5	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	60.5		

HCS7 Basic Freeway Report

Project Information

Segment Number	2	Segment Name	Pelandale Avenue On-Ramp to Beckwith Road Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	5250	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	60.5
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6450	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1989
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2305
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2075
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.67
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	18.3
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	75.7
Total Ramp Density Adjustment	4.5	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	60.5		

HCS7 Basic Freeway Report

Project Information

Segment Number	3	Segment Name	Beckwith Road Off-Ramp to Sisk Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	900	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	60.5
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5753	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	2366
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2305
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2075
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.74
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	18.6
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	82.3
Total Ramp Density Adjustment	4.5	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	60.5		

HCS7 Freeway Merge Report

Project Information

Segment Number	4	Segment Name	Sisk Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	60.5	45.0
Segment Length (L) / Acceleration Length (LA),ft	1000	590
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5753	652
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	13.50	13.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	0.881
Flow Rate (vi),pc/h	7098	804
Capacity (c), pc/h	6210	1785
Volume-to-Capacity Ratio (v/c)	0.86	0.45

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	1904.4	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.976
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	2700
Distance to Downstream Ramp (LDOWN), ft	1000	On-Ramp Influence Area Speed (SR), mi/h	42.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.594	Outer Lanes Freeway Speed (SO), mi/h	51.6
Flow in Lanes 1 and 2 (v12), pc/h	4398	Ramp Junction Speed (S), mi/h	27.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	5202	Average Density (D), pc/mi/ln	64.6
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	42.1

HCS7 Freeway Merge Report

Project Information

Segment Number	5	Segment Name	Beckwith Road On-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	60.5	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	0.900	0.850
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6405	347
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	13.50	13.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.881	0.881
Flow Rate (vi),pc/h	7902	428
Capacity (c), pc/h	6210	1785
Volume-to-Capacity Ratio (v/c)	0.93	0.24

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1000	Speed Index (MS)	0.352
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2035
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	54.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.620	Outer Lanes Freeway Speed (SO), mi/h	55.0
Flow in Lanes 1 and 2 (v12), pc/h	3320	Ramp Junction Speed (S), mi/h	54.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	3748	Average Density (D), pc/mi/ln	35.5
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	25.2

HCS7 Basic Freeway Report

Project Information

Segment Number	6	Segment Name	Beckwith Road On-Ramp to Briggsmore Avenue Off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	3390	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	1.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	60.5
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.900
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6752	Heavy Vehicle Adjustment Factor (f_{HV})	0.881
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1928
Total Trucks, %	13.50	Capacity (c), pc/h/ln	2305
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2075
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (E_T)	2.00		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	50.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	37.9
Total Ramp Density Adjustment	4.5	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	60.5		

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APPENDIX F

Water Supply Assessment

DRAFT REPORT | JUNE 2025

Scannell Industrial Project Water Supply Assessment

PREPARED FOR

City of Modesto

MODESTO
CALIFORNIA

PREPARED BY

WEST YOST
Water. Engineered.

DRAFT

Scannell Industrial Project
Water Supply Assessment

Prepared for

City of Modesto

Project No. 487-60-25-36

DRAFT

Prepared by: Elizabeth Drayer, PE — Date

QA/QC Review: Whitney Jones, PE — Date

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LIST OF ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
AFY	Acre-Feet Per Year
ARTDA	Amended and Restated Treatment and Delivery Agreement
ASR	Aquifer Storage and Recovery
CIMIS	California Irrigation Management Information System
City	City of Modesto
DBCP	Dibromochloropropane
DWR	California Department of Water Resources
EIR	Environmental Impact Report
ESIRWMP	East Stanislaus Integrated Regional Water Management Plan
gpcd	Gallons Per Capita Per Day
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
IBP	Industrial/Business Park
MCL	Maximum Contaminant Level
mgd	Million Gallons Per Day
MID	Modesto Irrigation District
MRWTP	Modesto Regional Water Treatment Plant
PCE	Perchloroethylene
PI	Planned Industrial
Proposed Project	Scannell Industrial Project
SB	Senate Bill
SCP	Salida Community Plan
SGMA	Sustainable Groundwater Management Act
SOI	Sphere of Influence
TCE	Trichloroethylene
TCP	Trichloropropane
STRGBA	Stanislaus and Tuolumne Rivers Groundwater Basin Association
TDA	Treatment and Delivery Agreement
TID	Turlock Irrigation District
UWMP	Urban Water Management Plan
Water Code	California Water Code
WSA	Water Supply Assessment

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EXECUTIVE SUMMARY

Purpose of Water Supply Assessment

The purpose of this Water Supply Assessment (WSA) is to evaluate the water supply requirements and availability for the proposed Scannell Industrial Project (Proposed Project), as mandated by California Water Code Sections 10910 through 10915, established under Senate Bill (SB) 610.

The project site is situated within the Stanislaus County Salida Community Plan (SCP) and falls within the City of Modesto (City) General Plan Planning Area, although it is currently outside the City's Sphere of Influence (SOI). The Proposed Project includes a request for an SOI amendment to incorporate the project site into the City's SOI and proposes the annexation of the project site into the City. If approved, the Proposed Project would receive its potable water supply from the City of Modesto.

This WSA evaluates the adequacy and sufficiency of the City's total projected water supplies, including existing water supplies and future planned water supplies, to meet the existing and projected future water demands, including those future water demands associated with the Proposed Project, under all hydrologic conditions (normal years, single dry years, and multiple dry years).

Proposed Project Overview

The project site is comprised of approximately 145 acres located at the northwest corner of Kiernan Avenue and Dale Road intersection, within the unincorporated Community of Salida. The Proposed Project will result in the construction of between 2,000,000 and 2,500,000 square feet of warehouse, distribution, and manufacturing space. In addition, a small 2- to 3-acre retail site is proposed at the corner of Dale Road and Kiernan Avenue (State Route 219) to provide retail service to the project.

The Proposed Project meets the definition of a "Project" per California Water Code Sections 10910 through 10915, as established by SB 610 in 2001, thus requiring the preparation of this WSA.

Projected Water Demands and Supply Availability

Projected potable demands for buildout of the Proposed Project total approximately 377 acre-feet per year (AFY). No recycled water demand is anticipated for the Proposed Project. The demands associated with the Proposed Project were included in the *City of Modesto/Modesto Irrigation District Joint 2020 Urban Water Management Plan* (June 2021) (also referred to in this WSA as the City's 2020 UWMP).

It is anticipated that potable water demands for the Proposed Project, if approved by the City, would be served by the City's existing and future water supplies. The inclusion of existing and planned future water supplies is specifically allowed by the California Water Code:

> *Water Code Section 10631(b): Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).*

Determination of Water Supply Sufficiency

Pursuant to California Water Code Section 10910(4) and based on the technical analyses described in this WSA, this WSA demonstrates that the City's existing and additional planned future water supplies are sufficient to meet the City's existing water demands, including those future water demands associated with the Proposed Project.

In most years, the City is expected to have sufficient water supplies to meet projected demands without requiring any demand reductions. During years when supplies are anticipated to be insufficient, only modest demand reductions are projected. Specifically, in normal years, water supplies are projected to meet demands through 2045 without the need for additional conservation or demand reduction measures. In single dry years, demand reductions of up to 9 percent may be necessary beginning in 2035. In multiple dry years, demand reductions of up to 11 percent may be required starting in 2030.

The City has effectively managed water demand during dry periods by implementing water conservation programs and enforcing usage restrictions, as outlined in its adopted Water Shortage Contingency Plan. If approved, the Proposed Project would be subject to the same conservation measures and water use restrictions in dry years as all other City water customers.

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1.0 INTRODUCTION

1.1 Legal Requirement for Water Supply Assessment

California Senate Bill (SB) 610 amended state law, effective January 1, 2002, to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 610 sought to promote more collaborative planning between local water suppliers and cities and counties. It requires detailed information regarding water supply availability to be provided to the city and county decision-makers prior to approval of specified large development projects. The purpose of this coordination is to ensure that prudent water supply planning has been conducted, and that planned water supplies are adequate to meet existing demands, anticipated demands from approved projects and tentative maps, and the demands of proposed projects.

SB 610 amended California Water Code (Water Code) Sections 10910 through 10915 (inclusive) to require land use lead agencies to identify any public water purveyor that may supply water for a proposed development project and request a Water Supply Assessment (WSA) from the identified water purveyor. The purpose of the WSA is to demonstrate the sufficiency of the purveyor's water supplies to satisfy the water demands of the proposed project, while still meeting the water purveyor's existing and planned future uses. Water Code Sections 10910 through 10915 delineate the specific information that must be included in the WSA.

1.2 Need for and Purpose of Water Supply Assessment

The purpose of this WSA is to perform the evaluation required by Water Code Sections 10910 through 10915 in connection with the Scannell Industrial Project (Proposed Project). It is not to reserve water, or to function as a "will serve" letter or any other form of commitment to supply water (see Water Code Section 10914). The provision of water service will continue to be undertaken in a manner consistent with applicable policies and procedures, consistent with existing law.

