INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

HILMAR CHEESE MAJOR MODIFICATION TO CONDITIONAL USE PERMIT 08-011

PREPARED FOR:

Merced County
Planning and Community Development Department
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Merced, CA 95340
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ICF. 2018. *Hilmar Cheese Major Modification to Conditional Use Permit 08-011*. Initial Study/Mitigated Negative Declaration. March. (ICF 482.18.) Hilmar, CA. Prepared for Merced County, Merced, CA.

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Acronyms and Abbreviations

$\mu g/m^3$	micrograms per cubic meter
2018 RTP/SCS	2018 Merced County Association of Governments Regional Transportation Plan/Sustainable Communities Strategy for Merced County
AAQA	ambient air quality analysis
AB	Assembly Bill
ADT	average daily traffic volume
ARB	California Air Resources Board
BAU	Business as Usual
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CalRecycle	California Department of Resources Recycling and Recovery
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CO	carbon monoxide
CO_2e	carbon dioxide equivalent
County	Merced County
CUP	Conditional Use Permit
cy	cubic yards
dB	decibel
dBA	A-weighted decibel
DPM	diesel particulate matter
EIR	Environmental Impact Report
EO	executive order
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FMMP	Farmland Mapping and Monitoring Program
GAMAQI	Guidance for Assessing and Mitigating Air Quality Impacts
GHG	greenhouse gas
GWP	global warming potential
HCC	Hilmar Cheese Company
HCP	Habitat Conservation Plan
HCWD	Hilmar County Water District
HFC	hydrofluorocarbon
HMBP	Hazardous Materials Business Plan
I-5	Interstate 5
IPCC	Intergovernmental Panel on Climate Change
IS	initial study

ITE	Institute of Transportation Engineers
LCFS	Low Carbon Fuel Standard
L_{dn}	day-night sound level
L_{eq}	equivalent sound level
L_{max}	maximum sound level
L_{min}	minimum sound level
LOS	level of service
LRA	Local Responsibility Area
MBTA	Migratory Bird Treaty Act
MCFD	Merced County Fire Department
MLD	Most Likely Descendant
MND	mitigated negative declaration
MRZ	Mineral Resource Zone
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Plan
NO_2	nitrogen dioxide
NO_X	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
O_3	ozone
OEHHA	California Office of Environmental Health Hazard Assessment
Pb	lead
PM	particulate matter
PM10	particulate matter less than or equal to 10 microns
PM2.5	particulate matter less than or equal to 2.5 microns
ppb	parts per billion by volume
ppm	parts per million by volume
PPV	peak particle velocity
PRC	Public Resources Code
project	2018 Hilmar Cheese Company Facility Expansion Project
RCRA	Resource Conservation and Recovery Act
ROG	reactive organic gas
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
sf	square feet
SF6	sulfur hexafluoride
SJVAPCD	San Joaquin Valley Air Pollution Control District
SO_2	sulfur dioxide
SR	State Route
TAC	toxic air contaminant
TID	Turlock Irrigation District
U.S.C.	U.S. Code

Chapter 1
Introduction and Overview

Overview

Merced County (County) has prepared this initial study (IS) and proposed mitigated negative declaration (MND) to evaluate the potential environmental consequences associated with the 2018 Hilmar Cheese Company (HCC) Facility Expansion Project (project). The project consists of a major modification to Conditional Use Permit (CUP) #08-011 to allow for the expansion of the HCC existing facility in Hilmar, California on parcels totaling approximately 88 acres (Merced County GIS). The project would result in the construction of approximately 101,300 square feet (sf) of new buildings and structures in Phase I and approximately 100,800 sf of new buildings and structures in Phase II. The buildings would be constructed in two phases over a 5-year period. The project includes approximately 114,000 sf of asphalt in Phase I and approximately 90,100 sf of asphalt in Phase II. A sphere of influence amendment and annexation of the project site area located south of August Avenue has been completed in the service boundaries of Hilmar County Water District (HCWD). As part of the County's permitting process, the project is required to undergo an environmental review in accordance with the California Environmental Quality Act (CEQA).

Authority

The preparation of an IS/MND is governed by two principal sets of documents: CEQA (Public Resources Code Section 21000, et seq.) and the State CEQA Guidelines (California Code of Regulations [CCR] Section 15000, et seq.). Specifically, Section 15063 of the State CEQA Guidelines and Sections 15070–15075 of Article 6 guide the process for the preparation of a negative declaration or a mitigated negative declaration. Where appropriate and supportive to an understanding of the issues, reference will be made either to the statute, the State CEQA Guidelines, or appropriate case law.

This IS/MND, as required by CEQA, contains 1) a project description; 2) a description of the environmental setting, potential environmental impacts, mitigation measures for any significant effects, and consistency with plans and policies; and 3) names of preparers.

The mitigation measures included in this IS/MND are designed to reduce or eliminate the potentially significant environmental impacts described herein. Where a mitigation measure described in this document has been previously incorporated into the project, either as a specific feature of design or as a mitigation measure, this is noted in the discussion. Mitigation measures are structured in accordance with the criteria in Section 15370 of the State CEQA Guidelines.

Scope of the IS/MND

This IS/MND evaluates the project's effects on the following resource topics.

- Aesthetics

- Agriculture and forestry resources
- Air quality
- Biological resources
- Cultural resources
- Geology/soils
- Greenhouse gas emissions
- Hazards & hazardous materials
- Hydrology/water quality
- Land use/planning
- Mineral resources
- Noise
- Population/housing
- Public services
- Recreation
- Transportation/traffic
- Tribal cultural resources
- Utilities/ service systems
- Mandatory findings of significance

Impact Terminology

The following terminology is used to describe the level of significance of impacts.

- A finding of no impact is appropriate if the analysis concludes that the project would not affect the particular topic area in any way.
- An impact is considered less-than-significant if the analysis concludes that it would cause no substantial adverse change to the environment and requires no mitigation.
- An impact is considered less-than-significant with mitigation incorporated if the analysis concludes that it would cause no substantial adverse change to the environment with the inclusion of environmental commitments or other enforceable measures that have been agreed to by the applicant.
- An impact is considered potentially significant if the analysis concludes that it could have a substantial adverse effect on the environment. For the project, no impacts were determined to be potentially significant.

IS/MND Organization

The content and format of this report are designed to meet the requirements of CEQA. The MND consists of the findings that the project, as mitigated, would have no significant impacts. The bulk of this IS/MND consists of the initial study and supporting studies. This report contains the following sections.

Chapter 1, *Introduction and Overview*, identifies the purpose and scope of the IS/MND and the terminology used in the report.

Chapter 2, *Project Description*, identities the location, background, and planning objectives of the project and describes it in detail.

Chapter 3, *Environmental Checklist*, presents the checklist responses for each resource topic. This section includes a brief setting section for each resource topic and identifies the impacts of implementing the project.

Chapter 4, *References*, identifies all printed references and individuals cited in this IS/MND.

Chapter 5, *List of Preparers*, identifies the individuals who prepared this report and their areas of technical specialty.

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Chapter 2
Project Description

Project History and Project Overview

The project site has approval for an existing CUP 08-011 approved by Merced County in 2008. The CUP allows HCC to conduct a variety of conditional uses on the site and to expand the facility in a manner consistent with plans reviewed in 2008 by the County. In January 2012, an IS/MND was prepared and adopted that identified the potential impacts associated with a major modification to CUP 08-011 (Major Modification No. MM11-014). This major modification included the following components:

1. Phase I administrative office building (53,000 sf)
2. Phase I cold storage expansion (60,000 sf)
3. Phase I cream process building (4,000 sf)
4. Phase I renewable energy tanks (2) (51,000 sf)
5. Phase I solar energy production facility
6. Phase I relocated stormwater retention pond (3.4 acres)
7. Phase I parking lot (72,000 sf)
8. Phase II administrative office building (53,000 sf)
9. Phase II parking lot (56,000 sf)

Many of these improvements, which were approved under Major Modification No. MM11-014 have been constructed except for (2) the 60,000 Phase I cold storage expansion, (3) Phase I cream process building (4,000 sf), (6) Phase I relocated stormwater retention pond (3.4 acres), (8) Phase II administrative office building (53,000 sf) and (9) Phase II parking lot (56,000 sf).

The project consists of Major Modification No. MM11-014 to CUP 08-011. The improvements that are proposed as a part of the project are in addition to the improvements approved in Major Modification No. MM11-014. The project would include one change to an improvement approved under Major Modification No. MM11-014. The cold storage facility that was approved for Phase I at 60,000 sf has been modified by the project to include an additional 61,000 sf. In addition, the project would include a Phase II cold storage facility that is 81,000 sf.

The project site has been used for agricultural production and for processing cheese and other dairy products. The project would result in the construction of approximately 202,100 sf of new buildings and structures and approximately 204,100 sf of new asphalt. A summary of these proposed new buildings is provided in Table 2-1. These buildings would be constructed in two phases over a 5-year period.

Project Location

The project site is located within the existing HCC facility and on vacant agricultural land (also owned by HCC) in the Hilmar area of unincorporated Merced County, as shown in Figure 2-1 and Figure 2-2. The closest intersection to the project site is the intersection of Lander Avenue (also known as State Route [SR] 165) and August Avenue. The project site includes the existing HCC facility (approximately 40.2 acres) and vacant agricultural land (approximately 11.4 acres) adjacent and to the north. All of the project facilities would be located west of Lander Avenue and north of August Avenue.

Site Background

HCC, established in 1984, is a privately held corporation owned by 11 dairy families. Production began in 1985. HCC produces a variety of cheeses, including Cheddar, Monterey Jack, Pepper Jack, Colby, and Colby-Jack, from its two facilities in California and Texas. CUP #08-011 was approved by Merced County in 2008, covering the project site. The CUP allows HCC to conduct a variety of conditional uses on the site and to expand the facility in a manner consistent with the CUP approved in 2008 by the County.

Existing Setting

Existing Site Conditions and Surrounding Land Uses

The project site includes the existing HCC processing facility located at the northwest corner of Lander Avenue and August Avenue and the existing agricultural land located at the southwestern corner of Lander Avenue and Oslo Road. The current HCC processing facilities consist of milk receiving areas, three cheese processing plants, a protein plant, a lactose plant, labs and office buildings, a visitor/education center, a wastewater treatment facility, and utilities buildings, located primarily at the northwest corner of August Avenue and Lander Avenue. The existing structures are up to approximately 85 feet in height.

HCC operates an onsite water reclamation facility, located south of Oslo Road (east of Oslo Street, west of SR 165) on the northwest portion of the project site. The facility includes a maintenance shop, wells, blower rooms, evaporator, and a water reclamation building with boiler room. Nearly all of the water used in the facility is reclaimed for use as irrigation water and used on local farmland or internally for non-food production applications. HCC also utilizes a private septic system for wastewater generated from the existing restrooms in the office building. HCC operates in full compliance with all applicable water quality requirements and the facility is designed to be fully protective of groundwater and surface water resources.

The project involves improvements to Assessor's Parcel Numbers 045-140-086, 045-140-087, and 045-140-088. The site is zoned A-1-General Agriculture, and the General Plan land use designation is Agriculture.

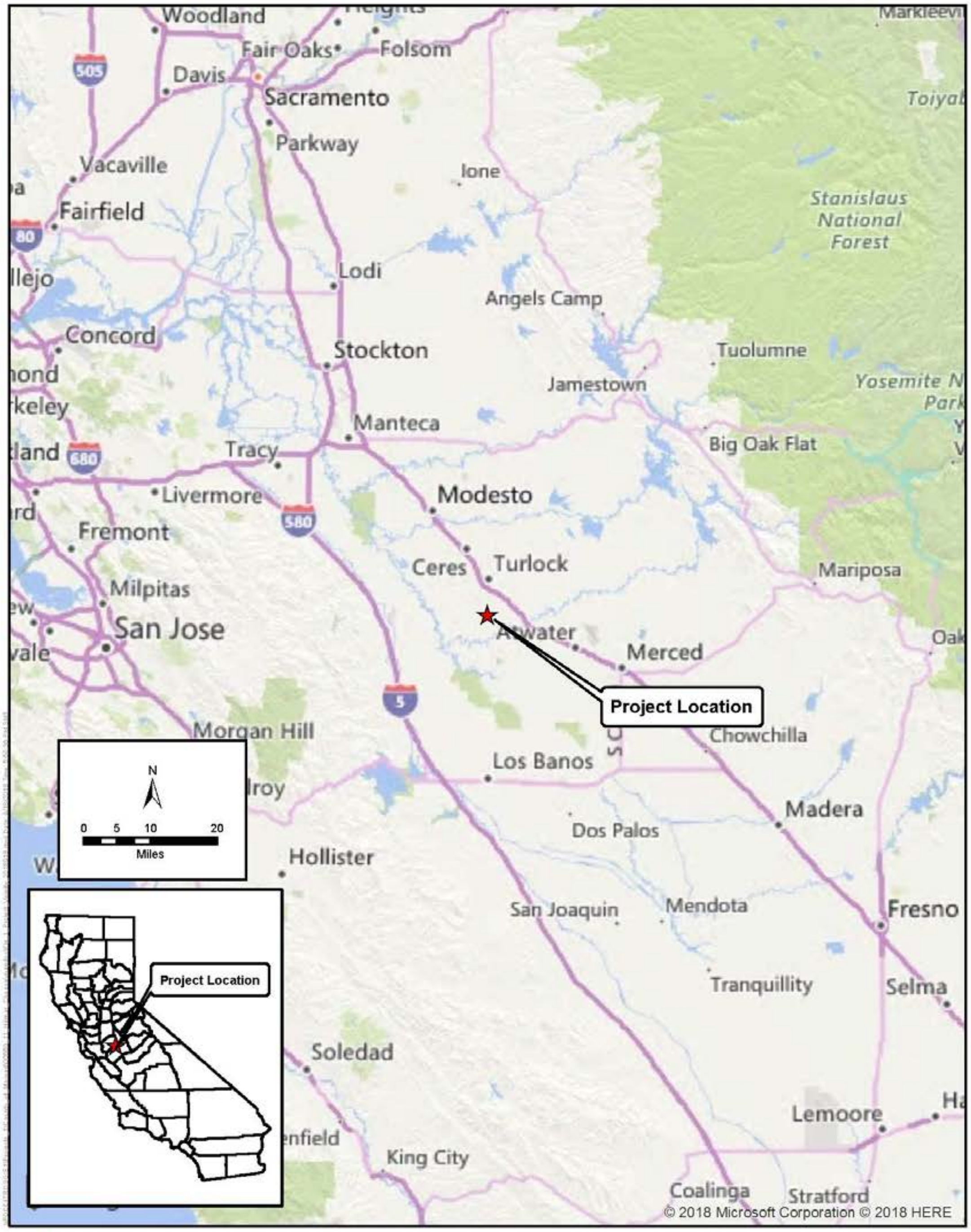

Figure 2-1
Hilmar Cheese Company Expansion
Project Vicinity

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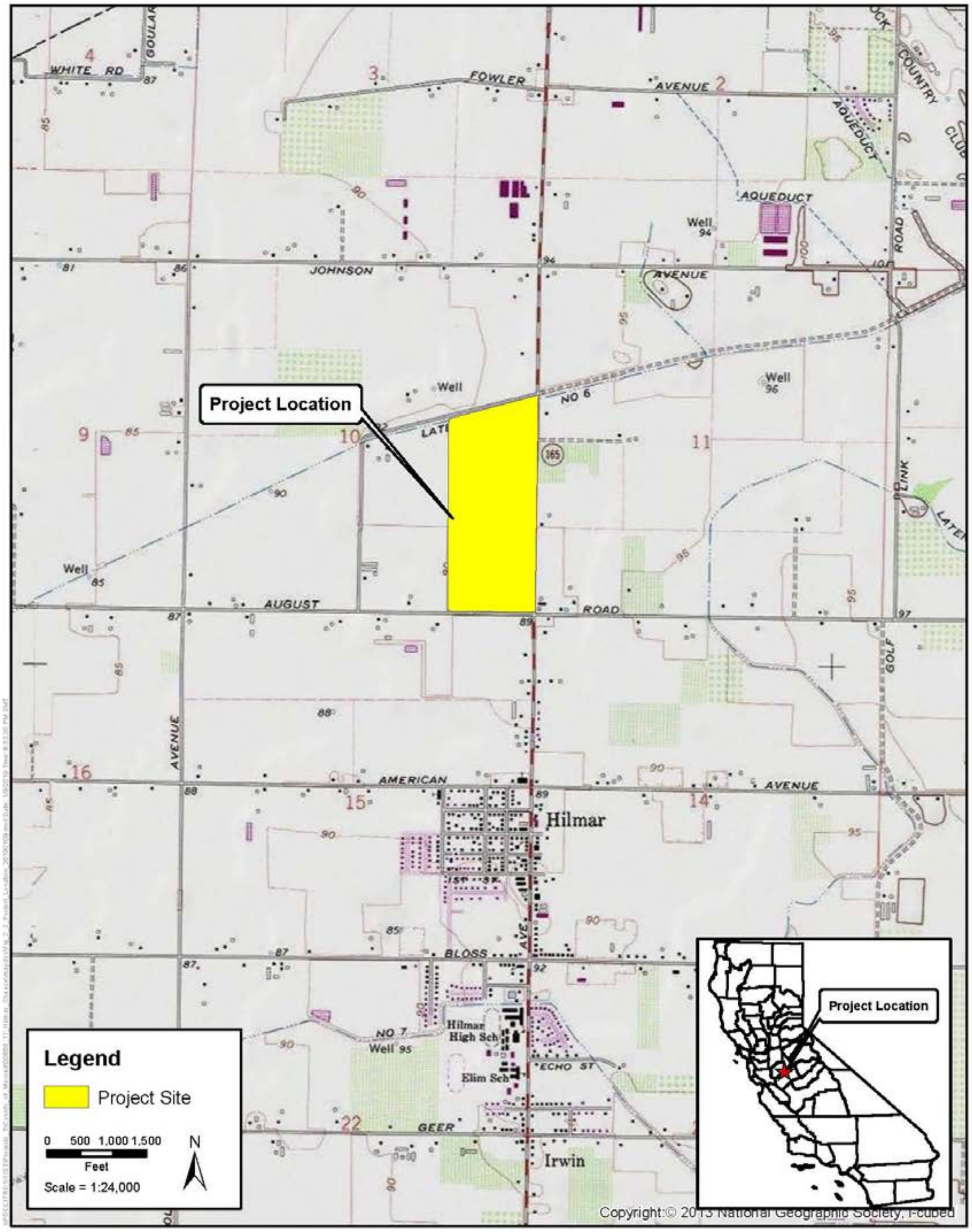