1.3 Water Supply Assessment Preparation, Format and Organization

The format of this WSA is intended to follow Water Code Sections 10910 through 10915 to clearly delineate compliance with the specific requirements for a WSA. The WSA includes the following sections:

- Section 1: Introduction
- Section 2: Description of Proposed Project
- Section 3: Required Determinations
- Section 4: City of Modesto Water Service Area
- Section 5: City of Modesto Water Demands
- Section 6: City of Modesto Water Supplies
- Section 7: Determination of Water Supply Sufficiency Based on the Requirements of SB 610
- Section 8: Water Supply Assessment Approval Process
- Section 9: References

Relevant citations of Water Code Sections 10910 through 10915 are included throughout this WSA in *italics* to demonstrate compliance with the specific requirements of SB 610.

2.0 DESCRIPTION OF PROPOSED PROJECT

The Proposed Project location, description, and projected water demands are discussed below. This information is based on the Project Description included in the Notice of Preparation for the Proposed Project.[1]

2.1 Proposed Project Location and Existing Use

The Proposed Project is comprised of approximately 145 acres located at the northwest corner of Kiernan Avenue and Dale Road intersection, within the unincorporated Community of Salida. The project site is located within the Stanislaus County Salida Community Plan (SCP) and is zoned for development as Salida Community Plan Industrial/Business Park (SCP-IBP) and Salida Community Plan Planned Industrial (SCP-PI). The project site is also within the City of Modesto General Plan Planning Area with a designation of Salida Community Plan (SCP) but is outside the City's Sphere of Influence (SOI). The Proposed Project requests an SOI amendment to incorporate the project site into the City's SOI and proposes an annexation of the project site into the City of Modesto. The location of the Proposed Project is shown on Figure 2-1.

The project site and surrounding properties are generally in agricultural use. There are also light industrial developments east and west of the project site, along Kiernan Avenue. Joseph A. Gregori High School is located northwest of the site and the Kaiser Permanente Modesto Medical Center and similar business park uses are located immediately south, within the City of Modesto. A vicinity map for the Proposed Project is presented on Figure 2-2.

2.2 Proposed Land Uses and Projected Water Demand

The Proposed Project will result in the construction of 2,000,000 to 2,500,000 square feet of warehouse, distribution, and manufacturing space. In addition, a small 2- to 3-acre retail site is proposed at the corner of Dale Road and Kiernan Avenue (State Route 219) to provide retail service to the project. The Proposed Project includes a Tentative Map that would create eight parcels for the industrial and retail buildings. Figure 2-3 provides an illustration of the proposed buildings and parcel lines.

To determine the projected water demand for the Proposed Project, the water use factors from the City's 2017 Water Master Plan[2] were used with a 15 percent reduction to account for more recent water use trends in the City, consistent with the water demands included in the *City of Modesto/Modesto Irrigation District Joint 2020 Urban Water Management Plan* (June 2021) (also referred to in this WSA as the City's 2020 UWMP). The total projected water demand for the Proposed Project is 377 acre-feet/year (AFY) as shown in Table 2-1. All the water demands from the Proposed Project are anticipated to be served by the City's potable water distribution system. No recycled water demand is anticipated for the Proposed Project.

[1] City of Modesto, 2025. Notice of Preparation – Scannell Industrial, dated February 2025.
[2] City of Modesto, 2017. Water Master Plan, dated September 2017.

Table 2-1. Total Projected Water Demand

Land Use Type	Gross Area	Water Use Factor[a]	Non-Revenue Water[b]	Projected Water Demand[c]
Salida Community Plan	145 acres	2.34 AFY/acre	10%	377 AFY

(a) Water use factor is from the City of Modesto 2017 Water Master Plan for the Salida Community Plan (2.75 AFY/acre) with a 15 percent reduction to account for more recent water use trends, consistent with the water demands included in the City's 2020 UWMP.

(b) Non-revenue water is 10 percent of the total water demand. This assumption is based on the City of Modesto 2017 Water Master Plan.

(c) The projected water demand was determined by multiplying the gross acres by the water use factor and dividing by 0.90 (1 minus 0.10) to account for the 10 percent non-revenue water.

2.3 Projected Water Supply

Water demands for the Proposed Project will be served using the City's existing and future portfolio of potable water supplies discussed in Section 6. The inclusion of existing and planned future water supplies is specifically allowed by the Water Code:

> *Water Code Section 10631(b): Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a)*

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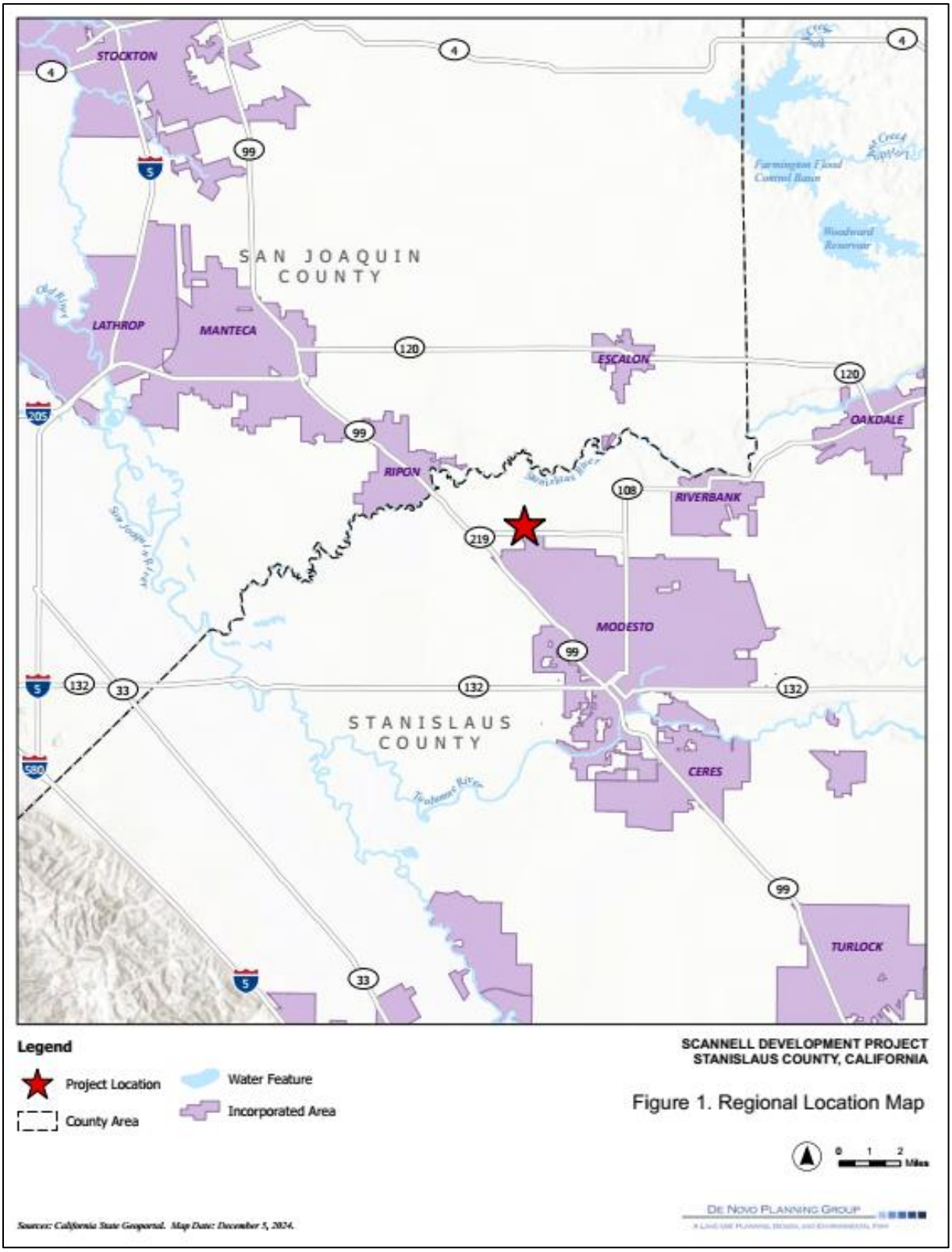
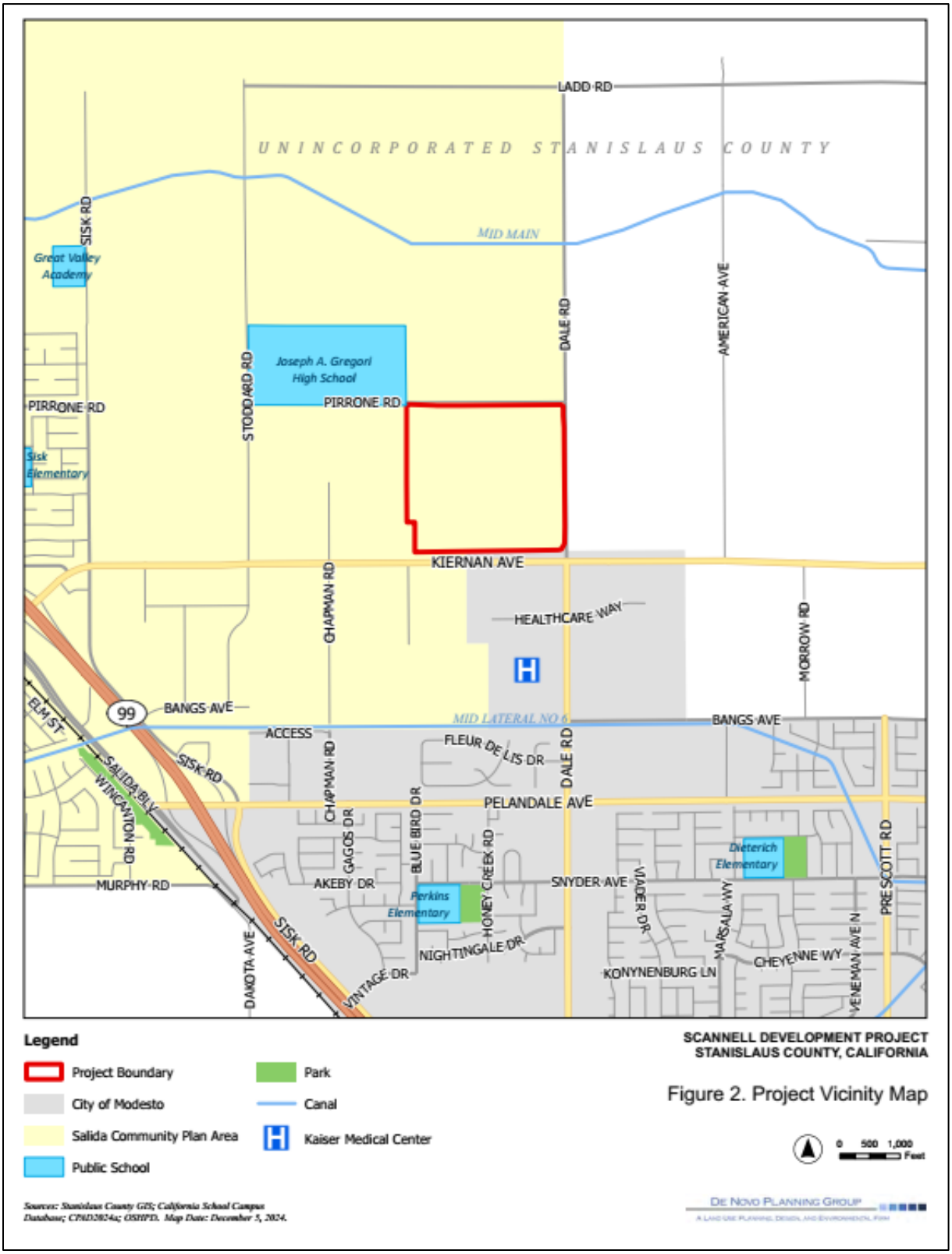