Figure 2-2
Hilmar Cheese Company Expansion
Project Location

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The project site is located in an unincorporated rural area, surrounded by commercial, agricultural and residential land uses immediately north (approximately 0.14 mile) of the unincorporated community of Hilmar. Adjacent land uses include:

- Commercial (Rick's Saddle Shop) and agricultural uses to the east.
- Agricultural and rural residential uses to the north.
- Single-family residential and agricultural uses to the south.
- Agricultural uses to the west.

Proposed Project

Description of the Proposed Project

The project consists of an application from HCC to Merced County for a modification to existing CUP 08-011 to allow for the expansion of the existing facility. The project consists of three new or expanded buildings with a maximum height of approximately 40 feet. The project components are shown in Figure 2-3 by phase.

HCC is proposing the following major modifications to the facility.

- Cold storage facility in two phases. Phase I would add 61,000 sf to the previously approved 60,000 sf for a total of 121,000 sf. Phase I would also include an approximately 9,400 sf dock. Phase II would add 81,000 sf. Phase II would also include an approximately 8,000 sf dock.
- Additional asphalt in two phases. Phase I would add approximately 114,000 sf of asphalt around the proposed cold storage facility. Phase II would add approximately 90,100 sf of asphalt around the proposed cold storage facility.
- Warehouse facility in two phases. Phase I would add approximately 6,900 sf and Phase II would add approximately 6,800 sf.
- Repackaging facilities in two phases. Phase I would add approximately 24,000 sf and Phase II would add approximately 5,000 sf. There would be an area next to the Phase I Repackaging facility that would be stabilized with gravel and that would be the location of a leach field to service the new restrooms proposed for the Phase 1 Repackaging facility.

Proposed structural improvements are summarized in Table 2-1. The proposed structures would be designed to be architecturally consistent with the style of the existing HCC facility.

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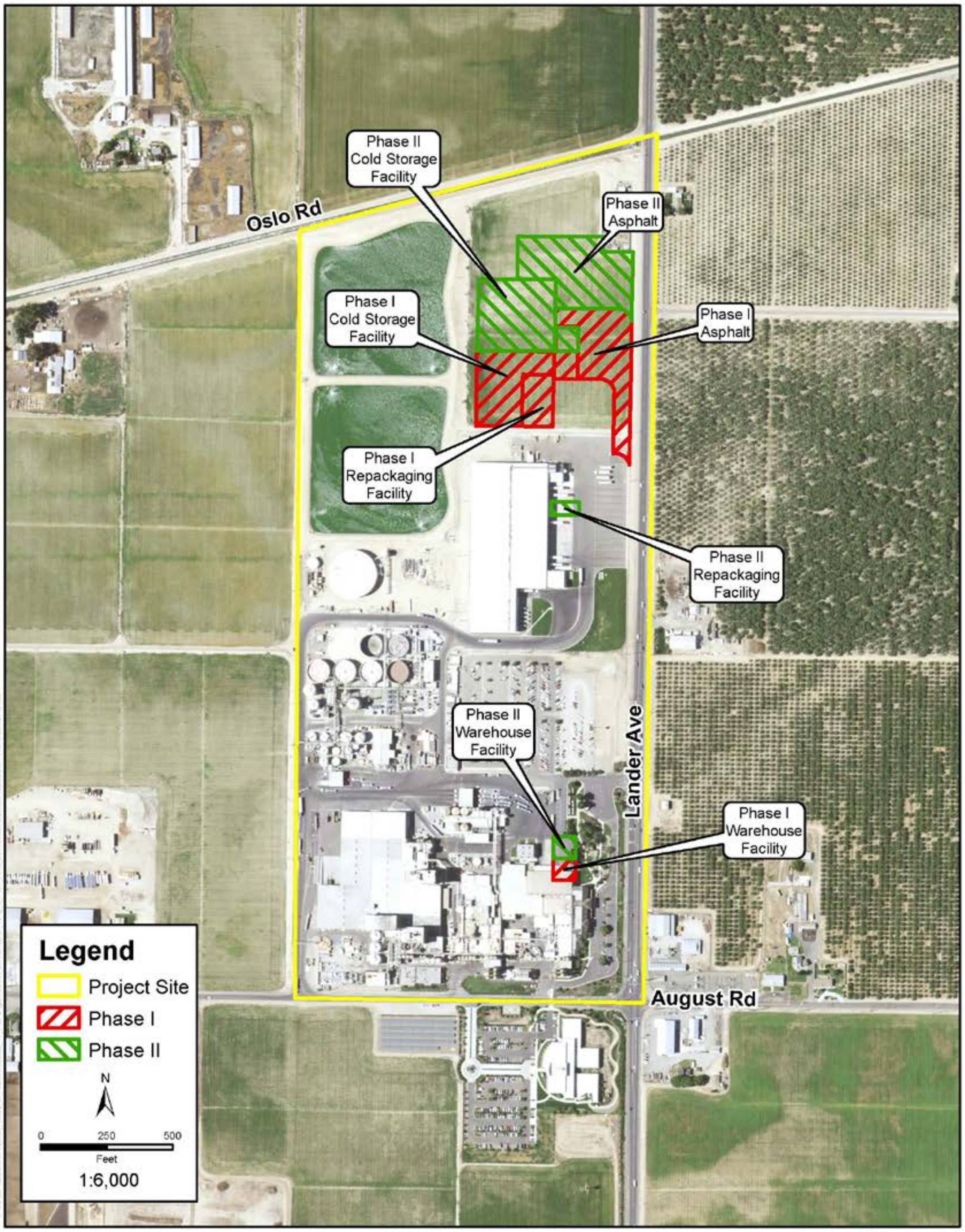

Figure 2-3
Hilmar Cheese Company Expansion Project Site

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Table 2-1. Summary of Proposed Structural Additions on the Project Site

Proposed Additions	Area (sf)	Site Location
Phase I Construction		
Cold storage facility	61,000	Vacant agricultural parcel
Dock (near the cold storage facility)	9,400	Vacant agricultural parcel
Asphalt	114,000	Vacant agricultural parcel
Warehouse facility	6,900	Existing HCC site, north of the existing visitor center
Repackaging facility	24,000	Vacant agricultural parcel
Total	215,300	--
Phase II Construction		
Cold storage facility	81,000	Vacant agricultural parcel
Dock (near the cold storage facility)	8,000	Vacant agricultural parcel
Asphalt	90,100	Vacant agricultural parcel
Warehouse facility	6,800	Existing HCC site, north of the existing visitor center
Repackaging facility	5,000	Existing HCC site, directly east of loading docks in existing building, south of the vacant agricultural parcel.
Total	**190,900**	--

Construction

The project would include the construction of new buildings and structures. Construction of the project is anticipated to begin in March 2019 and would take approximately 5 years. Construction activities would occur in two phases (see Table 2-2).

Building construction would produce approximately 3,900 cubic yards (cy)of earth during Phase I and 2,200 cy of earth during Phase II of the project. The project would require 3,900 cy of fill during Phase I of the project and 2,200 cy of fill during Phase II of the project. Because the amount of fill required for construction would be equal to the amount produced, no soil is anticipated to be exported offsite. Approximately 383 cy of demolished materials, including asphalt, related to site clearing for Phase I of the cold storage facility and Phases 1 and 2 of the warehouse facility, would be exported. A summary of the construction phases, construction duration, number of workers per day, and the total amount of demolished or imported/exported materials is included in Table 2-2.

Table 2-2. Demolition and Construction Activities

Construction Phase	Activity Duration (days)	Schedule	Maximum Number of Workers per day	Volume of Demolition Materials (cy)
Phase I Construction				
Cold storage facility, asphalt, and repackaging facility				
Demolition/Site Clearing	5	3/1/19 – 3/7/19	3	222
Site Excavation	8	3/8/19 – 3/19/19	3	
Site Grading	10	3/18/19 – 3/29/19	6	
Building Construction	120	4/4/2019 - 9/18/2019	30	

Construction Phase	Activity Duration (days)	Schedule	Maximum Number of Workers per day	Volume of Demolition Materials (cy)
Architectural Coating	30	8/1/19 – 9/11/19	5	
Paving	7	9/1/19 – 9/10/19	4	
Warehouse facility				
Demolition/Site Clearing	10	9/1/19 – 9/13/19	2	100
Site Excavation	10	9/15/19 – 9/27/19	3	
Site Grading	10	10/1/19 – 10/14/19	6	
Building Construction	90	10/15/19 – 2/17/20	15	
Paving	7	1/15/20 – 1/23/20	4	
Phase II Construction				
Cold storage facility, asphalt, and repackaging facility				
Demolition/Site Clearing	5	1/1/24 – 1/1/24	3	
Site Excavation	8	1/8/24 – 1/8/24	3	
Site Grading	10	1/18/24 – 1/18/24	6	
Building Construction	120	2/4/24 – 2/4/24	30	
Architectural Coating	30	6/2/24 – 6/2/24	5	
Paving	7	7/3/24 – 7/3/24	4	
Warehouse facility				
Demolition/Site Clearing	10	6/1/24 – 6/1/24	2	61
Site Excavation	10	6/15/24 – 6/15/24	3	
Site Grading	10	7/1/24 – 7/1/24	6	
Building Construction	90	7/15/24 – 7/15/24	15	
Paving	7	10/15/24 – 10/15/24	4	

Construction Equipment

Construction equipment required during construction is summarized in Table 2-3.

Table 2-3. Summary of Construction Equipment

Construction Phase	Activity Duration (days)
Phase I Construction	
Cold storage facility, asphalt, and repackaging facility	
Demolition/Site Clearing	1 Front loader 1 ten-yard dump truck
Site Excavation	1 tractor, loader, or backhoe 1 water truck

Construction Phase	Activity Duration (days)
Site Grading	1 grader 1 rubber tire blade 1 belly scraper 1 tractor, loader, or backhoe 1 water truck
Building Construction	1 reach lift 1 skip loader 1 concrete pump 1 crane
Architectural Coating	1 airless paint pump
Paving	1 tractor 1 paving machine
Warehouse facility	
Demolition/Site Clearing	1 Front loader 1 ten-yard dump truck
Site Excavation	1 tractor, loader, or backhoe 1 water truck
Site Grading	1 grader 1 rubber tire blade 1 belly scraper 1 tractor, loader, or backhoe 1 water truck
Building Construction	1 reach lift 1 skip loader 1 concrete pump 1 crane
Paving	1 tractor 1 paving machine
Phase II Construction	
Cold storage facility, asphalt, and repackaging facility	
Demolition/Site Clearing	1 Front loader 1 ten-yard dump truck
Site Excavation	1 tractor, loader, or backhoe 1 water truck
Site Grading	1 grader 1 rubber tire blade 1 belly scraper 1 tractor, loader, or backhoe 1 water truck
Building Construction	1 reach lift 1 skip loader 1 concrete pump 1 crane
Architectural Coating	1 airless paint pump
Paving	1 tractor 1 paving machine
Warehouse facility	

Construction Phase	Activity Duration (days)
Demolition/Site Clearing	1 Front loader 1 ten-yard dump truck
Site Excavation	1 tractor, loader, or backhoe 1 water truck
Site Grading	1 grader 1 rubber tire blade 1 belly scraper 1 tractor, loader, or backhoe 1 water truck
Building Construction	1 reach lift 1 skip loader 1 concrete pump 1 crane
Paving	1 tractor 1 paving machine

Schedule, Lighting, and Construction Hours

The project site would be fenced during construction, with access limited to construction personnel and other authorized personnel only. All construction staging would occur on the project site. Nighttime lighting onsite during construction would be limited, providing only lighting that is necessary for safety and security. Construction activities would be limited to daytime hours between 7 a.m. and 6 p.m., consistent with the County's Noise Ordinance.

Relocation of Power Lines

Construction of the project would also require the relocation of existing power lines that are located around the vacant agricultural parcel. In order to construct and operate the cold storage facility and repackaging facility, the existing power lines would need to be relocated further north of the existing cold storage building. New poles and power lines would need to be installed north of the new planned asphalt paving on the north side of the Phase II cold storage facility. Additional poles and power lines would be installed along the west side of the new cold storage facility and be connected to the existing power lines at the northwest corner of the existing cold storage facility. All power line installation and modification would be scheduled at a time to minimize downtime for the HCC production and operation and would not interrupt service to other Turlock Irrigation District (TID) customers.

Operation

Operational Employees

Currently, HCC produces approximately 1.5 million pounds of cheese per day for use in food service, ingredients, retail and restaurant trade with the current processing facilities. The project would not result in increased production and therefore the amount of production would remain at the current levels. Although the new project facilities would not trigger any additional cheese production growth, new employees would be needed for operation. As shown in Table 2-4, the project would generate 66 employees during Phase I and 22 employees during Phase II of the project.

Table 2-4. Employees Generated by the Project

Project Facility	Number of Employees
Phase I	
Cold storage facility	16
Repackaging facility	40
Warehouse facility	10
Total	***66***
Phase II	
Cold storage facility	10
Repackaging facility	6
Warehouse facility	6
Total	***22***

Operational Truck Trips

Operation of the project would result in one 21-mile daily truck trip. This truck trip would be required to meet additional equipment and material delivery needs.

Operational Water Use and Generation of Sewage, Stormwater, and Solid Waste

Operation of Phase I of the project would require approximately 28,509 gallons of water per day and operation of Phase II of the project would require approximately 21,540 gallons of water per day. Overall, the proposed facilities would generate approximately 770 gallons per day of sewage, approximately 49,223 cubic feet of stormwater, and approximately 22 cy of solid waste.

Required Permits and Approvals

The project would require approval from the following agencies.

- **Merced County Planning and Community Development Department.** Major modification to CUP #08-011.
- **Merced County Department of Public Works, Building and Safety Division.** Building Permits.

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Chapter 3
Environmental Checklist

1.	**Project Title:**	Hilmar Cheese Major Modification to Conditional Use Permit 08-011
2.	**Lead Agency Name and Address:**	Merced County Planning and Community Development Department 2222 "M" Street Merced, CA 95340
3.	**Contact Person and Phone Number:**	Brian Guerrero 209.385.7654
4.	**Project Location:**	9001 North Lander Avenue, Hilmar, CA 95324
5.	**Project Sponsor's Name and Address:**	Hilmar Cheese Company P.O. Box 910 Hilmar, CA 95324
6.	**General Plan Designation:**	Agricultural ("A")
7.	**Zoning:**	A-1 General Agriculture

8. **Description of Project:**

The project consists of an application from HCC to Merced County for a major modification to existing CUP 08-011 to allow for the expansion of the existing facility. The project is located on four parcels and includes the existing HCC facility (approximately 40.2 acres) and vacant agricultural land (approximately 11.4 acres) adjacent and to the north. All of the project facilities would be located west of Lander Avenue and north of August Avenue. The project site has been used for agricultural production and for processing cheese and other dairy products. The project would result in the construction of approximately 101,300 sf of new buildings and structures in Phase I and approximately 100,800 sf of new buildings and structures in Phase II. A summary of these new buildings is provided in Table 2-1. These buildings would be constructed in two phases over a 5-year period. The project includes approximately 114,000 sf of asphalt in Phase I and approximately 90,100 sf of asphalt in Phase II. A sphere of influence amendment and annexation of the project site area located south of August Avenue has been completed in the service boundaries of HCWD.

9. **Surrounding Land Uses and Setting:**

The project site is located in an unincorporated rural area, surrounded by commercial, agricultural and residential land uses and is located immediately north (approximately 0.14 mile) of the unincorporated community of Hilmar.

10. **Other Public Agencies Whose Approval is Required:**

Merced County Planning and Community Development Department
Merced County Department of Public Works, Building and Safety Division
San Joaquin Valley Unified Air Pollution Control District
Merced County Health Department, Environmental Health Division
Merced County Local Agency Formation Commission
Hilmar County Water District

Environmental Factors Potentially Affected

The environmental factors checked below would potentially be affected by this project (i.e., the project would involve at least one impact that is a "Potentially Significant Impact"), as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agricultural and Forestry	☐ Air Quality
☒ Biological Resources	☐ Cultural Resources	☐ Geology/Soils
☐ Greenhouse Gas Emissions	☒ Hazards and Hazardous Materials	☐ Hydrology/Water Quality
☐ Land Use/Planning	☐ Mineral Resources	☐ Noise
☐ Population/Housing	☐ Public Services	☐ Recreation
☒ Transportation/Traffic	☒ Tribal Cultural Resources	☐ Utilities/Service Systems
☒ Mandatory Findings of Significance		

Determination

On the basis of this initial evaluation:

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

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

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

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

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

Signature: [signature] Date: 3/5/19

Printed Name: BRIAN GUERRERO, PLANNER III For:

Evaluation of Environmental Impacts

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained if it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers must take account of the whole action involved, including offsite as well as onsite, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an Environmental Impact Report (EIR) is required.
4. "Negative Declaration: Less-than-Significant with Mitigation Incorporated" applies when the incorporation of mitigation measures has reduced an effect from a "Potentially Significant Impact" to a "Less-than-Significant Impact". The lead agency must describe the mitigation measures and briefly explain how they reduce the effect to a less-than-significant level. (Mitigation measures from Section XVII, "Earlier Analyses", may be cross-referenced.)
5. Earlier analyses may be used if, pursuant to tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration [Section 15063(c)(3)(D)]. In this case, a brief discussion should identify the following:
    a. Earlier Analysis Used. Identify and state where earlier analyses are available for review.
    b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards and state whether such effects were addressed by mitigation measures based on the earlier analysis.
    c. Mitigation Measures. For effects that are "Less-than-Significant with Mitigation Incorporated," describe the mitigation measures that were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, when appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
9. The explanation of each issue should identify:
    a. the significance criteria or threshold, if any, used to evaluate each question; and
    b. the mitigation measure identified, if any, to reduce the impact to a less-than-significant level.

I. Aesthetics	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway?	☐	☐	☒	☐
c. Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d. Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?	☐	☐	☒	☐

Setting

The proposed project is in unincorporated Merced County in the San Joaquin Valley. Merced County is known for its panoramic views of the Sierra Nevada Mountains and the Coast Ranges, mix of open orchard lands and field crop areas, and the seasonal contrasts of lush hillsides and wetlands against a backdrop of distant snow-capped mountains. According to the Merced County General Plan, scenic vistas within the County include views of the coastal and inland mountain ranges and the Merced, San Joaquin, and Bear Creek River corridors (Merced County 2013b).

The existing facility is located immediately north of the community of Hilmar. The existing visual character of the site and surrounding area is best described as a rural area surrounded by commercial, agricultural, and residential land uses. The adjacent land uses include commercial and agricultural uses to the east, agricultural and residential uses to the north, single-family residential and agricultural land uses to the south, and agricultural uses to the west. The cheese processing facility consists of a number of buildings and structures including milk receiving areas, three cheese processing plants, a protein plant, a lactose plant, labs and office buildings, a visitor/education center, a wastewater treatment facility, and utilities buildings, located primarily at the northwest corner of August Avenue and Lander Avenue. Existing buildings and structures on the project site vary in height with the highest structure reaching approximately 88 feet. Existing buildings in the areas adjacent to the project site are mostly single story and exhibit a variety of architectural styles and building ages. The project site is within a developed agricultural landscape currently planted with corn and winter oats. There are some trees and landscaping features near the existing visitor center.

Typical viewers of the project site are motorists traveling on the surrounding roadways, employees, and visitors to the HCC facility. Views are limited to the existing HCC facility, the surrounding agricultural lands, and the community of Hilmar.

According to the California Department of Transportation State Scenic Highway Mapping System, there are two designated scenic highways within the County of Merced (California Department of Transportation 2011). Interstate 5 (I-5) runs south to north approximately 17 miles southwest of the project site and is a designated scenic highway from SR 152 to the Stanislaus County Line. SR

152 runs east to west approximately 26 miles southwest of the project site and is a designated scenic highway from the Santa Clara County line to the junction of I-5. The project site is not visible from either I-5 or SR 152. Lander Avenue and August Road, which directly surround the project site, are not locally designated scenic resources.

Discussion

Would the project:

a. Have a substantial adverse effect on a scenic vista?

Less-than-Significant Impact. As discussed above, the project site is located in a rural setting where there are views of the surrounding agricultural lands. Due to distance and intervening topography and buildings, there are no views of these scenic vistas from the project site. The proposed project consists of three new buildings with a maximum height of approximately 40 feet. At 40 feet, these new buildings would be lower than the existing HCC facility buildings located on the project site, which are up to approximately 88 feet high, and the new buildings would not introduce any new visual obstructions. Because there are no views of scenic vistas from the project site and because the proposed buildings would be lower in height than existing buildings on the project site, the proposed project would not have a substantial adverse effect on a scenic vista. Impacts are less than significant.

b. Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings along a scenic highway?

Less-than-Significant Impact. As described above, the project site is not located adjacent to any designated scenic highways. The project site includes both developed areas and active farmland. There are no rock outcroppings on the project site. There are some trees and landscaping features near the visitor center; however, the trees and the landscaping features would not be removed as part of the proposed project. As described in Section V, there is one historic structure (a residence) that was identified during the 2011 cultural resources review but is not located on or adjacent to the project site. Furthermore, no project activities are planned in the direct vicinity of the residence. Therefore, the proposed project would not affect this historic structure or substantially damage any other historic resources. Further, as discussed below under item c, the proposed project would be consistent with the existing character of the project site. This impact is, therefore, considered less than significant.

c. Substantially degrade the existing visual character or quality of the site and its surroundings?

Less-than-Significant Impact. The existing visual character of the project site and surrounding area is described above in the Setting. As described in the project description, the proposed project would consist of three new buildings with a maximum height of approximately 40 feet, which would be lower than the existing buildings on the project site. The architectural style of the proposed structures would be designed to be architecturally consistent with the style of the existing HCC facility.

The visual character of the project site would not change as the facilities that would be constructed as part of the proposed project would be similar in character and function to the existing facilities. As such, because the proposed project would be generally consistent with the visual character of the existing facilities, it would not significantly degrade the existing visual character or aesthetic quality of the project site and its surroundings, resulting in a less-than-significant impact.

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

Less-than-Significant Impact. Construction of the proposed project would be limited to daytime hours typically between 7 a.m. and 6 p.m. Increased truck traffic and transport of construction materials to the project site would temporarily increase glare conditions as a result of light reflecting off vehicle windshields and construction materials. However, this increase in glare would be temporary and would be similar to and subsumed within existing glare conditions. Travel routes for construction traffic would include Lander Avenue and August Road, which are considered highly travelled routes that characteristically experience moderate levels of daytime glare from light reflecting off vehicle windshields. As such, the temporary increase in motor vehicle traffic that would occur during construction of the proposed project would not be considered a new source of substantial glare. Therefore, construction of the proposed project would not create a new source of substantial glare that would affect daytime views in the area. Impacts would be less than significant.

Operation of the proposed project would involve additional asphalt and concrete driving surfaces. New lighting would be installed in the additional hard surface space, resulting in new light sources and the potential for glare. This lighting would be placed, orientated and shielded in order to achieve minimal effects. The nearest residence is located approximately 175 feet northeast of the asphalt area for the Phase 2 cold storage warehouse. This residence could experience some effects from these new sources of light and glare. However, the proposed project would be similar to existing conditions and would also be designed to meet Merced County's lighting code (Section 18.41.060), which requires the use of directional lighting and minimization of glare and reflections. As such, the proposed project's exterior lighting would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area. Impacts would be less than significant.

II. Agricultural and Forestry Resources	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
In determining whether impacts on agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts on forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project, and forest carbon measurement methodology provided in the Forest Protocols adopted by the California Air Resources Board. Would the project:				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☒	☐
b. Conflict with existing zoning for agricultural use or conflict with a Williamson Act contract?	☐	☐	☐	☒
c. Conflict with existing zoning for, or cause rezoning of forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e. Involve other changes in the existing environment that, 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?	☐	☐	☒	☐

Setting

Approximately 11.4 acres of the project site (north of August Road and east of Lander Avenue) was temporarily fallow land, and has been planted with winter oats which will be planted with silage corn after the oats are harvested. This portion of the project site provides approximately 11.4 acres of corn and winter oats when in use. Approximately 90,128 acres (nearly 2.6 million tons) of silage corn was harvested within the County in 2016 (Merced County 2016a). The potential corn production at the project site represents approximately 0.01% of total corn production in Merced County. A comparison between the project's oat production and County-wide oat production is not feasible because the County Department of Agriculture classifies oats, along with beans, rice, and wheat as straw. A total of 1,241 tons of straw were produced within the County in 2016 (Merced County 2016a).

As shown in Figure 3.2-1, a portion of the project site is identified as Farmland of Statewide Importance (California Department of Conservation 2018). The project site is not under a Williamson Act contract and is classified as non-enrolled land (California Department of Conservation 2013). The project site is currently zoned A-1 General Agriculture and is designated as Agricultural ("A") by the County General Plan. Existing cheese processing operations are identified as manufacturing and storage uses that are allowed under the zoning designation.

Merced County has taken increased measures to strengthen protection on farmland. The 2030 Merced County General Plan includes an Agricultural Land Mitigation policy which calls for "establishing and implementing an agricultural mitigation program that matches acres converted with farmland acres of similar quality to those converted preserved at a 1:1 ratio" (Merced County 2013b). Merced County passed an ordinance in 2016, which adopted an Agricultural Mitigation Program that seeks to reinforce the General Plan policy identified above. This ordinance added the Agricultural Mitigation Program (Title 9, Section 9.30) to the Merced County Code. The ordinance mandates that each acre of productive agricultural land that is converted must be mitigated through the conveyance of an agricultural easement to a qualified entity, which shall be of equal quality to the land proposed for conversion (Merced County 2016b).

The project site does not contain any forest lands or timberlands nor is it zoned for forest or timberland uses.

Discussion

Would the project:

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

and

b. Conflict with existing zoning for agricultural use or conflict with a Williamson Act contract?

and

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

Less-than-Significant Impact. The project would consist of the expansion of the existing cold storage space, a new warehouse facility to store cheese packaging parts, and a new repackaging facility. Construction of the Cold Storage Facility (Phase 1 and Phase 2); Re-Packaging Facility (Phase 1); and asphalt around the Cold Storage Facility (Phase 1 and Phase 2) would result in the conversion of approximately 9 acres of corn and winter oats cropland (Farmland of Statewide Importance) to agricultural manufacturing and storage facilities. As previously described, the conversion represents a decrease of approximately 0.01% of total corn production in Merced County. The conversion of Farmland of Statewide Importance (as classified by the Farmland Mapping and Monitoring Program [FMMP]) from crop land to agricultural processing associated with the project would represent a small fraction of the production capacity of Merced County. While crop production from the approximately 9-acre area would be lost due to the project, the new land uses involve agricultural manufacturing, and storage and repackaging facilities which support the continued Hilmar Cheese facilities operations. These agricultural commercial and industrial operations help support the County's $939 million dollar dairy industry and are directly agriculturally related (Merced County 2016a). Furthermore, to offset the potential impacts to Farmland of Statewide Importance, the Applicant would be required to purchase an agricultural easement of equal quality, per the Agricultural Mitigation Program ordinance passed in 2016. Thus, project-related impacts on Farmland of Statewide Importance (as classified by FMMP) and agricultural uses are considered less than significant.

As described above, the project site is zoned A-1 "General Agriculture" and both existing and expanded cheese processing operations are identified as manufacturing and storage uses that are allowed under the zoning designation. Proposed land uses would be consistent with the existing zoning for agricultural use. Therefore, no impact would occur.

The project site is not under a Williamson Act contract and is classified as non-enrolled land (California Department of Conservation 2013). Therefore, the project would not conflict with the provisions of a Williamson Act contract. No impact on Williamson Act lands would occur.

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

and

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

No Impact. The project site and surrounding areas do not include forest land or timberland and are not zoned for forestry or timberland uses and would not result in the loss or conversion of such lands to non-forest uses. Therefore, no impact would occur.

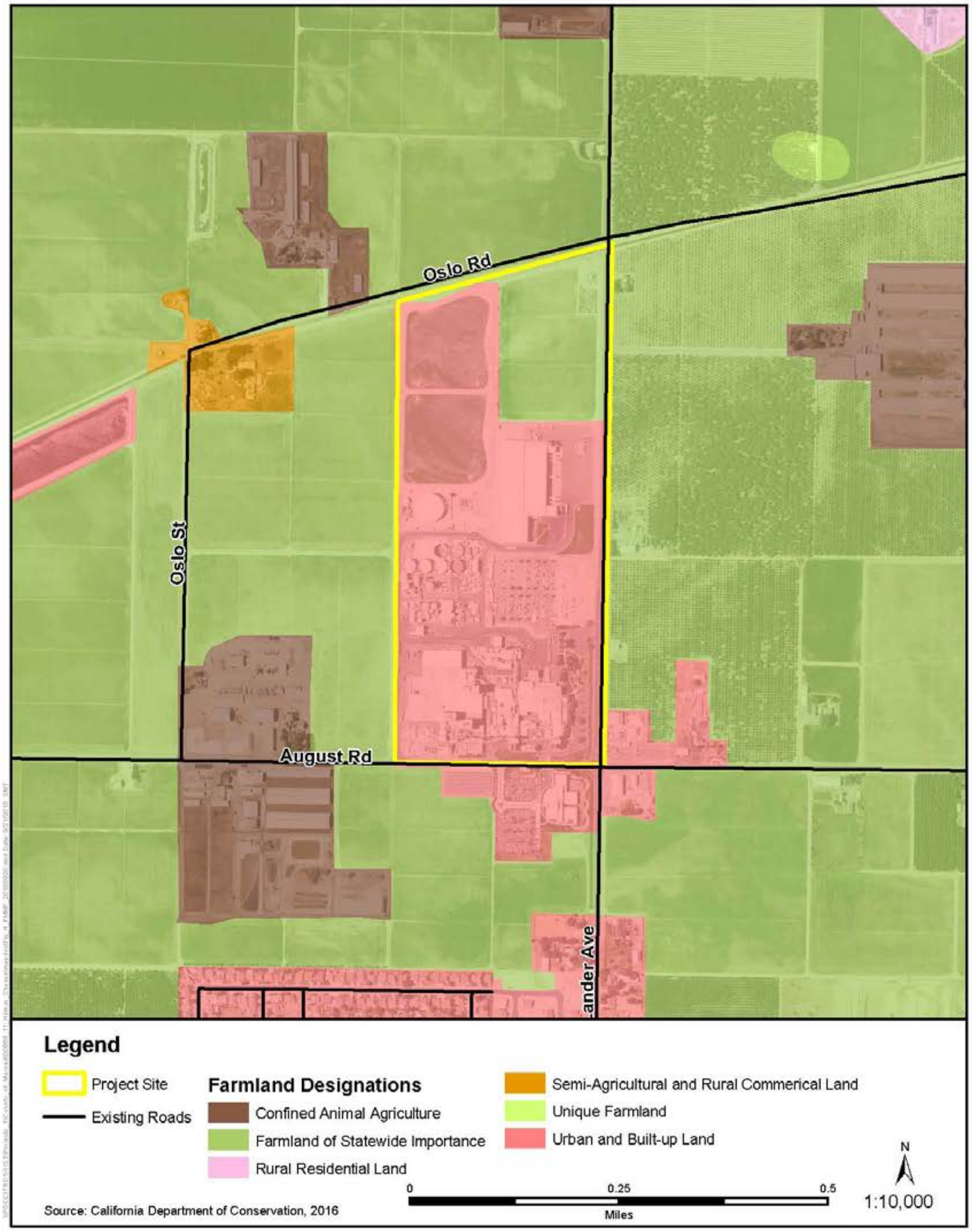

Figure 3.2-1
Hilmar Cheese Company Expansion
Important Farmlands near the Project Area

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III. Air Quality	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
When available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e. Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

This section provides an analysis of air quality impacts resulting from the project. It summarizes the overall regulatory framework for air quality management in California and the region, describes existing air quality conditions in the vicinity of the project, and identifies sensitive land uses. Environmental effects related to air quality, as well as mitigation measures to reduce or eliminate potential impacts, are also discussed.