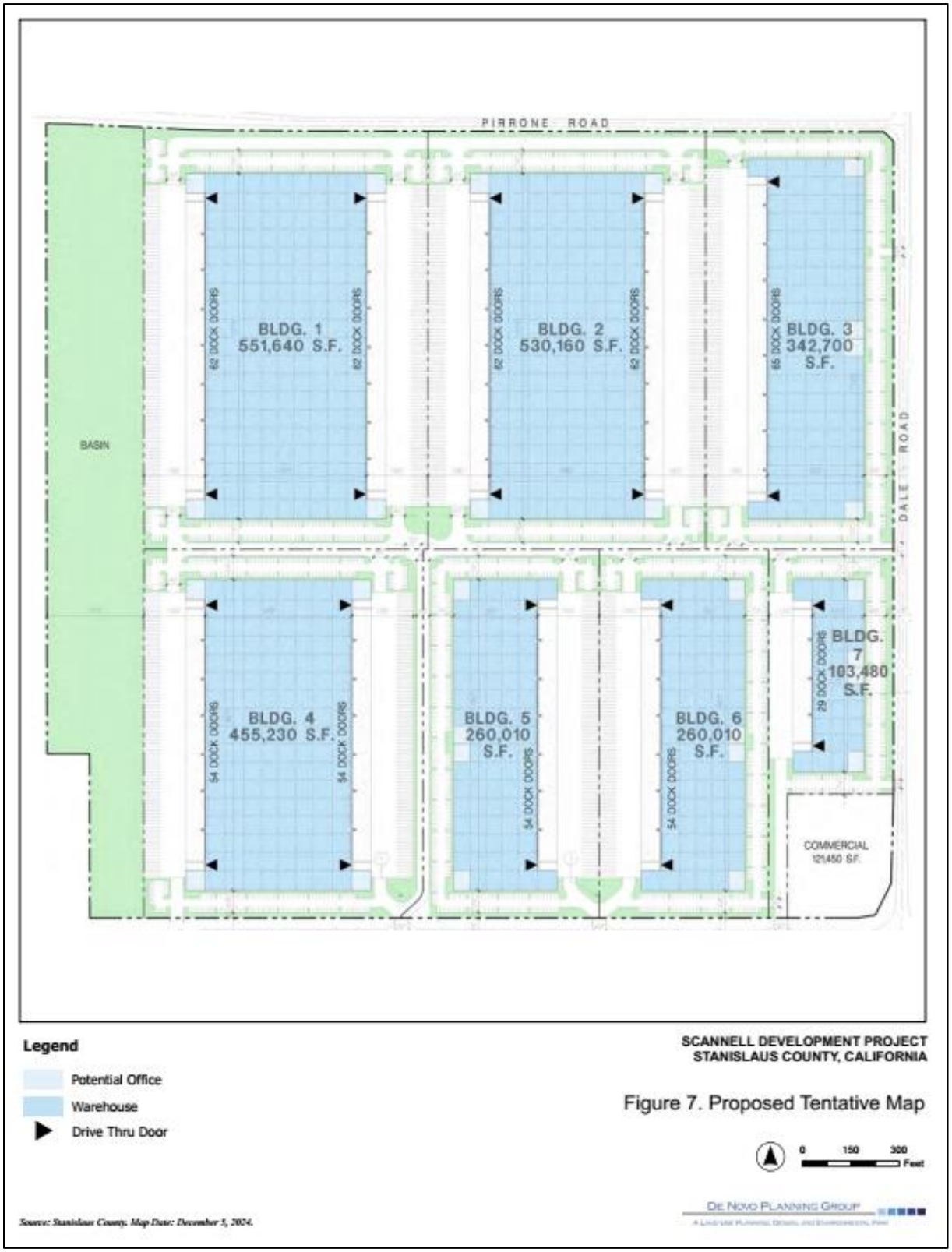
Source: City of Modesto, 2025. Notice of Preparation – Scannell Industrial

Figure 2-1. Proposed Project Location



Source: City of Modesto, 2025. Notice of Preparation – Scannell Industrial

Figure 2-2. Proposed Project Vicinity Map



Source: City of Modesto, 2025. Notice of Preparation – Scannell Industrial

Figure 2-3. Proposed Project

3.0 REQUIRED DETERMINATIONS

3.1 Does SB 610 Apply to the Proposed Project?

Water Code Section 10910(a) Any city or county that determines that a project, as defined in Section 10912, is subject to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) under Section 21080 of the Public Resources Code shall comply with this part.

Water Code Section 10912(a) "Project" means any of the following:

(1) A proposed residential development of more than 500 dwelling units.
(2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.
(3) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.
(4) A proposed hotel or motel, or both, having more than 500 rooms.
(5) A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.
(6) A mixed-use project that includes one or more of the projects specified in this subdivision.
(7) A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500-dwelling unit project.

Based on the following facts, SB 610 does apply to the Proposed Project.

- The City has determined that the Proposed Project is subject to the California Environmental Quality Act and that an Environmental Impact Report (EIR) is required.
- The Proposed Project, with 145 acres and 2,000,000 to 2,500,000 square feet of warehouse, distribution, and manufacturing space, meets the definition of a "project" as specified in Water Code Section 10912(a) paragraph (5) as defined for an industrial, manufacturing or processing plant, or industrial park.

The Proposed Project has not been the subject of a previously adopted WSA and has not been included in an adopted WSA for a larger project. Therefore, according to Water Code Section 10910(a), a WSA is required for the Proposed Project.

3.2 Does SB 221 Apply to the Proposed Project?

In 2001, SB 221 amended State law to require that approval by a city or county of certain residential subdivisions requires an affirmative written verification of sufficient water supply. Per California Government Code Section 66473.7(a)(1), a subdivision means a proposed residential development of more than 500 dwelling units.

The Proposed Project does not include any residential development and is therefore not subject to the requirements of SB 221.