Regulatory Setting

Air Quality Management

The air quality management agencies of direct importance in Merced County include the U.S. Environmental Protection Agency (EPA), California Air Resources Board (ARB), and the San Joaquin Valley Air Pollution Control District (SJVAPCD). EPA has established federal ambient air quality standards for which ARB and the SJVAPCD have primary implementation responsibility. ARB and the SJVAPCD are also responsible for ensuring that the California Ambient Air Quality Standards (CAAQS) are met. The SJVAPCD has further responsibility for implementing strategies for air quality improvement and recommending mitigation measures for new growth and development.

Air quality is determined primarily by the type and amount of contaminants emitted into the atmosphere, the size and topography of the air basin, and its meteorological conditions. State and federal criteria pollutant emission standards have been established for six pollutants: carbon monoxide (CO), ozone (O_3), particulate matter (PM) consisting of PM less than or equal to 10 microns (PM10) and PM less than or equal to 2.5 microns (PM2.5), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb). Within the San Joaquin Valley Air Basin, the SJVAPCD is responsible for ensuring that these emission standards are not violated.

The project may be subject to the following district rules. These are rules that have been adopted by SJVAPCD to reduce emissions throughout the San Joaquin Valley.

- Rule 2201 (New and Modified Stationary-Source Review Rule). This rule applies to all new stationary sources and all modifications to existing stationary sources subject to SJVAPCD permit requirements that, after construction, emit or may emit one or more pollutants regulated by the rule.
- Rule 3135 (Dust Control Plan Fees). This rule requires the applicant to submit a fee in addition to a dust control plan. The purpose of this rule is to recover SJVAPCD's cost for reviewing these plans and conducting compliance inspections.
- Rule 4101 (Visible Emissions). This rule prohibits emissions of visible air contaminants to the atmosphere and applies to any source operation that emits or may emit air contaminants.
- Rule 4102 (Nuisance). This rule applies to any source operation that emits or may emit air contaminants or other materials. In the event that the project or construction of the project creates a public nuisance, it could be in violation and subject to SJVAPCD enforcement action.
- Rule 4641 (Cutback, Slow-Cure, and Emulsified Asphalt, Paving, and Maintenance Operations). This rule applies to the manufacture and use of cutback asphalt, slow-cure asphalt, and emulsified asphalt for paving and maintenance operations.
- Regulation VIII (Fugitive PM10 Prohibitions). This is a series of rules (Rules 8011–8081) designed to reduce PM emissions (predominantly dust/dirt) generated by human activity, including construction, road construction, bulk materials storage, landfill operations, and other activities. The project would be required to comply with Regulation VIII by law.

The Indirect Source Review rule, Rule 9510, which went into effect March 1, 2006, requires developers of new residential, commercial and industrial projects to reduce smog-forming and particulate emissions generated by their projects. The Indirect Source Review rule seeks to reduce the growth in oxides of nitrogen (NO_X) and PM10 emissions associated with construction and operation of new development, transportation and transit projects in the San Joaquin Valley. This rule fulfills the district's emission reduction commitments in the PM10 and Extreme Ozone Attainment Demonstration Plan and 2007 Ozone Plan through emissions reductions for construction and use of development projects through design features and onsite measures. Because the project is a development project on a facility whose primary functions are subject to SJVAPCD Rules 2201 and 2010, namely a food manufacturing facility, the project would be exempt from the requirements of Rule 9510. Additionally, as discussed below in the evaluation of impacts for the project, construction and operational emissions are anticipated to be below the 2.0 tons per year NO_X and PM10 thresholds specified in the rule exemptions, and, even if not exempt from the rule requirements altogether, the project would be exempt from the mitigation requirements of the rule.

Federal and State Ambient Air Quality Standards

Existing air quality conditions in the project area can be characterized in terms of the ambient air quality standards that the federal government and California have established for several different pollutants. For some pollutants, separate standards have been set for different measurement periods. Most standards have been set to protect public health and welfare with an adequate margin of safety. For some pollutants, standards have been based on other values (such as protection of crops, protection of materials, or avoidance of nuisance conditions). The National Ambient Air Quality Standards (NAAQS) describe acceptable conditions, and were first authorized by the federal

Clean Air Act of 1970. Air quality is considered in "attainment" if pollutant levels are continuously below or equal to the NAAQS and exceed them no more than once each year. The CAAQS, which describe adverse conditions, were authorized by the State legislature in 1967. Pollution levels must be below the CAAQS before a basin can attain the standard. California standards are generally more stringent than the national standards. The pollutants of greatest concern in the project area are CO, O_3, and PM10 and PM2.5, which are inhalable. Federal and state ambient air quality standards are presented in Table 3-1.

Affected Environment

The primary factors that determine air quality are the locations of sources of air pollutants and the amount of pollutants emitted from those sources. Meteorological and topographical conditions are also important factors. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants.

Climate and Topography

The area's climate is considered "inland Mediterranean" and is characterized by warm, dry summers and cool winters. Summer high temperatures often exceed 100°F, averaging in the low 90s in the northern valley and high 90s in the south.

Although marine air generally flows into the basin from the Sacramento–San Joaquin River Delta, the surrounding mountain ranges restrict air movement through and out of the valley. Wind speed and direction influence the dispersion and transportation of ozone precursors, PM10, PM2.5, and CO; the more wind flow, the less accumulation of these pollutants.

The vertical dispersion of air pollutants in the San Joaquin Valley Air Basin is limited by the presence of persistent temperature inversion (warm air over cool air). Because of differences in air density, the air above and below the inversion does not mix. O_3 and its precursors will mix and react to produce higher concentrations under an inversion and will trap directly emitted pollutants, such as CO.

Precipitation and fog tend to reduce or limit pollutant concentrations. O_3 needs sunlight for its formation, and clouds and fog block the required radiation. CO is slightly water soluble, so precipitation and fog tend to reduce CO concentrations in the atmosphere. PM10 is somewhat "washed" from the atmosphere with precipitation. Annual precipitation in the valley decreases from north to south, with about 20 inches in the north, 10 inches in the middle, and less than 6 inches in the southern part of the valley.

Criteria Pollutants

The ambient concentrations of criteria pollutants are the primary indicators of air quality; the six criteria pollutants are O_3, CO, NO_2, SO_2, Pb, PM10, and PM2.5. The NAAQS and CAAQS have been established for these pollutants. O_3, NO_2, and PM are generally considered to be regional pollutants, as these pollutants or their precursors affect air quality on a regional scale. Pollutants such as CO, SO_2, Pb, and PM are considered to be local pollutants that tend to accumulate in the air in the same region where the pollutants were emitted (note that particulate matter is considered to be both a local and a regional pollutant). In the project vicinity, O_3, PM2.5, and PM10 are considered pollutants of concern. Brief descriptions of these pollutants are provided below. Toxic air contaminants (TACs) are also discussed below, although no state or federal ambient air quality standards exist for these pollutants. A complete summary of the CAAQS and NAAQS is provided in Table 3-1.

Ozone

O_3 increases susceptibility to respiratory infections, and is a severe eye, nose, and throat irritant. It is an oxidant that can cause extensive damage to plants by leaf discoloration and cell damage, and also attacks synthetic rubber, textiles, and other materials. O_3 is primarily a summer air pollution problem. Reactive organic gases (ROG) and NO_X are O_3 precursors mainly emitted by mobile sources, such as passenger vehicles, and stationary combustion equipment.

Carbon Monoxide

CO is a public health concern because it combines readily with hemoglobin and reduces the amount of oxygen transported in the bloodstream. CO can cause health problems such as fatigue, headache, confusion, dizziness, and even death. Motor vehicles are the dominant source of CO emissions in most areas. Data indicate that local CO concentrations do not approach the state standards; however, CO concentrations in the vicinity of congested intersections and freeways would be expected to be higher than those recorded at the monitoring station. CO concentrations are expected to continue to decline in the San Joaquin Valley Air Basin because of existing controls and programs and the continued retirement of older, higher-polluting vehicles.

Table 3-1. National and State Ambient Air Quality Standards

Criteria Pollutant	Average Time	California Standards	National Standards[a]	
			Primary	Secondary
Ozone	1-hour	0.09 ppm	None	None
	8–hour	0.070 ppm	0.070 ppm	0.070 ppm
Particulate Matter (PM10)	24-hour	50 μg/m^3	150 μg/m^3	150 μg/m^3
	Annual mean	20 μg/m^3	None	None
Fine Particulate Matter (PM2.5)	24-hour	None	35 μg/m^3	35 μg/m^3
	Annual mean	12 μg/m^3	12.0 μg/m^3	15 μg/m^3
Carbon Monoxide	8-hour	9.0 ppm	9 ppm	None
	1-hour	20 ppm	35 ppm	None
Nitrogen Dioxide	Annual mean	0.030 ppm	0.053 ppm	0.053 ppm
	1-hour	0.18 ppm	0.100 ppm	None
Sulfur Dioxide	Annual mean	None	0.030 ppm	None
	24-hour	0.04 ppm	0.014 ppm	None
	3-hour	None	None	0.5 ppm
	1-hour	0.25 ppm	0.075 ppm	None
Lead	30-day Average	1.5 μg/m^3	None	None
	Calendar quarter	None	1.5 μg/m^3	1.5 μg/m^3
	3-month average	None	0.15 μg/m^3	0.15 μg/m^3
Sulfates	24-hour	25 μg/m^3	None	None
Hydrogen Sulfide	1-hour	0.03 ppm	None	None
Vinyl Chloride	24-hour	0.01 ppm	None	None

Criteria Pollutant	Average Time	California Standards	National Standards[a] Primary	Secondary

Notes:

[a] National standards are divided into primary and secondary standards. Primary standards are intended to protect public health, whereas secondary standards are intended to protect public welfare and the environment.

Source: California Air Resources Board 2016

μg/m[3] = micrograms per cubic meter; ppm = parts per million; PM = particulate matter

Inhalable Particulates

Inhalable particulates (PM10 and PM2.5) can damage human health and retard plant growth. Particulates also reduce visibility and corrode materials. Health concerns associated with suspended particulate matter focus on those particles small enough to reach the lungs when inhaled. Particulate emissions are generated by a wide variety of sources, including agricultural activities, industrial emissions, dust suspended by vehicle traffic and construction equipment, and secondary aerosols formed by reactions in the atmosphere.

Toxic Air Contaminants

TACs are pollutants which may be expected to result in an increase in mortality or serious illness or which may pose a present or potential hazard to human health. Health effects include cancer, birth defects, neurological damage, damage to the body's natural defense system, and diseases that lead to death. Although CAAQS exist for criteria pollutants, no standards exist for TACs. For TACs that are known or suspected carcinogens, ARB has consistently found that there are no levels or thresholds below which exposure is risk-free. The TAC of most concern with regard to the project is diesel exhaust particulate matter.

Asbestos is the name given to many naturally occurring fibrous silicate minerals. It has been mined for applications requiring thermal insulation, chemical and thermal stability, and high tensile strength. It is also found in its natural state in rock or soil (known as naturally occurring asbestos). Mapping published by the United States Geological Survey and California Geological Survey indicates that the project site does not have any reported historic asbestos mines, historic asbestos prospects, asbestos-bearing talc deposits, fibrous amphiboles, or ultramafic rock outcrops (California Department of Conservation 2000).

Valley Fever

Although not considered a criteria pollutant, Valley Fever (also known as Coccidioidomycosis), an infectious disease caused by the fungus *Coccidioides immitis* commonly found in the San Joaquin Valley Air Basin*,* is transmitted through the air and poses a significant health risk to local residents. Valley Fever is caused by inhalation of *Coccidioides immitis* spores that have become airborne when dry, dusty soil or dirt is disturbed by wind, construction, farming, or other activities.

The Valley Fever fungus tends to be found at the base of hillsides in virgin, undisturbed soil. It usually grows in the top few inches of soil, but can grow down to 12 inches. The fungus does not survive well in highly populated areas because there is not usually enough undisturbed soil for the fungus to grow. The fungus is not likely to be found in soil that has been or is being cultivated and fertilized because human-made fertilizers, such as ammonium sulfate, enhance the growth of the natural microbial competitors of the *Coccidioides* fungus.

After the fungal spores have settled in the lungs, they change into a multicellular structure called a spherule. Valley Fever symptoms generally occur within 2 to 3 weeks of exposure. Approximately 60% of Valley Fever cases are mild and display flu-like symptoms or no symptoms at all. Of those who are exposed and seek medical treatment, the most common symptoms are fatigue, cough, chest pain, fever, rash, headache, and joint aches.

Valley Fever infection is most frequent during summers that follow a rainy winter or spring, especially after wind and dust storms. Valley Fever infection is common only in arid and semiarid areas of the western hemisphere. In the United States, it is mostly found from southern California to southern Texas.

Most new residents to San Joaquin Valley Air Basin have never been exposed to Valley Fever, and consequently are particularly susceptible to the infection. Many longtime residents of the area have at some time been exposed to the fungus, become infected, and have recovered, and are thus immune.

Monitoring Data

Existing air quality conditions in the project area can be characterized in terms of the ambient air quality standards that the federal and state governments have established for various pollutants (Table 3-1) and by monitoring data collected in the region. Monitoring data concentrations are typically expressed in terms of parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). The nearest air quality monitoring stations in the vicinity of the project area are the 2334 M Street (ARB 24510) and S. Coffee Avenue (ARB 24528) monitoring stations, both of which are located in the City of Merced approximately 20 to 25 miles southeast of the project site. Although the M Street station is closer to the project site, this station does not monitor concentrations of all pollutants. The M Street station monitors concentrations of PM10 and PM2.5, while the next closest station, the S. Coffee Avenue station, monitors concentrations of ozone and NO_2. Air quality monitoring data from these stations are summarized in Table 3-2 for the last 3 years for which complete data are available (2015–2017).

Air Quality Standards and Attainment Status

Areas are classified as either attainment or nonattainment by comparing actual monitored air pollutant concentrations to state and federal standards. If a pollutant concentration is lower than the state or federal standard, the area is classified as being in *attainment* of the standard for that pollutant. If a pollutant violates the standard, the area is considered a *nonattainment* area. If data are insufficient to determine whether a pollutant is violating the standard, the area is designated *unclassified*. Areas that were previously designated as nonattainment areas but have subsequently met the standard are called *maintenance* areas.

The state has classified Merced County as being in nonattainment for state standards for ozone, PM10, and PM2.5; in attainment for Pb, NO_2, SO_2, and sulfates; and unclassified for CO, hydrogen sulfide, and visibility-reducing particles (California Air Resources Board 2017).

The EPA has classified Merced County as being in extreme nonattainment for 8-hour O_3, and moderate nonattainment for PM2.5 (U.S. Environmental Protection Agency 2018).