3.3 Who is the Identified Public Water System?

> *Water Code Section 10910(b) The city or county, at the time that it determines whether an environmental impact report, a negative declaration, or a mitigated negative declaration is required for any project subject to the California Environmental Quality Act pursuant to Section 21080.1 of the Public Resources Code, shall identify any water system that is, or may become as a result of supplying water to the project identified pursuant to this subdivision, a public water system, as defined by Section 10912, that may supply water for the project.*
>
> *Water Code Section 10912(c) "Public water system" means a system for the provision of piped water to the public for human consumption that has 3,000 or more service connections.*

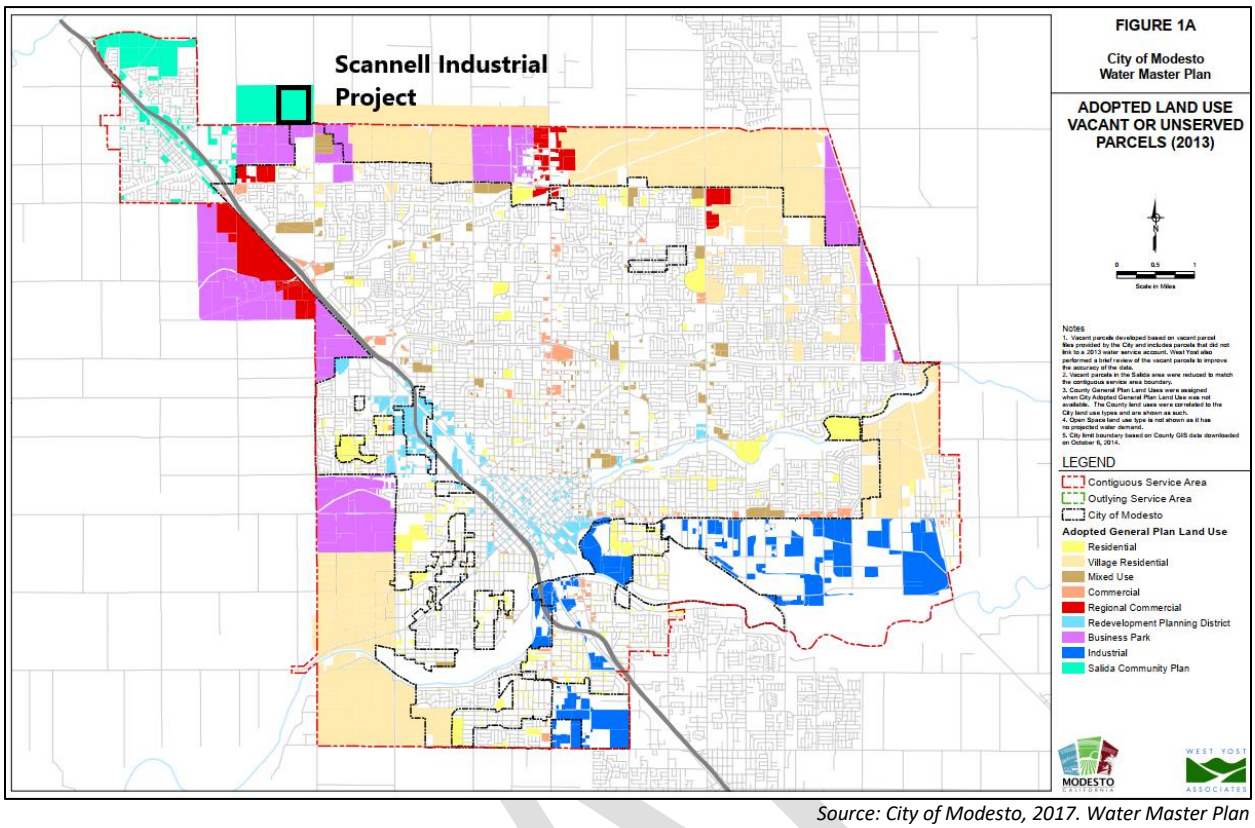
The Proposed Project is located within the City of Modesto General Plan Planning Area, but outside the City's SOI. The Proposed Project includes an SOI amendment to incorporate the project site into the City's SOI and proposes an annexation of the project site into the City of Modesto. Therefore, the City of Modesto is the identified public water system for the Proposed Project.

3.4 Does the City have an adopted Urban Water Management Plan (UWMP) and does the UWMP include the projected water demand for the Proposed Project?

> *Water Code Section 10910(c)(1) The city or county, at the time it makes the determination required under Section 21080.1 of the Public Resources Code, shall request each public water system identified pursuant to subdivision (b) to determine whether the projected water demand associated with a proposed project was included as part of the most recently adopted urban water management plan adopted pursuant to Part 2.6 (commencing with Section 10610).*

The City's most recent UWMP (the City's 2020 UWMP) was adopted by City Council in June 2021 and is incorporated by reference into this WSA.[3] The City's 2020 UWMP included water demand projections for current water demands within the City's contiguous and non-contiguous water service areas and anticipated water demands associated with future development projects and planning areas within the City's General Plan area through 2045. A portion of the Salida Community Plan area, including the Proposed Project area, was included in the future development projects and planning areas considered in the City's 2020 UWMP, as shown on Figure 3-1. Therefore, the projected water demand for the Proposed Project was included in the City's 2020 UWMP.

[3] West Yost. June 2021. City of Modesto/Modesto Irrigation District Joint 2020 Urban Water Management Plan.



Source: City of Modesto, 2017. Water Master Plan

Figure 3-1. Adopted General Plan Land Uses Considered in the City's 2020 UWMP

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4.0 CITY OF MODESTO WATER SERVICE AREA

4.1 Water Service Area

The City is located in the heart of the San Joaquin Valley, approximately 90 miles southeast of the San Francisco Bay Area and 77 miles south of the City of Sacramento. The City is located in Stanislaus County and is the largest incorporated city in Stanislaus County, accounting for approximately 40 percent of the County's population.

The City's water service area consists of one large "contiguous" service area and several "outlying" non-contiguous service areas. The central contiguous service area is primarily defined by the City's current SOI and includes Modesto, Salida, portions of North Ceres, and several unincorporated Stanislaus County "islands" including Empire, Bret Harte, and West Modesto, among several others. The outlying service areas are not contiguous to the central service area and include Grayson, Del Rio, Ceres (Walnut Manor), and portions of Turlock. The City also serves potable water to the Jennings Wastewater Treatment Plant via a groundwater well located at the plant.

4.2 Population

Population growth is a key factor influencing both water supply and demand in the City's service area. Historically, the City has been one of the fastest-growing areas in California, with an average annual growth rate of 1.8 percent from 1996 to 2004. Although growth slowed to about 1 percent per year between 2010 and 2020 due to broader economic conditions, even modest population increases can significantly impact water demand. As the population grows, so does the need for residential, commercial, and industrial water use, placing additional pressure on existing water infrastructure and resources. At the same time, planning for future water supply must account for these demographic trends to ensure that the system can meet long-term needs.

Table 4-1 shows the City's current and projected population in five-year increments from 2020 to 2045.

Table 4-1. City of Modesto Current and Projected Population

Year	Population
2020	270,974
2025	284,959
2030	298,631
2035	312,995
2040	328,072
2045	343,892

Source: City of Modesto 2020 UWMP, Table 3-2, June 2021.

4.3 Climate

The climate of the City's water service area plays a critical role in shaping both water supply and demand. Characterized by a Mediterranean climate with hot, dry summers and cool, wet winters, the region experiences highly seasonal precipitation patterns. Most rainfall occurs during the winter months, which replenishes surface and groundwater sources, while the summer months see little to no rainfall, increasing the risk of drought. This seasonal imbalance means that water must be carefully stored and managed to ensure availability during the dry season. At the same time, water demand peaks in the summer due to higher temperatures, which drive increased use for landscape irrigation, cooling, and personal consumption. This simultaneous decrease in supply and increase in demand can create significant challenges for water resource planning. Climate data, such as average temperature and rainfall (as summarized in Table 4-2), is essential for forecasting water needs, designing conservation strategies, and ensuring long-term sustainability of the water supply system.

Table 4-2. Monthly Average Climate Data Summary

Month	Standard Monthly Average Evapotranspiration[(a)], inches	Average Total Rainfall[(b)], inches	Average Temperature[(b)], Degrees Fahrenheit	
			Maximum	Minimum
January	1.12	2.44	53.8	37.6
February	1.95	2.07	60.9	40.8
March	3.63	1.93	66.9	43.5
April	5.27	1.03	73.3	46.8
May	6.96	0.46	81.2	51.8
June	7.93	0.13	88.3	56.6
July	7.99	0.02	94.3	60.0
August	6.93	0.04	92.3	58.8
September	5.14	0.17	87.7	56.0
October	3.46	0.63	77.9	49.6
November	1.74	1.24	64.6	41.7
December	1.12	2.05	54.4	37.7
Totals	**53.2**	**12.2**	74.6	48.4

Source: City of Modesto 2020 UWMP, Table 3-1, June 2021.

(a) Source: California Irrigation Management Information System (CIMIS) data for Station #71: Modesto (downloaded October 20, 2020).

(b) Source: Western Regional Climate Center data for California Department of Water Resources (DWR) for Modesto, California (period of record: March 1, 1906 to June 9, 2016).

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5.0 CITY OF MODESTO WATER DEMANDS

> *Water Code Section 10910(c)(2) If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f), and (g).*

The descriptions provided below for the City's water demands have been taken, for the most part, from the City's 2020 UWMP, which was adopted in June 2021, as well as from the City's Water Conservation Plan Update (July 2021).