Sensitive Receptors

SJVAPCD defines sensitive receptors as "facilities that house or attract children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants (San Joaquin Valley Air Pollution Control District 2015a)." Typical sensitive receptors include residences, hospitals, schools, and places of worship. The adjacent land uses to the project site include mostly agricultural uses to the east, with some commercial uses located along Lander Avenue. Approximately 175 feet northeast of the proposed Phase 2 asphalt area, there is one single-family residence located just south of Oslo Road, which is the closest sensitive receptor to the location of future construction activities. North of the project site is mostly agricultural uses, with one single-family residence located approximately 850 feet from the proposed Phase 2 asphalt surface. To the west of the project site, there are mostly agriculture uses, and the nearest sensitive receptors to the west is a group of single-family residences south of Oslo Road and a residence on the north side of August Avenue, all of which are more than 1,600 feet from where the new project facilities will be located. South of the project site are agricultural fields, with the nearest sensitive receptors, residences in a large neighborhood, located more than 1,400 feet from where the new project facilities will be located.

Table 3-2. Annual Ambient Air Quality Data at Merced South Coffee Avenue (ARB 24528) and M Street Stations (ARB 24510)

Pollutant Standards	2015	2016	2017
Ozone—Merced South Coffee Avenue			
Maximum 1-hour concentration (ppm)	0.102	0.097	0.093
Maximum 8-hour concentration (ppm) (State Standard)	0.090	0.087	0.085
Number of days standard exceeded[a]			
CAAQS 1-hour (>0.09 ppm)	2	2	0
CAAQS 8-hour (>0.070 ppm)	34	29	17
NAAQS 8-hour (>0.070 ppm)	29	28	16
Particulate Matter (PM10)[b]—Merced M Street			
National[c] maximum 24-hour concentration (μg/m^3)	97.2	64.3	146.6
State[d] maximum 24-hour concentration (μg/m^3)	94.0	64.5	144.0
National second highest concentration (μg/m^3)	64.5	62.9	94.1
State second highest concentration (μg/m^3)[e]	65.2	62.2	98.5
Number of days standard exceeded[a]			
NAAQS 24-hour (>150 μg/m^3)[f]	0	0	0
CAAQS 24-hour (>50 μg/m^3)[f]	5	6	12
Particulate Matter (PM2.5)[b]—Merced M Street			
National[c] maximum 24-hour concentration (μg/m^3)	60.8	42.8	66.7
State[d] maximum 24-hour concentration (μg/m^3)	60.8	42.8	66.7
National second highest concentration (μg/m^3)	41.1	36.3	63.9
State second highest concentration (μg/m^3)[e]	41.1	36.3	63.9
Number of days standard exceeded[a]			
NAAQS 24-hour (>35 μg/m^3)[f]	5	2	6
Nitrogen Dioxide (NO_2) —Merced South Coffee Avenue			
State maximum 1-hour concentration (ppb)	50	50	40
State second-highest 1-hour concentration (ppb)	49	46	40

Pollutant Standards	2015	2016	2017
Annual average concentration (ppb)	-	6	7
Number of days standard exceeded[a]			
CAAQS 1-hour (0.18 ppm)	0	0	0

Notes:
An exceedance is not necessarily a violation.
Measurements usually are collected every 6 days.
National statistics are based on standard conditions data. In addition, national statistics are based on samplers using federal reference or equivalent methods.
State statistics are based on local conditions data, except in the South Coast Air Basin, for which statistics are based on standard conditions data. In addition, State statistics are based on California approved samplers.
State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.
Mathematical estimate of how many days concentrations would have been measured as higher than the level of the standard had each day been monitored.
Source: California Air Resources Board 2018
CAAQS = California ambient air quality standards; NAAQS = national ambient air quality standards; – = insufficient data available to determine the value; ppm = parts per million; μg/m³ = micrograms per cubic meter

Significance Criteria

In accordance with Appendix G of the State CEQA Guidelines, the project would be considered to have a significant effect if it would result in any of the conditions listed below.

- Conflict with or obstruct implementation of the applicable air quality plan.
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors).
- Expose sensitive receptors to substantial pollutant concentrations.
- Create objectionable odors affecting a substantial number of people

SJVAPCD Thresholds

Regional Thresholds for Air Basin Attainment of State and Federal Ambient Air Quality Standards

Appendix G in the CEQA Guidelines states that the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to determine the project's level of impact. SJVAPCD's published guidelines, Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI) (San Joaquin Valley Air Pollution Control District 2015a), include the thresholds of significance shown in Table 3-3.

Table 3-3. SJVAPCD Construction and Operational Thresholds of Significance

Pollutant/Precursor	Construction Emissions (tons per year)	Operational Emissions (tons per year)
CO	100	100
NO_X	10	10
ROG	10	10
SOX	27	27
PM10	15	15
PM2.5	15	15
Source: San Joaquin Valley Air Pollution Control District 2015a		

The SJVAPCD's 2015 GAMAQI introduced screening-level thresholds for construction and operational emissions to help determine when an ambient air quality analysis (AAQA) must be performed. An AAQA would entail the use of air dispersion modeling to determine whether emission increases from a project will cause or contribute to a violation of the CAAQS or NAAQS. The SJVAPCD's AAQA screening-level thresholds are 100 pounds per day of any criteria pollutant; projects with emissions in excess of this threshold would require dispersion modeling, while projects below this threshold are presumed to not result in a violation of the CAAQS or NAAQS. While the SJVAPCD's AAQA screening-level thresholds are presented in pounds per day, they have been annualized and converted to tons per year for comparison to the project's annual emissions. The annualization is calculated from the SJVAPCD's 100 pounds per day AAQA screening-level threshold and the assumed corresponding 250 day construction period, resulting in a calculated annual AAQA-equivalency threshold of 12.5 tons per year.

Health-Based Thresholds for Project-Generated Pollutants of Human Health Concern

As discussed above, all criteria pollutants are associated with some form of health risk (e.g., asthma, asphyxiation). Adverse health effects associated with criteria pollutant emissions are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, as well as the number and character of exposed individuals [e.g., age, gender]). Moreover, ozone precursors (ROG and NO_X) affect air quality on a regional scale. Health effects related to ozone are therefore the product of emissions generated by numerous sources throughout a region. Existing models have limited sensitivity to small changes in criteria pollutant concentrations, and, as such, translating Project-generated criteria pollutants to specific health effects would produce meaningless results.

In an amicus curiae brief filed in a court case for the Friant Ranch Project in Fresno County, SJVAPCD has stated that there is a distinction between TACs and criteria air pollutants with respect to local health risk assessments. While local health risk assessments for TACs are routinely performed, SJVAPCD concluded that a local health risk assessment for criteria air pollutants would produce "speculative results". The results of such an analysis would be speculative and not produce reliable information, because the currently available modeling tools "are not well suited" to correlate an individual project's criteria air pollutant emissions and specific health outcomes. Due to the complex processes by which ozone formation occurs, increases in specific amounts of ozone precursor emissions (ROG and NO_X) from projects do not lead to consistent concentrations of ozone. Further, SJVAPCD has concluded that, in the event that modeling tools are developed in the future that are sufficient to correlate a project's emissions with ozone formation and concentrations, there are currently no tools available to determine specific health outcomes associated with specific ozone concentrations. Current models have been designed to evaluate health outcomes at a regional level and not at a localized level (Supreme Court of California 2015).

As such, an analysis of impacts on human health associated with project-generated regional emissions is not included in the project-level analysis. Increased emissions of ozone precursors (ROG and NO_X) generated by the project could increase photochemical reactions and the formation of tropospheric ozone, which at certain concentrations, could lead to respiratory symptoms (e.g., coughing), decreased lung function, and inflammation of airways. As documented by SJVAPCD in their amicus curiae brief, summarized above, although these health effects are associated with ozone the impacts are a result of cumulative and regional ROG and NO_X emissions; therefore, specific health outcomes from criteria pollutant emissions cannot be solely traced to the project.

Because localized pollutants generated by a project can directly affect adjacent sensitive receptors, the analysis of project-related impacts on human health focuses only on those localized pollutants with the greatest potential to result in a significant, material impact on human health. This is consistent with the current state-of-practice and published guidance by the California Air Pollution Control Officers Association (2009), California Office of Environmental Health Hazard Assessment (OEHHA) (2015), and ARB (2000). These pollutants are (1) diesel particulate matter (DPM),[1] (2) locally concentrated CO, and (3) asbestos. As discussed above, the project is not located in an area with any reported historic asbestos mines, historic asbestos prospects, asbestos-bearing talc deposits, fibrous amphiboles, or ultramafic rock outcrops. As such, this analysis focuses on DPM and locally concentration CO.

Localized Diesel Particulate Matter Concentrations

The following criteria from SJVAPCD's GAMAQI were used to determine whether the project would result in a significant health risk from receptor exposure to DPM.

- The project would result in increased cancer risk of more than 20 in 1 million or increased non-cancer risks of greater than 1.0 hazard index.[2]

Localized Carbon Monoxide Concentrations

The following criteria from SJVAPCD's GAMAQI were used to determine whether the project would result in a significant health risk from receptor exposure to CO.

- A traffic study for the project indicates that the level of service (LOS) on one or more streets or at one or more intersections in the project vicinity will be reduced to LOS E or F.

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[1] DPM is the primary TAC of concern for mobile sources—of all controlled TACs, emissions of DPM are estimated to be responsible for about 70% of the total ambient TAC risk. Given the risks associated with DPM, tools and factors for evaluating human health impacts from Project-generated DPM have been developed and are readily available. Conversely, tools and techniques for assessing Project-specific health outcomes as a result of exposure to other TAC (e.g., benzene) remain limited. These limitations impede the ability to evaluate and precisely quantify potential public health risks posed by TAC exposure.

[2] Non-cancer health hazards for chronic and acute diseases are expressed in terms of a hazard index (HI), a ratio of TAC concentration to a reference exposure level (REL), below which no adverse health effects are expected, even for sensitive individuals.

- A traffic study indicates that the project will substantially worsen an already existing LOS F on one or more streets or at one or more intersections in the project vicinity.

Odors

Odors would be considered significant if the project would be located within 1 mile of sensitive receptors and would receive more than one confirmed odor complaint per year averaged over a 3-year period or three unconfirmed odor complaints per year averaged over a 3-year period.

Discussion

This section describes the environmental impacts of the project in the context of air quality. It describes the methods used to evaluate the impacts and the thresholds used to determine whether an impact would be significant. Measures to mitigate significant impacts are provided, where appropriate.

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

A project would be deemed inconsistent with air quality plans if it would result in population and/or employment growth that exceeds estimates used to develop applicable air quality plans. Projects that propose development that is consistent with the growth anticipated by the relevant land use plans would be consistent with the current SJVAPCD air quality plans. If a project proposes development that exceeds the anticipated growth projections, the project would be in conflict with the SJVAPCD air quality plans and might have a potentially significant impact on air quality, because emissions would exceed estimates developed for the region.

As discussed in Section X, *Land Use and Planning*, the project would not conflict with any applicable land use plan, because the project site has approval of an existing CUP that was approved in 2008. Under the approved CUP, HCC can expand its facility in a manner consistent with plans reviewed in 2008 by the County. Additionally, the project would be consistent with the current agricultural land use designation and would meet all of the criteria listed in the Merced County General Plan for its proposed land uses. Consequently, the project is consistent with the Merced County General Plan and would thus not conflict with the land use assumptions used to develop applicable air quality plans.

As discussed in Section XIII, *Population and Housing*, the project would not induce substantial population growth in the area, either directly or indirectly. The project does not include construction of residential units or businesses that would attract new residents but would generate new jobs for approximately 88 individuals. Most of these jobs would likely be filled by individuals living in the community and/or people that would commute to Hilmar from nearby areas within the County. Further, the project site would not include any road or infrastructure improvements that would indirectly induce growth.

Accordingly, the project would be consistent with recent growth projections for the region. Although the project would result in criteria pollutant emissions during the construction and operational periods, the emissions would not be expected to exceed SJVAPCD significance thresholds nor impede attainment or maintenance of the NAAQS or CAAQS.

Because the project would not conflict with any applicable land use plan or policy, would be consistent with recent growth projections for the region, and would not exceed SJVAPCD's significance thresholds, it would not conflict with or obstruct implementation of the current SJVAPCD air quality plans. Therefore, the impact would be less than significant.

b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Construction Emissions

Construction of the project has the potential to result in air quality impacts through the use of heavy-duty construction equipment, construction worker vehicle trips, and on-road truck hauling trips. Additionally, off-gassing from paving and architectural coating activities would result in ROG emissions, and fugitive dust emissions would result from site preparation and grading activities. The quantified estimates of criteria pollutant emissions from construction activities were produced using a combination of emission factors and methodologies from the California Emissions Estimator Model (CalEEMod), version 2016.3.2; ARB's Emission Factors 2017 model; and EPA's AP-42 Compilation of Air Pollutant Emission Factors based on project-specific construction data (e.g., schedule, equipment, truck volumes). Refer to Appendix A for the assumptions used in the air quality analysis and a more detailed description of methodology.

Construction of Phase I is anticipated to begin in 2019 and end in 2021, while construction of Phase II would begin and occur entirely in 2024. The emissions that would result in each year of construction have been individually compared to the SJVAPCD's thresholds of significance (as shown in Table 3-3). The annual emissions that have been quantified for the project construction activities are shown in Table 3-4.

Table 3-4. Annual Emissions of Criteria Pollutants from Construction Activities by Year (tons per year)

Year of Construction	ROG	NO_X	CO	SO_2	PM10	PM2.5
2019	0.1	0.6	0.5	< 0.1	0.2	0.1
2020	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2021	< 0.1	0.2	0.2	< 0.1	0.1	< 0.1
2024	0.1	0.4	0.4	< 0.1	0.2	0.1
SJVAPCD Annual Threshold	10	10	100	27	15	15
SJVAPCD AAQA screening-level thresholds[1]	*12.5*	*12.5*	*12.5*	*12.5*	*12.5*	*12.5*
SJVAPCD Threshold Exceed?	No	No	No	No	No	No

Notes:

[1] The SJVAPCD's 100 pounds of pollutant-per-day AAQA screening-level thresholds have been annualized and converted to tons per year for comparison to the project's annual emissions. The annualization is based on 100 pounds per day over the assumed 250 day construction period.

SJVAPCD = San Joaquin Valley Air Pollution Control District; ROG = reactive organic compounds; NO_X = nitrogen oxides; CO = carbon monoxide; SO_x = sulfur oxides; PM10 = particulate matter; PM2.5 = fine particulate matter; ambient air quality analysis = AAQA

Based on the levels of emissions in Table 3-4, project construction activities would be substantially below the SJVAPCD's adopted numeric threshold for criteria pollutants and the AAQA screening-level threshold in all years of construction and would thus not result in a violation of the CAAQS or NAAQS. Construction emissions would also be well below the AAQA screening-level threshold and thus no further air dispersion modeling is required. Construction of the project would not result in a violation of the CAAQS or NAAQS, and this would be a less-than-significant impact. Consequently, this would be a less-than-significant impact.

Operational Emissions

During the operational phase of the project, mobile source emissions would be generated by the additional employee vehicles that would travel to and from the project site and the one daily delivery truck trip. Area source emissions would be caused by incidental activities related to the expanded facilities, such as paint reapplications, cleaning, consumer products, and landscaping equipment. The project would not result in direct energy source emissions at the project site, because the additional facilities would use electricity and not natural gas. While natural gas results in combustion and hence criteria pollutant emissions, electricity is produced offsite, and it is not standard practice to attribute emissions from electricity consumption to a single project. Both the mobile and energy source emissions have been incorporated in the evaluation of the project's long-term operational impacts and were quantified using CalEEMod. Refer to Appendix A for the CalEEMod output files.

The estimated annual operational emissions from the project uses are presented in Table 3-5 and are compared to SJVAPCD's criteria pollutant threshold in addition to the calculated annual AAQA-equivalency threshold of 18.25 tons per year (100 pounds per day average over 365 days per year for project operation).