5.1 Historical Water Demand

The City's water demand, as measured by water production data, peaked in 2002 and has steadily declined since. Significant reductions occurred in 2009 and 2010, likely due to the economic downturn. In recent years, despite continued population and economic growth, water demand has not returned to historical peak levels and has remained relatively stable. This sustained reduction is largely attributed to intensified conservation efforts during the 2012–2016 drought and subsequent dry years, which have had a lasting influence on customer water use behavior.

Table 5-1 presents historical per capita water use for the City's contiguous and outlying service areas from 2005 to 2020. During this period, per capita use dropped significantly, from a high of 274 gallons per capita per day (gpcd) in 2005 and 2007 to 175 gpcd in 2020. The sharpest reductions occurred between 2014 and 2016, driven by drought-related conservation measures and the City's residential meter retrofit program. Although per capita water use began to rebound slightly in 2017, it remains well below 2005 levels, reflecting the continued success of long-term conservation practices.

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Table 5-1. Historical Water Demand and Per Capita Water Use[a]			
Year	Total Population[b]	Total Annual Water Production, AF[c]	Per Capita Water Use[d], gpcd
2005	249,691	76,517	274
2006	249,918	76,275	272
2007	250,877	77,020	274
2008	251,639	75,030	266
2009	252,838	68,729	243
2010	251,098	62,845	223
2011	251,668	62,503	222
2012	252,777	64,155	227
2013	255,919	64,407	225
2014	257,830	57,396	199
2015	259,187	47,459	163
2016	264,485	47,128	159
2017	266,485	49,815	167
2018	268,144	50,362	168
2019	270,299	49,883	165
2020	270,974	53,104	175

Source: City of Modesto Water Conservation Plan Update, Table 4-1, July 2021.

(a) Includes the City's contiguous and outlying service areas, except Hickman and Waterford. As of July 1, 2015, the City no longer serves Hickman and Waterford. Therefore, historical water use and populations from Hickman and Waterford have been removed from the totals presented above.

(b) Population for 2005-2015 is based in Table 3-1 in the City of Modesto's 2017 Water Conservation Plan. Population for 2016-2020 is based on information received from the City for its 2020 UWMP.

(c) Water production from 2005-2015 is based in Table 3-1 in the City of Modesto's 2017 Water Conservation Plan. Water production from 2016-2020 is based on information received from the City for its 2020 UWMP.

(d) Per capita water use shown is based on City's total water use for all customer classes.

5.2 Future Water Demand

Projected future water demands presented in the City's 2020 UWMP used land-use based water demand projections developed for the City's 2017 Water Master Plan Update, with a 15 percent reduction to account for more recent and projected future water use trends. As noted in Section 3.4, a portion of the Salida Community Plan area, which includes the Proposed Project area, was included in the future development projects and planning areas considered in the City's 2020 UWMP. Therefore, the projected water demand for the Proposed Project was included in the City's 2020 UWMP.

Projected water demands for the City's water service area, which include the projected water demands for the Proposed Project, are summarized in Table 5-2.

Table 5-2. Projected Future Water Demand (includes Non-Revenue Water)					
	Projected Water Demand, AFY				
	2025	2030	2035	2040	2045
Potable Water Demand	63,666	68,289	72,911	77,533	82,156
Total (including Proposed Project)	**63,666**	**68,289**	**72,911**	**77,533**	**82,156**
Source: City of Modesto 2020 UWMP, Table 4-5, June 2021.					

5.3 Dry Year Water Demand

The City has demonstrated its ability to reduce water demands during drought conditions through the implementation of various water conservation programs and water use restrictions. In 2015, the City achieved a cumulative savings of 29.1 percent in response to the Governor's Executive Order calling for a statewide reduction in urban water use. The adopted Water Shortage Contingency Plan, outlined in Appendix J of the City's 2020 UWMP, includes a six-stage plan describing specific actions to reduce water demand by up to and greater than 50 percent in the event of a water supply shortage or other emergency.

As described further in Sections 6 and 7 of this WSA, the City's projected water demands in single dry years and multiple dry years assume a modest reduction in water demand to match available water supplies. If approved, the Proposed Project would be subject to the same conservation measures and water use restrictions in dry years as all other City water customers.

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6.0 CITY OF MODESTO WATER SUPPLIES

Water Code Section 10910(c)(2) If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f) and (g).

Water Code Section 10910(d)(1) The assessment required by this section shall include an identification of any existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and a description of the quantities of water received in prior years by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts.

Water Code Section 10910(d)(2) An identification of existing water supply entitlements, water rights, or water service contracts held by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall be demonstrated by providing information related to all of the following:

(A) Written contracts or other proof of entitlement to an identified water supply.

(B) Copies of a capital outlay program for financing the delivery of a water supply that has been adopted by the public water system.

(C) Federal, state, and local permits for construction of necessary infrastructure associated with delivering the water supply.

(D) Any necessary regulatory approvals that are required in order to be able to convey or deliver the water supply.

Water Code Section 10910(e) If no water has been received in prior years by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts, the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall also include in its water supply assessment pursuant to subdivision (c), an identification of the other public water systems or water service contract-holders that receive a water supply or have existing water supply entitlements, water rights, or water service contracts, to the same source of water as the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has identified as a source of water supply within its water supply assessments.

The Proposed Project, if approved by the City, is anticipated to be served from the City's existing and future portfolio of water supplies. The inclusion of existing and planned future water supplies is specifically allowed by the Water Code:

Water Code Section 10631(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).

The water supply for the Proposed Project will have the same water supply reliability and water quality as the water supply available to the other City existing and future water customers.

The water supplies needed to serve the Proposed Project (together with existing water demands and planned future uses) are predominantly described in the City's 2020 UWMP. When relevant, the descriptions provided below have been updated with information provided by City staff.

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6.1 Existing Potable Water Supplies

Prior to 1995, all municipal and industrial water demands in the City were met from groundwater pumping. Beginning in the 1940s, increased water demands resulting from growth, along with periodic drought conditions, contributed to a reduction in groundwater levels and created a cone of depression under the City. This cone of depression, combined with increasingly stringent federal and state water quality requirements, prompted a 1983 study of the City's groundwater supply. This study recommended a conjunctive water use program that would supplement the City's groundwater supply with treated surface water from the Tuolumne River. Following the recommendations from the study, the City, Modesto Irrigation District (MID) and the former Del Este Water Company formed a partnership to use a portion of MID's surface water supplies for municipal water use.

The City currently uses a conjunctive water use strategy with two primary water sources to meet potable water demands within the City's service area. These include:

- Surface water from the Tuolumne River via Modesto Reservoir and treated at MID's Modesto Regional Water Treatment Plant (MRWTP), which is purchased on a wholesale basis from MID
- Local groundwater pumped from City wells located throughout the City's service area

City residents within the contiguous service area north of the Tuolumne River (including North Modesto, Salida, and Empire) generally rely on treated surface water supply from MID year-round, supplemented with groundwater as needed. Water demands for the contiguous service area located south of the Tuolumne River (South Modesto) and the City's outlying service areas are met entirely with groundwater supply year-round.

Each of the City's existing water supplies is described in more detail below. Table 6-1 shows the source of the City's existing water supplies and actual volume used in 2020.

Table 6-1. Existing (2020) Water Supplies

Supply Source	Additional Detail on Water Supply	Actual Volume, AFY
Purchased Treated Surface Water	MID MRWTP	25,983
Groundwater	City Wells	27,121
	Total	**53,104**

Source: City of Modesto 2020 UWMP, Table 6-13, June 2021.

6.1.1 Purchased Treated Surface Water

Together with the Turlock Irrigation District (TID), MID holds senior rights to water from the Tuolumne River. The 1,880-square mile Tuolumne River watershed extends to the high Sierra Nevada Mountains, and the river flows to its confluence with the San Joaquin River approximately ten miles west of Modesto. Most of the water in the Tuolumne River comes from snowmelt, with peak runoff flows occurring from April through July during which time over 60 percent of the annual flow takes place. Within the lower Tuolumne River watershed, MID and TID operate the Don Pedro Reservoir with a maximum storage capacity of 2,030,000 AF. MID's annual diversion from the Tuolumne River was approximately 258,000 AF of water (average from 2011 to 2020). Of that amount, approximately 26,780 AF (average from 2011 to 2020) was delivered to the MRWTP for treatment and delivery to the City.

The original Treatment and Delivery Agreement (TDA), enacted in 1992, established the delivery of treated surface water to the City's contiguous service area north of the Tuolumne River. It obligated MID to deliver up to 33,600 AFY of treated surface water to the City, commencing on May 1 and ending the following April 30 during normal years. In 1995, the City purchased the Del Este Water Company and, along with it, their proportional share of treated surface water as defined in the TDA. In January 1995, Phase One of the MRWTP became operational, and the City began receiving an annual average of 30 million gallons per day (mgd) (33,600 AFY) of treated surface water from MID.

MID and the City approved the Amended and Restated Treatment and Delivery Agreement (ARTDA) in October 2005. This agreement supersedes the original TDA and sets forth, among other things, the terms and conditions for the delivery of up to 67,200 AFY of treated water to the City from the expanded MRWTP. The increased water treatment capacity provided by the MRWTP Phase Two Expansion project would allow the City to serve more surface water, thereby reducing its long-term dependence on groundwater. In early 2016, the MRWTP Phase Two Expansion was completed, which will ultimately provide the City with up to an additional 30 mgd of treated surface water supply, for a total annual average supply of up to 60 mgd (67,200 AFY).