Table 3-5. Operational Emissions of Criteria Pollutants (tons per year)

Phase and Emissions Source	ROG	NO_X	CO	SO_2	PM10	PM2.5
Phase I	**0.90**	**0.05**	**0.34**	**< 0.01**	**0.12**	**0.03**
Area Sources	0.89	< 0.01	< 0.01	-	< 0.01	< 0.01
Mobile Sources	0.02	0.05	0.33	< 0.01	0.12	0.03
Phase II	**0.48**	**0.01**	**0.11**	**< 0.01**	**0.04**	**0.01**
Area Sources	0.47	< 0.01	< 0.01	-	< 0.01	< 0.01
Mobile Sources	< 0.01	0.01	0.11	< 0.01	0.04	0.01
Total Project	**1.38**	**0.06**	**0.45**	**< 0.01**	**0.15**	**0.04**
Area Sources	1.36	< 0.01	< 0.01	-	< 0.01	< 0.01
Mobile Sources	0.02	0.06	0.44	< 0.01	0.15	0.04
SJVAPCD Threshold	10	10	100	27	15	15
SJVAPCD AAQA screening-level thresholds[1]	*18.25*	*18.25*	*18.25*	*18.25*	*18.25*	*18.25*
Exceeds Threshold?	**No [1]**	**No**	**No**	**No**	**No**	**No**

Notes:

[1] The SJVAPCD's 100 pounds of pollutant-per-day AAQA screening-level thresholds have been annualized and converted to tons per year for comparison to the proposed project's annual emissions. The annualization is based on 100 pounds per day over 365 days per year.

SJVAPCD = San Joaquin Valley Air Pollution Control District; ROG = reactive organic compounds; NO_X = nitrogen oxides; CO = carbon monoxide; SO_x = sulfur oxides; PM10 = particulate matter; PM2.5 = fine particulate matter; ambient air quality analysis = AAQA

As shown in Table 3-5, the emissions generated from operation of the project would be substantially below the SJVAPCD's adopted numeric threshold for criteria pollutants. Operational emissions would also be well below the AAQA screening-level threshold and thus no further air dispersion modeling is required. The project would not result in a violation of the CAAQS or NAAQS, and this would be a less-than-significant impact.

Construction and Operation Overlap Emissions

Since construction of Phase II would overlap with the operational activities of Phase I in 2024, Phase II construction emissions and Phase I operational emissions need to be combined for an interim year analysis to ensure that emissions would not temporarily exceed the SJVAPCD thresholds. The emissions that would occur during the combined construction and operational period are shown in Table 3-6.

Table 3-6. Construction and Operational Emissions in 2024 (tons/year)

Project Activity	ROG	NO_X	CO	SO_X	PM10	PM2.5
Phase II Construction	0.1	0.4	0.4	< 0.1	0.2	0.1
Phase I Operations	0.9	0.1	0.3	< 0.1	0.1	< 0.1
Total	**1.0**	**0.4**	**0.8**	**< 0.1**	**0.3**	**0.1**
SJVAPCD Annual Thresholds	*10*	*10*	*100*	*27*	*15*	*15*
SJVAPCD AAQA screening-level thresholds[1]	*18.25*	*18.25*	*18.25*	*18.25*	*18.25*	*18.25*
SJVAPCD Threshold Exceeded?	*No*	*No*	*No*	*No*	*No*	*No*

Notes:

[1]The SJVAPCD's 100 pounds of pollutant-per-day AAQA screening-level thresholds have been annualized and converted to tons per year for comparison to the proposed project's annual emissions. The annualization is based on 100 pounds per day over 365 days per year.

SJVAPCD = San Joaquin Valley Air Pollution Control District; ROG = reactive organic compounds; NO_X = nitrogen oxides; CO = carbon monoxide; SO_x = sulfur oxides; PM10 = particulate matter; PM2.5 = fine particulate matter; ambient air quality analysis = AAQA

As shown in Table 3-6, total construction and operational emissions in 2024 from the project would not be in excess of SJVAPCD's adopted numeric thresholds or result in a violation of the CAAQS or NAAQS. Consequently, this would be a less-than-significant impact.

c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?

The GAMAQI indicates that if project-specific emissions exceed the thresholds of significance for criteria pollutants, the project would be expected to result in a cumulatively considerable net increase of any criteria pollutant for which the District is in non-attainment under applicable Federal or State ambient air quality standards. As indicated in Tables 3-4 through 3-6, construction and operational emissions would not exceed SJVAPCD's significance thresholds or calculated AAQA-equivalency thresholds. Consequently, a cumulatively considerable net increase of any nonattainment criteria pollutant is not anticipated. This impact is less than significant.

d. Expose sensitive receptors to substantial pollutant concentrations?

Construction

Diesel Particulate Matter

Project construction would generate DPM, resulting in the exposure of nearby existing sensitive receptors to increases in DPM concentrations. Cancer health risks associated with exposure to diesel exhaust are typically associated with chronic exposure, in which a 70-year exposure period is assumed. DPM concentrations, and, thus cancer health risks, dissipate as a function of distance from the emissions source.

DPM, which is classified as a carcinogenic TAC by the ARB, is the primary pollutant of concern with regard to health risks effects on sensitive receptors. Diesel-powered construction equipment would emit DPM that could potentially expose nearby sensitive receptors to pollutant concentrations. Given that the project would introduce DPM emissions to an area near existing sensitive receptors, a human health risk assessment was performed using EPA's most recent dispersion model, AERMOD, chronic risk assessment values presented by OEHHA, as well as assumptions for model inputs from SJVAPCD's *Update to District's Risk Management Policy to Address OEHHA's Revised Risk Assessment Guidance Document* (San Joaquin Valley Air Pollution Control District 2015b). The health risk assessment also incorporates OEHHA's most recent *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Risk Assessments* guidance and calculation methods (California Office of Environmental Health Hazard Assessment 2015). As described above, there are sensitive receptors located, at the nearest, a distance of 175 feet from the project site. DPM generated during construction may expose receptors in the project vicinity to increased health risks.

A health risk assessment was conducted to analyze the potential health risks associated with short-term construction on nearby residential receptors, and takes into account the regulatory framework, proximity of contaminants to sensitive receptors, quantity, volume, and toxicity of the contaminants, and the likelihood and potential level of exposure. The maximum increased cancer risk at any of the nearby residences was calculated to be 2.5 cases per million, and the maximum hazard index was calculated to be 0.002. The maximum cancer risk increase occurs at the receptor location of 19886 August Avenue, which is a residence approximately 500 feet east of the project site. Although this receptor is not the closest receptor to the project site, the prevailing wind direction in the area, which blows to the southeast, would cause DPM concentrations at this receptor to be a maximum among all nearby receptors. The maximum hazard index would occur at the nearest receptor to the project site, a residence located at 9562 Lander Avenue. These levels of cancer risk and hazard index are far below SJVAPCD's cancer risk and hazard thresholds of 20 in 1 million and 1 (unit-less), respectively. Therefore, this impact would be less than significant. Appendix A includes a detailed description of the health risk assessment methods, the AERMOD emissions modeling results, and the health risk calculations.

Asbestos

Asbestos is a naturally occurring mineral that was previously used in building construction due to its heat resistance and strong insulating properties. Exposure to asbestos, however, has been shown to cause many disabling and fatal diseases, including lung cancer, mesothelioma, and pleural plaques. Demolition of the existing buildings on the project site may expose workers and nearby receptors to asbestos if the material was used during construction of the original buildings. However, the project would comply with Bay Area Air Quality Management District Regulation 11, Rule 2, *Asbestos, Demolition, Renovation, and Manufacturing*. The purpose of this rule is to control emissions of asbestos to the atmosphere during demolition and building renovation. Because the applicant would be required to control asbestos emissions according to Bay Area Air Quality Management District regulations, impacts associated with asbestos emissions would be less than significant.

Valley Fever

Disturbance of soil containing Coccidioides fungus could expose the general public to spores known to cause Valley Fever. Over 75% of Valley Fever cases in California have been in people who live in the San Joaquin Valley. Madera County is one of the counties with the highest annual incidence rates statewide in 2016 at 31.5 per 100,000 (California Department of Public Health 2016). Construction activities in areas known to contain Coccidioides fungus may expose workers and the general public to spores that could result in Valley Fever. Compliance with SJVAPCD Regulation VIII/Dust Control Plan would reduce the risk of contracting Valley Fever. This impact is considered less than significant.

Operation

Diesel Particulate Matter

During the operational period of the project, there would be no major sources of diesel particular matter at the facility. The project applicant has indicated that there would be no new stationary combustion equipment present at the new facilities. With respect to mobile sources of diesel particulate matter, the forklifts used on-site would be electrically powered and would not use diesel fuel. As discussed above, the project would result in the addition of one heavy–duty truck trip per day for materials delivery, which would use diesel fuel; however, the addition of one truck trip per day would not appreciably change the existing pollutant concentrations and background health risks at the site. As such, the operational period of the project would not expose sensitive receptors to substantial pollutant concentrations.

Carbon Monoxide

Elevated levels of CO concentrations are typically found in areas with significant traffic congestion. CO is a public health concern because it combines readily with hemoglobin and reduces the amount of oxygen transported in the bloodstream. SJVAPCD requires localized CO concentrations associated with traffic congestion to be analyzed to ensure that monitored concentrations remain below CAAQS and NAAQS, and to ensure that sensitive receptors are not exposed to elevated localized concentrations near roadways that may not show up at monitoring stations. SJVAPCD has developed a set of preliminary screening criteria that can be used to determine with fair certainty that the effect a project has on any given intersection would not cause a potential CO hotspot. A project can be said to have no potential to create a CO violation or create a localized "hotspot" if neither of the following conditions are met: LOS on one or more streets or intersections will be reduced to LOS E or F; or the proposed project would substantially worsen an already LOS F street or intersection within the project vicinity.

According to the transportation impact analysis, all intersections within the vicinity of the project would operate at LOS D or better during the existing plus project condition (Fehr & Peers 2018). On roadway segments in the project vicinity, existing LOS is C for Lander Avenue along the project site, D on Lander Avenue north of the project site, and E on Lander Avenue south of the project site. The project would not result in a change in LOS on any of these roadways, as indicated in the

Transportation Impact Assessment (Fehr & Peers 2018). On Lander Avenue south of the project site where the LOS is E, the project would increase volumes by less than 1%, and such an increase is not considered to be substantial. As such, the project would not worsen the LOS at any intersection or on any roadway segment, and neither of the SJVAPCD screening criteria conditions are met. Therefore, the proposed project would not generate CO hotspots, and this impact would be less than significant.

e. Create objectionable odors affecting a substantial number of people?

During the construction period, temporary odors from diesel exhaust and paving materials may occur. However, the closest sensitive receptor to any of the new project buildings is approximately 475 feet from the project site and any odors would cease after construction is completed.

The SJVAPCD has identified certain types of land uses as being commonly associated with odors. Based on these land uses, the SJVAPCD has established screening criteria that identifies reasonable buffer distances by odor-generating facility in which the location of sensitive receptors located within these distances could result in significant odor impacts. Table 3-7 summarizes the SJVAPCD's odor screening distances as a function of facility type.

Table 3-7. SJVAPCD Project Screening Trigger Levels for Potential Odor Sources

Type of Facility	SJVAPCD Recommended Buffer Distance
Wastewater Treatment Facilities	2 miles
Sanitary Landfill	1 mile
Transfer Station	1 mile
Composting Facility	1 mile
Petroleum Refinery	2 miles
Asphalt Batch Plant	1 mile
Chemical Manufacturing	1 mile
Fiberglass Manufacturing	1 mile
Painting/Coating Operations (e.g., auto body shops)	1 mile
Food Processing Facility	**1 mile**
Feed Lot/Dairy	1 mile
Rendering Plant	1 mile

Bold text indicates the type of facility represented by the project
Source: San Joaquin Valley Air Pollution Control District 2015a

The project involves food manufacturing and thus is considered a type of facility that could produce unpleasant odors. The screening distance in Table 3-7 for a food processing facility is 1 mile, and, because there are sensitive receptors located within 1 mile of the project site, the project could create objectionable odors that affect nearby receptors. To evaluate the project's potential to result in future odor complaints, the past record of odor-related complaints has been obtained from SJVAPCD (Haywood pers. comm.). In the previous 3 years (October 2015 through October 2018), SJVAPCD has received one complaint associated with the existing facilities, but this complaint was not related to odor issues of the facilities' production process. As such, the existing facilities have not resulted in any odor complaints in the previous 3 years, and the SJVAPCD's threshold of one complaint per year averaged over a 3-year period is not exceeded.

While the project would increase the capacity of the Hilmar Cheese facility, it would not change the current production or storage processes currently employed at the facility in such a manner that is anticipated to generate increased odors. Therefore, it is reasonable to assume that the past record of odor complaints for the existing facilities would be representative of the operations of the project. Consequently, because existing operations have not resulted in verified odor complaints that exceed SJVAPCD's threshold and the project would continue to use the same type of production and storage methods as existing uses, impacts would be less than significant.

IV. Biological Resources	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f. Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Setting

The project site is located in north central Merced County, immediately north of the unincorporated community of Hilmar. Much of the project site consists of agricultural fields (summer corn and winter oats), and developed agricultural processing buildings and paved areas associated with HCC. At the time of the August 2018 site visit, the agricultural fields were fallow. The project site includes disturbed/ruderal areas and landscaped vegetation adjacent to HCC facilities, as well as maintained water treatment ponds. Disturbed/ruderal areas include unvegetated road shoulders, dirt roads, fallow areas, and levees. The project site is relatively flat with elevations ranging from approximately 93 to 96 feet above mean sea level. Soil types within the project site include Delhi sand and Hilmar loamy sand. Due to the project site being fully affected by agriculture and development, it does not contain natural land cover or communities, regulated wetlands and waters, riparian habitat, or other sensitive natural communities as defined by the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (U.S. Fish and Wildlife Service

2018a). Although ornamental landscape is present within the project site, no trees would be removed. Ornamental vegetation is not a sensitive natural community as indicated by the CDFW Natural Communities List (California Department of Fish and Wildlife 2018a). In addition to the onsite water treatment ponds, the nearest aquatic resources to the project site include a concrete-lined agricultural canal that borders the project site on the north and two freshwater agricultural ponds located approximately 0.15 mile southwest and 0.24 mile northwest of the project site(U.S. Fish and Wildlife Service 2018a). The proposed project is located approximately 4 miles north of the Merced River and approximately 7 miles east of the San Joaquin River.

Land uses in the project site vicinity are predominantly agricultural (i.e., orchard, row crops, grain), with numerous agricultural and sparse rural residential structures scattered throughout the region, and high-density residential development in the community of Hilmar approximately 0.25 mile south of the project site.

Approach to Analysis

Impacts on biological resources were evaluated based on the likelihood that special-status species, sensitive habitats, wildlife corridors, and protected trees could be present within the project site, and the potential effects that construction or operation might have on these resources. To evaluate whether special-status species or other sensitive biological resources could occur on the project site and vicinity, biologists reviewed existing resource information including the following:

- *Hilmar Cheese Company Facility Expansion Project Draft IS/MND (Major Modification No. MM11-014 to Conditional Use Permit No. CUP08-011*) prepared by ICF (ICF 2012).
- California Natural Diversity Database (CNDDB) species list query of the U.S. Geological Service 7.5-minute Turlock quadrangle (California Department of Fish and Wildlife 2018b) (Appendix B).
- California Native Plant Society Inventory of Rare and Endangered Plants of California species list query of the U.S. Geological Service 7.5-minute Turlock quadrangle (California Native Plant Society 2018) (Appendix C).
- U.S. Fish and Wildlife Service Information for Planning and Conservation species list query of the project site (U.S. Fish and Wildlife Service 2018b) (Appendix D).
- eBird online database of bird distribution and abundance (eBird 2012)
- U.S. Fish and Wildlife Service National Wetland Inventory (U.S. Fish and Wildlife Service 2018a)
- Aerial imagery on Google Earth (Google Earth 2018)
- Site photographs
- Species distribution and habitat requirements literature

Site photographs (below) depicting current conditions and land use were taken on August 16, 2018 by Leo Mena (ICF). Figure 3.4-1 shows the CNDDB occurrences of special-status species that have been previously identified within 10 miles of the project site (California Department of Fish and Wildlife 2018b). Information obtained from all listed resources was used to develop Table 3-8, which lists the special-status plant, invertebrate, wildlife, and fish species that have been documented in or have the potential to occur in the project region. Each species' potential to occur within the project site was evaluated based on the conditions of the site and surrounding area and recent biological information. While multiple special-status plant, wildlife, and fish species have the potential to occur in the project region, suitable habitat for only four special-status wildlife species (tricolored blackbird, Swainson's hawk, white-tailed kite, and northern harrier) is present on the project site. These species are discussed below.