6.1.2 Groundwater

Water Code Section 10910(f) If a water supply for a proposed project includes groundwater, the following additional information shall be included in the water supply assessment.

Water Code Section 10910(f)(1) A review of any information contained in the urban water management plan relevant to the identified water supply for the proposed project.

Water Code Section 10910(f)(2) A description of any groundwater basin or basins from which the proposed project will be supplied. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current bulletin of the department that characterizes the condition of the groundwater basin, and a detailed description by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), of the efforts being undertaken in the basin or basins to eliminate the long-term overdraft condition.

Water Code Section 10910(f)(3) A detailed description and analysis of the amount and location of groundwater pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), for the past five years from any groundwater basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historical use records.

Water Code Section 10910(f)(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), from any basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historical use records.

Water Code Section 10910(f)(5) An analysis of the sufficiency of the groundwater from the basin or basins from which the proposed project will be supplied to meet the projected water demand associated with the proposed project. A water assessment shall not be required to include the information required by this paragraph if the public water system determines, as part of the review required by paragraph (1), that the sufficiency of groundwater necessary to meet the initial and projected water demand associated with the project was addressed in the description and analysis required by paragraph (4) of subdivision (b) of Section 10631.

6.1.2.1 Groundwater Overview

As discussed above, the City relied exclusively on groundwater to meet water demands until the introduction of treated surface water in 1995. At the time the 2020 UWMP was prepared, the City had 89 active groundwater wells in both the contiguous and outlying service areas.

The City obtains its groundwater from the San Joaquin Valley Groundwater Basin, which has three subbasins within the City's service area: the Modesto Subbasin (north of the Tuolumne River), the Turlock Subbasin (south of the Tuolumne River), and the Delta-Mendota Subbasin (west of the San Joaquin River, serving the Grayson area).

Groundwater recharge in these subbasins primarily occurs through deep percolation of applied irrigation water and seepage from canals, streams, and rivers. Additional, though smaller, contributions come from percolation of precipitation and runoff from smaller streams. The City also actively supports groundwater recharge through stormwater management infrastructure, including rock wells, infiltration basins, and other dedicated recharge facilities.

In 2007, the City estimated a preliminary operational yield of approximately 53,500 AFY from the three groundwater subbasins underlying its service area. This estimate was based on historical groundwater pumpage and was designed to maintain an average groundwater elevation of at least 40 feet above mean sea level. If actual pumpage falls below this threshold, groundwater levels are expected to rise, effectively allowing for "in-lieu" groundwater banking that can be drawn upon during dry periods or to meet future demand. Conversely, exceeding the 53,500 AFY yield, such as during drought years, would likely result in declining groundwater levels.

It is important to note that this yield was estimated when the City still served the Hickman and Waterford areas. As of July 1, 2015, those areas are no longer within the City's service area. From 2000 to 2013, Hickman and Waterford averaged a combined groundwater production of about 2,000 AFY. Adjusting for their removal, the City's current operational yield is estimated to be 51,500 AFY.

6.1.2.2 Groundwater Basin Management

Prior to the passage of the Sustainable Groundwater Management Act in 2014, the City and MID participated in groundwater management studies initiated by the 1992 California State Assembly Bill 3030 (AB 3030). The goal of this bill, also referred to as the Groundwater Management Act, was to maximize the total groundwater supply while protecting the quality of the groundwater basin. The Stanislaus and Tuolumne Rivers Groundwater Basin Association (STRGBA) completed the Integrated Regional Groundwater Management Plan for the Modesto Subbasin in 2005 in compliance with the Groundwater Management Planning Act of 2002 (SB 1938) and the Integrated Regional Water Management Planning Act of 2002 (SB 1672). The STRGBA is made up of the following agencies: City of Modesto, MID, City of Oakdale, Oakdale Irrigation District, City of Riverbank, City of Waterford[7], and Stanislaus County.

The City also participated in the preparation of the Turlock Groundwater Basin Management Plan, which was prepared by the Turlock Groundwater Basin Association and was completed in 2008. The agencies involved in this association include the City of Modesto, City of Turlock, TID, City of Ceres, City of Hughson, Merced Irrigation District, Eastside Water District, Delhi County Water District, Ballico Community Services District, Ballico-Cortez Water District, Hillmar Water District, Denair Community Services District, the Keyes Community Water District, Stanislaus County, and Merced County.

On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package, composed of AB 1739 (Dickinson), SB 1168 (Pavley), and SB 1319 (Pavley), collectively known as the Sustainable Groundwater Management Act of 2014 (SGMA). SGMA empowers local agencies to manage groundwater basins in a sustainable manner over the long term. SGMA applies to basins or subbasins designated by the DWR as high- or medium-priority basins based on a statewide ranking that uses criteria including population and extent of irrigated agriculture dependent on groundwater. The final September 2019 Basin Prioritization results indicated that 94 of California's 515 groundwater basins and subbasins are high- and medium-priority basins. All three of the City's underlying groundwater subbasins have been designated as high-priority basins, and the Delta-Mendota Subbasin has also been identified as critically overdrafted.

The STRGBA Groundwater Sustainability Agency (GSA) and the Tuolumne County GSA developed a Groundwater Sustainability Plan (GSP) for the Modesto Subbasin. The GSP was initially submitted to DWR in January 2022, revised and resubmitted in July 2024 to address comments from DWR, and subsequently approved by DWR in February 2025.

The Turlock Subbasin contains two GSAs, the West Turlock Subbasin GSA and the East Turlock Subbasin GSA. The City is a member of the West Turlock Subbasin GSA. The West Turlock Subbasin and East Turlock Subbasin GSAs jointly developed a single GSP for the Turlock Subbasin. The GSP was initially submitted to DWR in January 2022, revised and resubmitted in July 2024 to address comments from DWR, and subsequently approved by DWR in February 2025.

The Delta-Mendota Subbasin contains 24 GSAs. The Grayson water system is located within the West Stanislaus Irrigation District GSA, which developed the Northern and Central Delta-Mendota Regions GSP8 along with seven other GSAs in November 2019. A revised GSP was completed in June 2022 to address comments from DWR and was subsequently approved by DWR in July 2022. Although the City is not a member of the West Stanislaus Irrigation District GSA, it coordinates directly with Stanislaus County, which is a member of the West Stanislaus Irrigation District GSA.

Under SGMA, the GSAs, including the City, will be regularly monitoring and reporting their progress on implementing projects and studies and the impacts of their outreach within each subbasin.

6.1.2.3 Groundwater Use

The City's historical groundwater pumpage from 2016 through 2020 is summarized in Table 6-2. Average annual groundwater pumpage during that period was approximately 22,546 AFY, which is well below the City's groundwater operational yield of 51,500 AFY.

Table 6-2. Historical Groundwater Volume Pumped by the City of Modesto

Supply Source	Annual Groundwater Volume, AFY				
	2016	2017	2018	2019	2020
Groundwater	23,514	21,941	19,876	20,279	27,121

Source: City of Modesto 2020 UWMP, Table 6-6, June 2021.

6.1.2.4 Groundwater as a Future Water Supply

The City currently maximizes the use of its treated surface water supply from MID in normal and wetter years. The use of this treated surface water supply provides the City with flexibility to preserve its groundwater supplies through in-lieu banking. The City will address overdraft conditions in accordance with SGMA through the GSPs developed for the groundwater subbasins underlying the City's water service area. The GSPs identify the activities required for the City to monitor and manage groundwater levels, water quality, groundwater quality degradation, and inelastic land surface subsidence.

6.2 Additional Planned Future Potable Water Supplies

The City's treated surface water supply from MID and the City's groundwater supply are the key components of the City's water supply portfolio. The City may implement future water supply projects to increase water supply for average, single-dry, and multiple dry years. These potentially include both additional surface water supplies and groundwater supplies.

A potential MRWTP Phase Three Expansion Project is possible if an available surface water supply is identified in the future. However, at this time, this project is speculative, and the need for and timing of this project has not yet been determined.

The City may also develop projects to construct wellhead treatment systems to address existing and/or emerging water quality issues and/or an aquifer storage and recovery program (also referred to as managed aquifer recharge) that involves the seasonal banking of water in an aquifer during times when excess water is available (typically winter and spring) and subsequent recovery of the water from the aquifer when needed (typically fall and summer, and/or during drought periods).

However, because the City is projected to have sufficient supplies to meet future water demands, the need for and timing of potential water supply projects have not been determined. Therefore, these potential future water supply projects are not currently included in the City's future water supply portfolio.

6.3 Recycled Water

The City currently uses recycled water (secondary treated effluent) for agricultural irrigation on City-owned ranch lands located outside of its water service area and delivers tertiary treated recycled water as part of the North Valley Regional Recycled Water Program, which is also outside of its water service area. The North Valley Regional Recycled Water Program is a partnership with the City of Turlock to provide recycled water to the Del Puerto Water District for irrigation purposes through a pipeline that discharges into the Delta Mendota Canal. Additionally, the program provides water to Central Valley Project Improvement Act wildlife refuges located south of the Sacramento-San Joaquin River Delta.