Image 3.4-1 Representative photo of development and agricultural fields within the project site (looking west)

Image 3.4-2 Representative photo of agricultural fields within the project site (taken August, 2018)

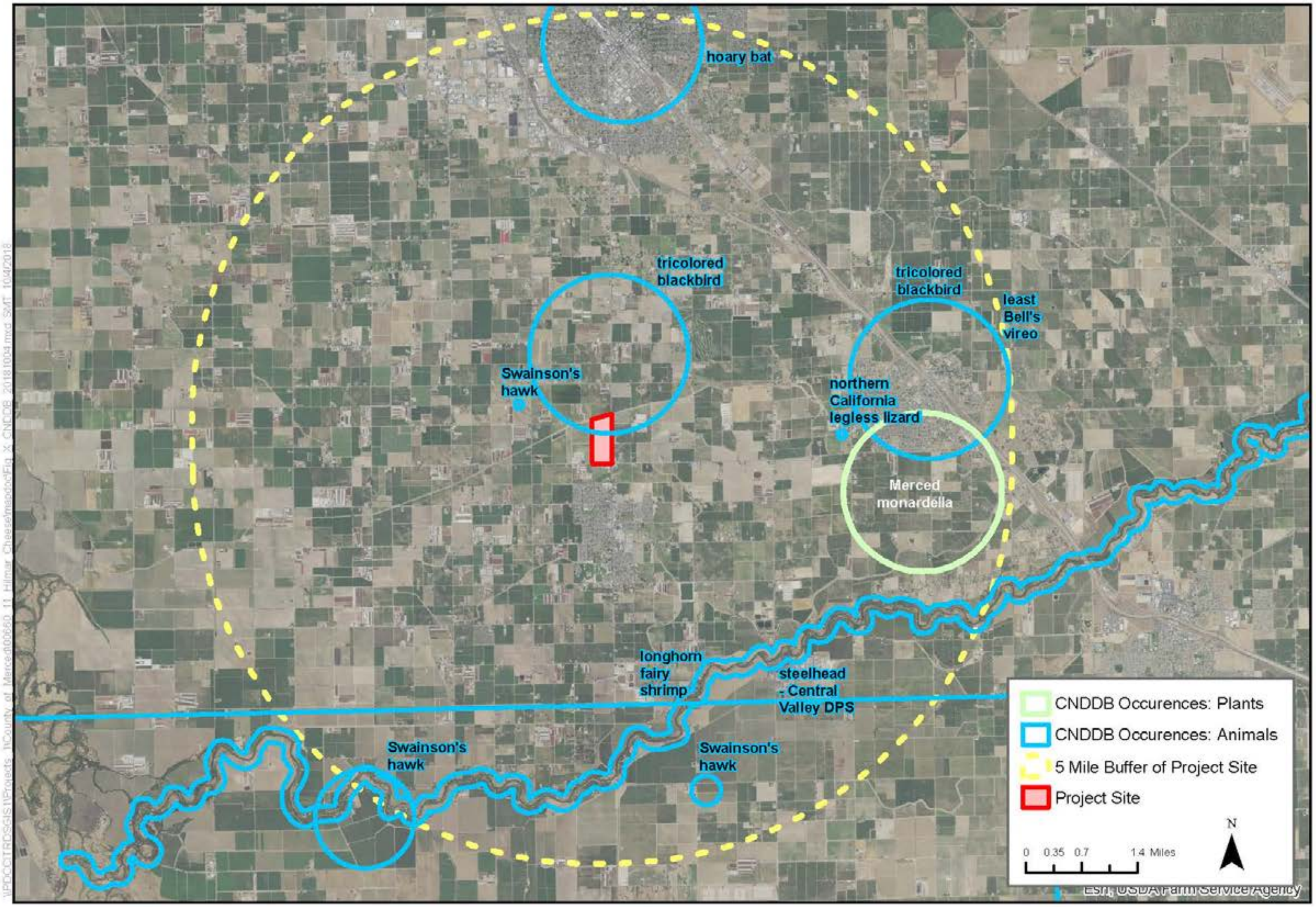

Figure 3.4-1
CNDDB Occurrences of Special-Status Species within 5 Miles of Project Site

Figure 3.4-1 CNDDB Occurrences of Special-Status Species within 10 miles of Project Site

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Table 3-8. Special-Status Species Known to Occur within the Project Region

Species	Status Fed/State/ Other	Distribution	Habitat	Likelihood of Occurrence
Plants				
Eryngium racemosum Delta button celery	–/SE/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 250 feet above mean sea level (MSL). Blooming period is Jun-Aug.	**None:** There are no CNDDB records within 5 miles of the project site and there is no suitable habitat on the project site.
Monardella leucocephala Merced monardella	–/–/SSC, 1A	Presumed extirpated, last seen in 1941, historically known from northern San Joaquin Valley.	Moist, sub-alkaline soils associated with low elevation grassland, in sandy depressions and riverbeds, from 115 to 330 feet above MSL. Blooming period is May-Aug.	**None:** There is one CNDDB record within 5 miles of the project site from 1941 located approximately 3.7 miles west of the project site. There is no suitable habitat in the project site.
Invertebrates				
Branchinecta longiantenna Longhorn fairy shrimp	FE/-/-	Eastern margin of central Coast Ranges from Contra Costa County to San Luis Obispo County; disjunct population in Madera County.	Small, clear pools in sandstone rock outcrops of clear to moderately turbid clay- or grass-bottomed pools.	**None:** There is one CNDDB record within 5 miles of the project site located approximately 3 miles south, but there is no suitable habitat in the project site.
Branchinecta lynchi Vernal pool fairy shrimp	FT/-/-	Central Valley, central and south Coast Ranges from Tehama County to Santa Barbara County; isolated populations also in Riverside County.	Common in vernal pools; also found in sandstone rock outcrop pools.	**None:** There are no CNDDB records within 5 miles of the project site and there is no suitable habitat in the project site.
Desmocerus californicus dimorphus Valley elderberry longhorn beetle	FT/-/-	Stream side habitats below 3,000 feet throughout the Central Valley.	Riparian and oak savanna habitats with elderberry shrubs; elderberries are the host plant.	**None:** There are no CNDDB records within 5 miles of the project site, and there is no suitable habitat in the project site.

Species	Status Fed/State/ Other	Distribution	Habitat	Likelihood of Occurrence
Lepidurus packardi Vernal pool tadpole shrimp	FE/-/-	Shasta County south to Merced County.	Vernal pools and ephemeral stock ponds.	**None:** There are no CNDDB records within 5 miles of the project site, and there is no suitable habitat in the project site.
Fish				
Hypomesus transpacificus Delta smelt	FT/SE/–	Primarily in the Sacramento–San Joaquin Estuary, but has been found as far upstream as the mouth of the American River on the Sacramento River and Mossdale on the San Joaquin River; range extends downstream to San Pablo Bay.	Occurs in estuary habitat in the Delta where fresh and brackish water mix in the salinity range of 2–7 parts per thousand (Moyle 2002).	**None:** There are no CNDDB records within 5 miles of the project site, and there is no suitable habitat within the project site. The project site is outside of the species' known range.
Oncorhynchus mykiss Central Valley Steelhead	FT/–/–	Sacramento and San Joaquin River and their tributaries.	Aquatic; anadromous fish that spawns and spends a portion of its life in inland streams, typically maturing in the open ocean.	**None:** There is one CNDDB record within 5 miles of the project site from 2013 located over 2.8 miles southeast in the Merced River. There is no suitable habitat within the project site.
Amphibians				
Ambystoma californiense California tiger salamander	FT/ST/–	Central Valley, including Sierra Nevada foothills, up to approximately 1,000 feet, and coastal region from Sonoma County south to Santa Barbara County.	Small ponds, lakes, or vernal pools in grasslands and oak woodlands for larvae; rodent burrows, rock crevices, or fallen logs for cover for adults and for summer dormancy.	**None:** There are no CNDDB records within 5 miles of the project site. Also, there is no suitable upland habitat for California tiger salamanders within 1.24 mile of the project site and therefore salamanders would not be expected to occur within the onsite treatment ponds.
Rana draytonii	FT/–/SSC	Found along the coast and coastal mountain ranges of California from	Permanent and semi-permanent aquatic habitats, such as creeks	**None:** There are no CNDDB records within 5 miles of the

Species	Status Fed/State/ Other	Distribution	Habitat	Likelihood of Occurrence
California red-legged frog		Mendocino County to San Diego County and in the Sierra Nevada from Butte County to Stanislaus County.	and cold water ponds with emergent and submergent vegetation; may aestivate in rodent burrows or cracks during dry periods.	project site. California red-legged frogs are presumed to be extirpated from the valley floor.
Reptiles				
Anniella pulchra pulchra Northern California legless lizard	–/–/SSC	Along the Coast, Transverse, and Peninsular Ranges from Contra Costa County to San Diego County with spotty occurrences in the San Joaquin Valley.	Habitats with loose soil for burrowing or thick duff or leaf litter; often forages in leaf litter at plant bases; may be found on beaches, sandy washes, and in woodland, chaparral, and riparian areas.	**None:** There is one CNDDB record within 5 miles of the project site from 1998 located approximately 2.9 miles west in an undeveloped area with sandy soil and non-native grasses and weeds. There is no suitable habitat in the project site.
Emys marmorata Western pond turtle	–/SSC	The western pond turtle is uncommon to common in suitable aquatic habitat throughout California, west of the Sierra-Cascade crest and absent from desert regions, except in the Mojave Desert along the Mojave River and its tributaries.	Occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation in woodlands, grasslands, and open forests. Nests are typically constructed in upland habitat within 0.25 mile of aquatic habitat.	**None:** There are no CNDDB occurrences within 5 miles of the project site and there is no suitable habitat for this species within the project site. Pond turtles are not expected to use onsite water treatment ponds because these ponds lack vegetation for cover and forage, frequent routine maintenance, fluctuation of water levels, and because they do not hydrologically connect to any suitable aquatic habitat known or with potential to support western pond turtle.
Gambelia sila Blunt-nosed leopard lizard	FE/SE/FP	San Joaquin Valley from Stanislaus County through Kern County and along the eastern edges of San Luis Obispo and San Benito Counties.	Open habitats with scattered low bushes on alkali flats, and low foothills, canyon floors, plains, washes, and arroyos; substrates	**None:** There are no CNDDB records within 5 miles of the project site and the project site

Species	Status Fed/State/ Other	Distribution	Habitat	Likelihood of Occurrence
			may range from sandy or gravelly soils to hardpan.	is outside the known range of the species.
Thamnophis gigas Giant garter snake	FT/ST/-	Central Valley from the vicinity of Burrel in Fresno County north to near Chico in Butte County; has been extirpated from areas south of Fresno.	Sloughs, canals, low gradient streams and freshwater marsh habitats where there is a prey base of small fish and amphibians; also found in irrigation ditches and rice fields; requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter.	**None:** There are no CNDDB records within 5 miles of the project site and there is no suitable habitat in the project site. The water treatment ponds within the project site do not provide suitable habitat for this species due to the lack of vegetation for cover and forage, frequent routine maintenance, fluctuation of water levels, and because they do not hydrologically connect to any suitable aquatic habitat known or with potential to support giant garter snake.
Birds				
Agelaius tricolor Tricolored blackbird	–/CSE/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 grain fields. Habitat must be large enough to support 50 pairs. Probably requires water at or near the nesting colony.	**None (nesting):** There are two CNDDB records within 5 miles of the project site from breeding observations in 1933, located approximately 0.8 mile north and 4 miles east from the project site. Both of these colonies were presumed extirpated in 1991. There is no preferred nesting habitat (i.e., emergent marsh vegetation) on the project site. Although the species has been known to nest in grain crops, there is no suitably sized foraging areas nearby that could support a nesting colony. Therefore the species is not expected to nest

Species	Status Fed/State/ Other	Distribution	Habitat	Likelihood of Occurrence
				onsite. The species could occasionally forage onsite throughout the year.
Buteo swainsoni Swainson's hawk	–/ST/–	Lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley. Highest nesting densities occur near Davis and Woodland, Yolo County.	Nests in oaks or cottonwoods in or near riparian habitats. Forages in grasslands, irrigated pastures, and grain fields.	**Moderate:** There are three CNDDB records within 5 miles of the project site The closest known nest is 2.0 miles to the northwest and was confirmed nesting in 2012. There are only a few trees on the project site that could provide suitable nesting substrate; however, there are several potential nest trees within 0.5 mile of the project site. Open agricultural fields on and adjacent to the project site provide potential foraging habitat. Typical crops planted onsite are corn and wheat, which provide only marginal foraging habitat for the species. Based on the high degree of development and low density of trees onsite, there is a low probability of nesting on the project site.
Circus cyaneus Northern harrier	–/–/SSC	Occurs throughout lowland California. Has been recorded in fall at high elevations.	Grasslands, meadows, marshes, and seasonal and agricultural wetlands.	**Low (foraging habitat only):** There are no CNDDB records within 5 miles of the project site. There is no suitable nesting habitat on the project site, however, suitable foraging habitat for this species occurs in the open fields within the project site.

Species	Status Fed/State/ Other	Distribution	Habitat	Likelihood of Occurrence
Elanus leucurus White-tailed kite	–/–/FP	Lowland areas west of Sierra Nevada from the head of the Sacramento Valley south, including coastal valleys and foothills to western San Diego County at the Mexico border.	Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging.	**Low:** There are no CNDDB records within 5 miles of the project site. The few trees within the project site could provide suitable nesting substrate and open agricultural fields provide a small amount of suitable foraging habitat for this species, but the high degree of development and low density of trees reduce the probability of nesting within the project site.
Vireo bellii pusillus Least Bell's vireo	FE/SE/–	Small populations remain in southern Inyo, southern San Bernardino, Riverside, San Diego, Orange, Los Angeles, Ventura, and Santa Barbara Counties.	Riparian thickets either near water or in dry portions of river bottoms; nests along margins of bushes and forages low to the ground; may also be found using mesquite and arrow weed in desert canyons.	**None:** There is one CNDDB record within 5 miles of the project site from an observation of a nesting pair in 1919 located approximately 4 miles east from the project site. There is no suitable habitat in or near the project site.
Mammals				
Dipodomys nitratoides exilis Fresno kangaroo rat	FE/SE/–	Historically found from Merced Co. south to Central Fresno Co.	Found at elevations from 200 to 300 feet in alkali sink habitats	**None:** There are no CNDDB records within 5 miles of the project site and there is no suitable habitat in the project site.
Lasiurus cinereus Hoary bat	–/–/M	Widespread throughout California	Roosts in coniferous and deciduous trees, typically within forests.	**None:** There is one CNDDB record within 5 miles of the project site from an observation in 1925, located approximately 4.4 miles from the project site in an area that is now developed (Turlock). Trees within the project site are located in landscaped areas

Species	Status Fed/State/ Other	Distribution	Habitat	Likelihood of Occurrence
				immediately adjacent to the existing Hilmar Cheese Company facilities and do not provide suitable roosting habitat for this species.

Status Explanations:

– = no status

Federal

FE = Federally listed as endangered under the ESA

FT = Federally listed as threatened under the ESA

State

SE = State listed as endangered under CESA

ST = State listed as threatened under CESA

SSC = California Species of Special Concern

FP = California Fully Protected Species

CSE = Candidate for listing as state endangered under CESA

California Rare Plant Rank

1A = Plants presumed extirpated in California and either rare or extinct elsewhere.

1B = Plants that are rare, threatened, or endangered in California and elsewhere.

California Native Plant Society Threat Code Extension

.1 = Species seriously endangered in California

Western Bat Working Group (WBWG) Conservation Priority

M= Medium

Discussion

Would the project:

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

Less-than-Significant Impact with Mitigation Incorporated. Candidate, sensitive, or other special-status species listed in local or regional plans, policies, or regulation, or by the CDFW or U.S. Fish and Wildlife Service with potential to occur on the project site or its vicinity could potentially be adversely affected by the proposed project. Potential impacts on special-status species including Swainson's hawk, white-tailed kite, northern harrier, and tricolored blackbird in addition to other raptors and bird species regulated by the Migratory Bird Treaty Act (MBTA), would be considered significant; however, impacts can be reduced to a less-than-significant level through the implementation of Mitigation Measures BIO-1 and BIO-2 listed below.