There is no existing or planned beneficial use of recycled water within the City's water service area.

6.4 Water Supply Availability and Reliability

Water Code Section 10910(c)(4) requires that a WSA include a discussion with regard to "whether total projected water supplies, determined to be available by the city or county for the project during normal, single dry, and multiple dry water years during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses, including agricultural and manufacturing uses." Accordingly, this WSA addresses these three hydrologic conditions through the year 2045. The reliability discussion presented in this section reflects Chapter 7 of the City's 2020 UWMP.

An in-depth assessment of climate change impacts is included in the *East Stanislaus Integrated Regional Water Management Plan (ESIRWMP) Update* (February 2018). The City is a member of the East Stanislaus Regional Water Management Partnership, the official Regional Water Management Group for the area, alongside the cities of Hughson, Ceres, Turlock, Waterford, and Stanislaus County.

Climate change introduces new uncertainties to an already complex water resources planning landscape, particularly given the region's limited diversification in water supply sources. The area relies heavily on multiple subbasins of the San Joaquin Valley Groundwater Basin and primarily on surface water from the Tuolumne River. Although climate change will affect groundwater and surface water differently, the region faces shared vulnerabilities across both sources, including:

- Reduced surface water availability
- Decreased water supply reliability due to diminished groundwater recharge and runoff
- Increased risk of groundwater overdraft
- Declining water quality
- Loss of riparian habitat, wetlands, and other sensitive ecosystems
- Reduced hydroelectric generation capacity

6.4.1 Reliability by Water Source

The following sections describe the anticipated reliability of the City's purchased treated surface water supplies and groundwater supplies.

6.4.1.1 Purchased Treated Surface Water

Under normal/wet water year supply conditions, it is assumed that the City will receive its full allotment of their MID treated surface water delivery. Normal conditions for the area are based on 1984, which has been characterized as an above normal year using the San Joaquin Valley Water Year Type Index. This index characterizes water year type based on the unimpaired flow at the following four locations: Stanislaus River below Goodwin Reservoir, Tuolumne River below La Grange, Merced River below Merced Falls, and San Joaquin River inflow to Millerton Lake. The unimpaired runoff for 1984 was 3.69 million AF. Above normal flow is characterized as flows greater than 3.1 million AF and less than 3.8 million AF.

The ARTDA between MID and the City includes a formula to reduce deliveries in drier than average years based on the number of inches allocated to MID's agricultural customers. In 2014 and 2015, the available supply from MID was reduced significantly due to drought conditions:

- In 2014, the available supply was 24 inches of the total 42-inch allocation (a 43 percent reduction), resulting in a treated water supply delivery to the City of approximately 19,200 AF for the 2014/2015 water year (May 1, 2014 through April 30, 2015).
- In 2015, the available supply was 16 inches of the total 42-inch allocation (equivalent to a 62 percent reduction), resulting in a treated water supply delivery to the City of approximately 12,800 AF for the 2015/16 water year (May 1, 2015 through April 30, 2016).

For a single dry water year, it was assumed that MID delivery cutbacks would equal those experienced in 2015 (i.e., a reduction of 26/42 inches, or 61.9 percent). In dry years, the City plans to supplement reduced surface water supplies with banked groundwater supplies, as necessary, to meet water demands.

To estimate supply reductions during a five-year drought, MID delivery cutbacks were based on the 2015 water supply condition. It was assumed that 2015 was the fifth year of a five-year drought with equally proportioned shortages for the five years (or a 26-inch reduction over 5 years for a 5.2-inch effective reduction per year). Therefore, for planning purposes, the MID delivery cutbacks experienced in each successive drought year are assumed as follows:

- First year cutback: 5.2/42 inches (12.4 percent)
- Second year cutback: 10.4/42 inches (24.8 percent)
- Third year cutback: 15.6/42 inches (37.1 percent)
- Fourth year cutback: 20.8/42 inches (49.5 percent)
- Fifth year cutback: 26.0/42 inches (61.9 percent)

When available, the City can also purchase additional water from MID (at a higher rate) or exchange groundwater for agricultural use for treated surface water during drought years. However, the City did not purchase additional treated surface water supplies in 2014 or 2015. Instead, the City chose to increase groundwater production and implement an aggressive water conservation program to help reduce water demands to match available supplies.

6.4.1.2 Groundwater Supply

The City's increased groundwater production in response to the treated surface water supply shortage in 2014 and 2015 remained within the operational yield estimates for the Modesto and Turlock Subbasins and is not anticipated to have any adverse effects on the underlying groundwater subbasins or resources. In the future, if the City were to implement an Aquifer Storage and Recovery (ASR) Program, the City may be able to inject surplus treated surface water supplies available in normal or wet years into the underlying groundwater subbasins and bank it for later extraction during dry years and/or use during seasonal demand peaking. Such a program would provide the City with added supply reliability during dry years. Based on the operational yield estimates for the Modesto and Turlock Subbasins, it is assumed that groundwater supplies (51,500 AFY) would not be reduced in dry years.

The City has historically experienced some issues related to groundwater quality. Concentration levels of arsenic, uranium, perchloroethylene (PCE), trichloroethylene (TCE), dibromochloropropane (DBCP), 1,2,3- Trichloropropane (TCP) or nitrate in excess of drinking water regulatory maximum contaminant levels (MCLs) have resulted in production wells being taken out of service. These well outages have reduced the City's groundwater pumping capacity. To minimize the City's vulnerability to potential groundwater quality issues, the City has developed strategies to maintain and enhance its groundwater extraction capacity through a combination of well monitoring for early detection, well rehabilitation, wellhead treatment, and blending. Through the well monitoring and capital improvement programs, the City expects to maintain sufficient well capacity to meet future water demands.

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6.4.2 Summary of Available Water Supplies Under Normal, Single Dry, and Multiple Dry Years

The reliability of the City's existing and additional planned water supplies and their projected availability during normal, single dry, and multiple dry years is described in Chapter 7 of the City's 2020 UWMP and is summarized below.

The City's normal water year supplies, summarized in Table 6-3, include:

- MRWTP Phase One supply of 33,600 AFY;
- MRWTP Phase Two Expansion supply, assumed to be 5,600 AFY in 2025 and increasing linearly as additional development occurs within the City's contiguous water service area up to an additional total supply of 33,600 AFY in 2050; and
- Groundwater pumping from City's local groundwater basins (up to 51,500 AFY) is assumed to provide 100 percent of the City's remaining water demand, as summarized in Table 5-2.

Table 6-3. Normal Year Water Supply

Supply Source	Water Supply, AFY				
	2025	2030	2035	2040	2045
Purchased Water (MID MRWTP)	39,200	44,800	50,400	56,000	61,600
Groundwater	24,466	23,489	22,511	21,533	20,556
Total	**63,666**	**68,289**	**72,911**	**77,533**	**82,156**

Source: City of Modesto 2020 UWMP, Tables 6-14, 7-3 and 7-4, June 2021.

The City's single dry year supplies, summarized in Table 6-4, include:

- Projected base purchased surface water supplies from MRWTP Phase One and the MRWTP Phase Two Expansion (with a 61.9 percent reduction from normal year MID supplies); and
- Groundwater pumping from City's local groundwater basins (up to 51,500 AFY).

It is anticipated that the City can reduce water demand during a single dry year by up to 9 percent compared to normal year levels beginning in 2035, aligning demand with available supply. As demonstrated in 2014 and 2015, the City has a proven ability to significantly reduce water use through conservation measures. Similar strategies can be implemented in the future to effectively respond to water supply shortages.

Table 6-4. Single Dry Year Water Supply

Supply Source	Water Supply, AFY				
	2025	2030	2035	2040	2045
Purchased Water (MID MRWTP)	14,933	17,067	19,200	21,333	23,467
Groundwater	48,733	51,222	51,500	51,500	51,500
Total	**63,666**	**68,289**	**70,700**	**72,833**	**74,967**
Reduction from Normal Year Water Supply	**0%**	**0%**	**3%**	**6%**	**9%**

Source: City of Modesto 2020 UWMP, Tables 7-5 and 7-6, June 2021.

The City's multiple dry year supplies, summarized in Table 6-5, include:

- Projected base purchased surface water supplies from MRWTP Phase One and the MRWTP Phase Two Expansion (with a 12.4 percent reduction from normal year MID supplies during the first dry year and an additional 12.4 percent reduction in each successive dry year); and
- Groundwater pumping from City's local groundwater basins (up to 51,500 AFY).

It is anticipated that the City can reduce water demand during multiple dry years by up to 11 percent compared to normal year levels beginning in 2030, aligning demand with available supply. As demonstrated in 2014 and 2015, the City has a proven ability to significantly reduce water use through conservation measures. Similar strategies can be implemented in the future to effectively respond to water supply shortages.

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Table 6-5. Multiple Dry Years Water Supply

Supply	Water Supply, AFY				
	2025	2030	2035	2040	2045
First Year					
Purchased Water (MID MRWTP)	34,347	39,253	44,160	49,067	53,973
Groundwater	29,319	29,036	28,751	28,466	28,183
Supply Total	**63,666**	**68,289**	**72,911**	**77,533**	**82,156**
Reduction from Normal Year Water Supply	**0%**	**0%**	**0%**	**0%**	**0%**
Second Year[(a)]					
Purchased Water (MID MRWTP)	30,231	34,534	38,748	42,961	47,174
Groundwater	34,360	34,679	35,088	35,497	35,906
Supply Total	**64,591**	**69,213**	**73,836**	**78,458**	**83,080**
Reduction from Normal Year Water Supply	**0%**	**0%**	**0%**	**0%**	**0%**
Third Year[(a)]					
Purchased Water (MID MRWTP)	26,023	29,543	33,063	36,583	40,103
Groundwater	39,492	40,595	41,697	42,799	43,902
Supply Total	**65,515**	**70,138**	**74,760**	**79,382**	**84,005**
Reduction from Normal Year Water Supply	**0%**	**0%**	**0%**	**0%**	**0%**
Fourth Year[(a)]					
Purchased Water (MID MRWTP)	21,503	24,330	27,156	29,983	32,810
Groundwater	44,937	46,732	48,529	50,324	51,500
Supply Total	**66,440**	**71,062**	**75,685**	**80,307**	**84,310**
Reduction from Normal Year Water Supply	**0%**	**0%**	**0%**	**0%**	**1%**
Fifth Year[(a)]					
Purchased Water (MID MRWTP)	16,648	18,781	20,914	23,048	25,181
Groundwater	50,716	51,500	51,500	51,500	51,500
Supply Total	**67,364**	**70,281**	**72,414**	**74,548**	**76,681**
Reduction from Normal Year Water Supply	**0%**	**2%**	**5%**	**8%**	**11%**

Source: City of Modesto 2020 UWMP, Tables 7-7 and 7-8, June 2021.

(a) For each multiple dry year shown, supplies in years 2 through 5 reflect linear increases between the five-year increments. For example, Multiple Dry Year 2 for 2025 represents the supplies for 2026, Multiple Dry Year 3 represents the supplies for 2027, etc. However, with MID reductions in successive dry years, at times groundwater reaches its maximum of 51,500 AFY.

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7.0 DETERMINATION OF WATER SUPPLY SUFFICIENCY BASED ON THE REQUIREMENTS OF SB 610

Water Code Section 10910(c)(4) If the city or county is required to comply with this part pursuant to subdivision (b), the water supply assessment for the project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the project during normal, single dry, and multiple dry water years during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses, including agricultural and manufacturing uses.

Table 7-1 summarizes the projected availability of the City's existing and planned future potable water supplies compared with projected water demands in normal, single dry and multiple dry years through buildout. As stated in Section 3.4, the Proposed Project's water demands were included in future water demand projections presented in the City's 2020 UWMP. As described in Sections 5.3 and 6.4, the City's projected water demands in single dry years and multiple dry years assume a modest reduction in water demands as needed to match available water supplies in accordance with the City's Water Shortage Contingency Plan. Specifically, in normal years, water supplies are projected to meet demands through 2045 without the need for additional conservation or demand reduction measures. In single dry years, demand reductions of up to 9 percent may be necessary beginning in 2035. In multiple dry years, demand reductions of up to 11 percent may be required starting in 2030. Consistent with the City's 2020 UWMP, the potential supply deficit and percent shortfall of demand are shown as zero based on the City's demonstrated ability to achieve the required demand reductions.

If approved, the Proposed Project would be subject to the same conservation measures and water use restrictions in dry years as all other City water customers.

Pursuant to Water Code Section 10910(c)(4) and based on the technical analyses described in this WSA, the total projected water supplies determined to be available for the Proposed Project during normal, single dry, and multiple dry years during a 20-year projection will meet the projected water demand associated with the Proposed Project, in addition to existing and planned future uses.

Table 7-1. Summary of Water Demand Versus Water Supply During Various Hydrologic Conditions

Hydrologic Condition	Water Supply and Water Demand, AFY				
	2025	2030	2035	2040	2045
Normal Year					
Available Water Supply[(a)]	63,666	68,289	72,911	77,533	82,156
Total Water Demand[(b)]	63,666	68,289	72,911	77,533	82,156
Potential Supply Surplus (Deficit)	0	0	0	0	0
Percent Shortfall of Demand	0%	0%	0%	0%	0%
Single Dry Year					
Available Water Supply[(c)]	63,666	68,289	70,700	72,833	74,967
Total Water Demand[(b,d)]	63,666	68,289	70,700	72,833	74,967
Potential Supply Surplus (Deficit) [(d)]	0	0	0	0	0
Percent Shortfall of Demand[(d)]	0%	0%	0%	0%	0%

Table 7-1. Summary of Water Demand Versus Water Supply During Various Hydrologic Conditions

Hydrologic Condition		Water Supply and Water Demand, AFY				
		2025	2030	2035	2040	2045
Multiple Dry Years						
Multiple Dry Year 1	Available Water Supply[e]	63,666	68,289	72,911	77,533	82,156
	Total Water Demand[b]	63,666	68,289	72,911	77,533	82,156
	Potential Supply Surplus (Deficit)	0	0	0	0	0
	Percent Shortfall of Demand	0%	0%	0%	0%	0%
Multiple Dry Year 2	Available Water Supply[e]	64,591	69,213	73,836	78,458	83,080
	Total Water Demand[b]	64,591	69,213	73,836	78,458	83,080
	Potential Supply Surplus (Deficit)	0	0	0	0	0
	Percent Shortfall of Demand	0%	0%	0%	0%	0%
Multiple Dry Year 3	Available Water Supply[e]	65,515	70,138	74,760	79,382	84,005
	Total Water Demand[b]	65,515	70,138	74,760	79,382	84,005
	Potential Supply Surplus (Deficit)	0	0	0	0	0
	Percent Shortfall of Demand	0%	0%	0%	0%	0%
Multiple Dry Year 4	Available Water Supply[e]	66,440	71,062	75,685	80,307	84,310
	Total Water Demand[b,f]	66,440	71,062	75,685	80,307	84,310
	Potential Supply Surplus (Deficit)[f]	0	0	0	0	0
	Percent Shortfall of Demand[f]	0%	0%	0%	0%	0%
Multiple Dry Year 5	Available Water Supply[e]	67,364	70,281	72,414	74,548	76,681
	Total Water Demand[b,g]	67,364	70,281	72,414	74,548	76,681
	Potential Supply Surplus (Deficit)[g]	0	0	0	0	0
	Percent Shortfall of Demand[g]	0%	0%	0%	0%	0%

(a) Refer to Table 6-3.

(b) Refer to Table 5-2; includes projected water demands for the Proposed Project. For each multiple dry year shown, demands for years 2 through 5 reflect linear increases in demand between the five-year increments. For example, Multiple Dry Year 2 for 2025 represents the demand for 2026, Multiple Dry Year 3 represents the demand for 2027, etc.

(c) Refer to Table 6-4.

(d) Demands in single dry years reduced by 3 percent in 2035, 6 percent in 2040 and 9 percent in 2045 to align with available supplies. Consistent with the City's 2020 UWMP, the potential supply deficit and percent shortfall are shown as zero based on the City's demonstrated ability to achieve the required demand reductions.

(e) Refer to Table 6-5.

(f) Demands in the fourth year of a multiple dry year period starting in 2045 are reduced by 1 percent to align with available supplies.

(g) Demands in the fifth year of a multiple dry year period starting in 2030 are reduced by 2 percent, starting in 2035 are reduced by 5 percent, starting in 2040 are reduced by 8 percent and starting in 2045 are reduced by 11 percent to align with available supplies. Consistent with the City's 2020 UWMP, the potential supply deficit and percent shortfall are shown as zero based on the City's demonstrated ability to achieve the required demand reductions.

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8.0 WATER SUPPLY ASSESSMENT APPROVAL PROCESS

Water Code Section 10910(g)(1) Subject to paragraph (2), the governing body of each public water system shall submit the assessment to the city or county not later than 90 days from the date on which the request was received. The governing body of each public water system, or the city or county if either is required to comply with this act pursuant to subdivision (b), shall approve the assessment prepared pursuant to this section at a regular or special meeting.

Water Code Section 10911(b) The city or county shall include the water supply assessment provided pursuant to Section 10910, and any information provided pursuant to subdivision (a), in any environmental document prepared for the project pursuant to Division 13 (commencing with Section 21000) of the Public Resources Code.

As the approving agency for the Proposed Project, the City of Modesto must adopt this WSA at a regular or special meeting. Furthermore, the City must include this WSA in the EIR that is being prepared for the Proposed Project.

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9.0 REFERENCES

City of Modesto, February 2025. *Notice of Preparation – Scannell Industrial.*

West Yost, September 2017. *City of Modesto Water Master Plan*.

West Yost, June 2021. *City of Modesto/Modesto Irrigation District Joint 2020 Urban Water Management Plan*.

West Yost, July 2021. *City of Modesto Water Conservation Plan Update.*

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