Agricultural land cover within the project site provides suitable nesting substrate for tricolored blackbird and other bird species regulated by the MBTA. Large trees located outside, but within 0.5 mile of the project site provide suitable nesting substrate for Swainson's hawk, white-tailed kite, and other raptors regulated by the MBTA. These trees include eucalyptus (*Eucalyptus* spp.) associated with the rural structures and residences located east, west, and north of the project site. In addition, several large trees are located within the high density residential area immediately south of the project site. These trees are not expected to provide suitable nesting substrate for Swainson's hawk or other raptors regulated by the MBTA because of their location within a high density residential neighborhood that is expected to experience routine human-generated disturbance from the homeowners. Project activities have the potential to affect active nests of raptors and other bird species regulated by the MBTA if any are located within or near the project site; however, these impacts would be avoided through the implementation of Mitigation Measure BIO-1.

The project site contains fallow agricultural fields that would typically support wheat and corn. Agricultural fields only provide marginal foraging habitat for Swainson's hawk, white-tailed kite, northern harrier, tricolored blackbird and other bird species regulated by MBTA. The onsite disturbed areas are slivers of areas along roadways and around developed areas and would not be considered foraging habitat. Permanent removal of 11.4 acres of marginal foraging habitat would not substantially decrease the available foraging habitat for locally nesting birds, including Swainson's hawks. Foraging habitat is not a limited resource within the project vicinity as large tracts of agricultural lands are present within a 10-mile radius around the project site that provide foraging opportunities for Swainson's hawks and other nesting birds. However, the cumulative loss of foraging habitat for Swainson's hawk (a state threatened species) as a result of other development projects throughout Merced County could be considered cumulatively considerable and may result in a reduction in the reproductive potential of Swainson's hawks in Merced County. Compensation to offset the cumulative loss of foraging habitat resulting from proposed project activities is provided through the implementation of Mitigation Measure BIO-2.

The cumulative loss of foraging habitat for Swainson's hawk would be a potentially significant impact, but would be reduced to a less-than-significant level with the implementation of Mitigation Measure BIO-2 described below.

Mitigation Measure BIO-1: Avoid disturbance of tree-, shrub-, and ground-nesting migratory birds and raptors (including Swainson's hawk) and conduct preconstruction nesting bird surveys.

If construction activities commence after March 1 of the construction year and cannot be confined to the non-breeding season (September 1 through February 28), preconstruction nesting bird surveys will be conducted before the start of construction.

The preconstruction nesting bird surveys will consist of a minimum of two separate surveys to look for active migratory bird and raptor nests. Surveys will include a search of all trees, shrubs, and ground vegetation that provide suitable nesting substrate in the construction work area. Where access is permitted, a 100-foot area around the construction area will be surveyed for song birds, a 500-foot area around the construction area will be surveyed for common raptors, and a 0.25-mile area around the construction area will be surveyed for Swainson's hawk. The first survey will occur within 14 days prior to construction and the second survey will occur within 48 hours prior to the start of construction or prior to vegetation removal. If no active nests are detected during these surveys, no additional protection measures are required. If there is a lapse in construction activities of 7 days or longer at a previously surveyed area, an additional preconstruction survey will be conducted. If an active nest is found in the survey area, a no-disturbance buffer will be established around the nest site to avoid disturbance or destruction of the nest until the end of the breeding season (August 31) or until after a qualified wildlife biologist determines that the young have fledged and are not dependent on the nest site for feeding (this date varies by species). The extent of these buffers will be determined by the biologist in coordination with the County and CDFW, as applicable. No-disturbance buffer distances will depend on the level of construction disturbance, line-of-sight between the nest and the disturbance, ambient levels of noise and other disturbances in the area near the nest, and other topographical or artificial barriers. Suitable buffer distances may vary between species. Generally, buffer distance will be a minimum of 50 feet for passerines, 300 feet for raptors, and 1,000 feet for Swainson's hawk. If site-specific conditions or the nature of the activity indicate that a smaller buffer could be used, the biologist will coordinate with CDFW to determine the appropriate buffer size and identify additional protection measures (such as nest monitoring), as warranted.

Mitigation Measure BIO-2: Compensate for the loss of 11.4 acres of Swainson's hawk foraging habitat.

The project proponent will compensate for the permanent removal of suitable foraging habitat for Swainson's hawks by acquiring offsite habitat management lands as described in CDFW's Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California (CDFW Staff Report) (California Department of Fish and Game 1994). Consistent with the CDFW Staff Report, permanent loss of foraging habitat will be mitigated at a 0.75:1 ratio (0.75 acre preserved for every 1 acre affected) based on the proximity of the closest known nest located 2 miles from the project site (CNDDB occurrence #2502: June 2012). In lieu of acquiring offsite mitigation lands, the project proponent may purchase mitigation credits for Swainson's hawk foraging habitat from a suitable mitigation or conservation bank that sell upland habitat credits with equal or similar habitat function to lands that are permanently affected by the proposed project.

The final mitigation approach for Swainson's hawk foraging habitat will be presented to the County by the project proponent for review and approval to ensure consistency with the CDFW Staff Report. If offsite mitigation lands are the preferred approach, the project proponent will provide the County with a habitat evaluation prepared by a qualified biologist familiar with the foraging requirements of the Swainson's hawk and using the most recent scientific research. The project proponent will prepare a mitigation plan that identifies the land uses and crop type proposed for the mitigation lands that are consistent with the needs of Swainson's hawk and any management and reporting actions proposed.

Prior to starting construction of the project, the project proponent will either provide a purchase agreement for the appropriate mitigation credits to the County or will acquire and protect mitigation lands deemed adequate by the County.

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

No Impact. There is no riparian habitat or other sensitive natural community located within the project site; therefore, no impact on riparian habitat or other sensitive natural communities would occur as a result of the proposed project.

c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?

No Impact. The water treatment ponds within the project site were created and are maintained by HCC for facility operation and maintenance. Under the 2015 Clean Water Rule (33 Code of Federal Regulations [CFR] 328.3), waste water treatment ponds are not considered waters of the United States and are not regulated under Section 404 of the Clean Water Act. There are no federally protected wetlands or other jurisdictional waters in the vicinity of the project site that could be affected by the proposed project. Therefore, no impact would occur.

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

No Impact. The proposed project is not within an established wildlife corridor and does not involve the construction of extensive facilities or fences that could impede wildlife movement. The proposed project would not interfere with the movement of any native resident or migratory wildlife species or with established native resident or migratory wildlife corridors, and would not impede the use of native wildlife nursery sites. No impact would occur.

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

No Impact. The proposed project does not conflict with any local policies or ordinances pertaining to biological resources on the project site. No trees would be removed as part of the proposed project. No impact would occur.

f. Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?

No Impact. There are no existing or proposed Habitat Conservation Plans (HCPs) or Natural Community Conservation Plans (NCCPs) within the vicinity of the project site (California Department of Fish and Wildlife 2018c). The nearest HCP is in the community of Santa Nella in western Merced County, which is approximately 20 miles southwest of the project site (U.S. Fish and Wildlife Service 2018b). Since there are no HCPs or NCCPs that apply to the project site, there would be no project impacts related to HCPs and NCCPs.

V. Cultural Resources	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	☐	☐	☐	☒
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☐	☐	☒
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒
d. Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒

Setting

Two broad types of historical resources can be expected in the vicinity of the project site: historic built environment (i.e., historic buildings and structures) and archaeological sites (including Native American sites and non-Indian historic sites). For the purposes of cultural resources management in California, a built environment resource is considered historic in age if it is 45 years or older at the time of identification, although not all built environment resources constitute significant historic resources under CEQA, as age is only one factor considered in evaluation of significance.

Methods and Results

An inventory of cultural resources in the vicinity of the study area was conducted in 2011 as part of previous permitting efforts. This inventory included a literature review of pertinent historical information, a review of previously recorded resources and studies conducted in the vicinity, a review of landform data of the area, consultation with Native American groups in the area as well as a pedestrian survey. One historic structure was identified during the 2011 cultural resources review. This historic structure is not in or adjacent to the project site. This inventory did not identify any built environment or archaeological resources within the project site and determined the potential was low for encountering any as-yet undocumented cultural resources during project related activities (ICF 2011).

More recent cultural resources inventory efforts included an updated records search and literature review which was conducted on the project site as well as 0.5-mile of the surrounding area as well as consultation with local California Native American Tribes, pursuant to Assembly Bill (AB) 52. A pedestrian survey was not conducted as part of the current inventory due to the developed nature of the project site as well as the negative results of previous pedestrian surveys. Regarding built environment resources, the findings of the previous cultural resources inventory are used for the impacts analysis of the current project, and no new built environment survey was conducted.

Records Search and Literature Review

An updated records search was performed at the Central Coast Information Center (CCIC) on September 11, 2018. This search included the study area as well as 0.5-mile of the surrounding area. This search did not identify any additional previously recorded cultural resources within the project area. Two additional cultural resources studies have been conducted within 0.5-mile of the project area. These studies are detailed below.

- Applied Earth Works. 1999. *Cultural Resources Survey for the Turlock Irrigation District Westside Transmission Line Project, Stanislaus and Merced Counties, California*. S-3630
- Earth Touch. 2001. *Nextel Communications Wireless Telecommunications Service Facilities located in Counties Covered by the Central California Information Center*. S-4668

One previously recorded built environment resource was identified within 0.5-mile of the study area.

- This bridge (BR39C0123) was evaluated as part of the California Department of Transportation Structure Maintenance and Investigations and was determined to be ineligible for listing to the National Register of Historic Places.

Correspondence with Native Americans

In 2014 the State of California passed AB 52, which requires a lead agency under CEQA to consult with any California Native American Tribes who have formally requested consultation on projects in their jurisdiction. AB 52 recognizes that Tribes may have knowledge regarding the geographic regions in which they are traditionally and culturally affiliated.

On September 28, 2018, the County, pursuant to AB 52, provided formal notification to those California Native American Tribes that previously requested to be informed of proposed projects in the geographic area per Public Resources Code (PRC) Section 21080.3.1. The County sent letters summarizing the project along with accompanying figures showing the regional and project location to the following Tribes:

- Amah Mutsun Tribal Band
- Southern Sierra Miwuk Nation
- Dumna Wo-Wah Tribal Government
- Northern Valley Yokuts Tribe

As of the date of this writing no Tribes have responded or requested consultation.

Discussion

a. Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

No Impact. The cultural inventory effort conducted in 2011 to support earlier permitting efforts identified that no historic built environment resources were located within or adjacent to the project area. An updated records search at the CCIC in 2018 did not identify any additional previously recorded built environment resources in the project area or within 0.5-mile. As a result, the current analysis finds that there would be no impact to historic built environment resources as a result of the project.

b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

No Impact. A cultural review was conducted for a previous major modification number MM11-014 to conditional use permit number CUP08-011 in 2011, which consisted of the construction of new buildings, structures, and dirt mounding. During the cultural review no previously recorded resources were identified within the project area or within 0.5-mile of the project area, no Tribal areas of concern were identified during consultation with Native American Tribes, and the pedestrian survey did not find any indications of buried archaeological deposits. The 2011 review concluded that the proposed project activities had a low potential for encountering as-yet undocumented cultural resources within the project area.

An updated literature review at the CCIC did not identify any previously recorded cultural resources in the project area or within 0.5-mile. New consultation with Native American Tribes was also initiated and did not result in the identification of any Tribal areas of concern within the project area. Additionally, no human remains are known to be located within the project site or on adjacent lands; therefore, no impacts are expected. This updated review concluded that the setting of the project area has not changed and that the currently proposed project activities hold a low potential for encountering as-yet undocumented cultural resources.

c. Directly or indirectly destroy a unique paleontological resource, site, or geologic feature?

No Impact. Much of the project site is situated on paved, developed land. The remainder of the project site is on tilled agricultural land. Although the sediments underlying the project site are theoretically old enough to contain fossilized material, paleontologists generally regard agricultural areas to have low potential for significant fossil finds. No unique geologic formations are present in the project site; therefore, no impacts are expected.

d. Disturb any human remains, including those interred outside of formal cemeteries?

Less-than-Significant Impact with Mitigation Incorporated. Much of the project site is situated on paved, developed land, and the remainder of the project site is on tilled agricultural land. No human remains are known to be located within the project site or on adjacent lands; therefore, no impacts are expected.

VI. Geology and Soils	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
1. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
2. Strong seismic ground shaking?	☐	☐	☒	☐
3. Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
4. Landslides?	☐	☐	☐	☒
b. Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c. Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?	☐	☐	☒	☐

Setting

The project site is not located within an Alquist-Priolo Earthquake Fault Zone. However, Merced County, including the project site, is located within a seismically active region that has been subject to major earthquakes in the past. The major active faults in the area include the San Andreas, Ortigalita, Calaveras, and Bear Mountain Faults. The closest fault to the project site is the Ortigalita Fault Cottonwood Arm section (approximately 25.5 miles from the site), followed by the Calaveras Fault (approximately 45 miles from the site). According to the Merced County General Plan, there are no known extensions of faults that exist beneath the project site.

The project site is located within an area designated as “moderate severity, moderate probable damage” by the Merced County General Plan’s Seismic Damage Zones Within Merced County Map

(Merced County 2013b). According to the Merced County General Plan, there is no record of any seismic activity originating in the County. However, the county has experienced ground shaking from earthquakes originating elsewhere, including those occurring in 1872, 1906, 1966, 1984, and 1989. At the very least, minor structural damage has occurred throughout the County as a result of these six earthquakes and major structural damage occurred as a result of the earthquake in 1906.

According to the Merced County General Plan, no specific liquefaction hazard areas have been identified in the County. However, the General Plan assumes that liquefaction hazards exist in many of Merced County's wetland areas, which extend from the San Joaquin River west to the Southern Pacific Railroad and east toward SR 99 and SR 59 south. The project site is not located on or near a wetland.

The project site is relatively flat. There are no steep slopes near the project site and the area is not included or adjacent to an earthquake-induced landslide zone.

According to the U.S. Department of Agriculture Web Soil Survey, approximately 74% of the project site is underlain with Delhi sand and approximately 26% of the project site is underlain with Hilmar loamy sand (U.S. Department of Agriculture 2018). Expansive (shrink-swell) soils are fined-grained soils (generally high-plasticity clays) that can undergo a significant increase in volume with an increase in water content and significant decrease in volume with a decrease in water content. Seasonal changes in the water content of expansive soils can result in severe distress to structures constructed upon the soil. Volume changes associated with changes in the moisture content of near-surface expansive soils can cause uplift or heave of the ground when the soils become wet or, less commonly, cause settlement when they dry out.

Soils that have high or very high shrink-swell potential (expansive soil properties) would have liquid limits greater than 50% and plasticity indices greater than 30%. Soils with moderate shrink-swell potential have liquid limits ranging from 25% to 50% and plasticity indices between 15% and 30%. Low shrink-swell potentials are indicated by liquid limits less than 25% and indices less than 15%. Both Delhi sand's and Hilmar loamy sand's liquid limit rating and plasticity index are 0.

Regulatory Setting

Federal

National Earthquake Hazards Reduction Act (1977)

In October 1977, the U.S. Congress passed the Earthquake Hazard Reduction Act to reduce the risks to life and property in the United States through the establishment and maintenance of effective earthquake hazards reduction program. As a result of this act, the National Hazards Reduction Program was created and established. The program was amended in 1990 to become the National Earthquake Hazards Reduction Program Act, which further developed the objectives, goals, and responsibilities of the program.

The purpose of the act is to:

- Educate the public, and state and local officials concerning the phenomena of earthquakes, the identification of locations and structures which are especially susceptible to damage caused by earthquakes, and ways to minimize or reduce the impacts of earthquakes

- Encourage the development of technology that is economically feasible, and implement construction methods and procedures to make current and future structures in seismic areas, earthquake resistant
- Implement to the greatest extent possible, a system for predicting damaging earthquakes, and for identifying, evaluating, and accurately characterizing seismic hazards
- Develop, publish, and promote a model of building codes and other means to encourage risk of seismic activity when making decisions regarding land-use policies and construction activities
- Develop plans for reconstruction and redevelopment after an earthquake
- Encourage the development of ways to increase the use of existing scientific and engineering knowledge to mitigate earthquake hazards
- Increase the availability of affordable earthquake insurance

State

Alquist-Priolo Earthquake Fault Zoning Act

California's Alquist-Priolo Earthquake Fault Zoning Act (Public Resources Code Sec. 2621 et seq.) is intended to reduce the risk of life and property from surface fault rupture during earthquakes. The Alquist-Priolo Act prohibits the location of most types of structures intended for human occupancy[3] across the traces of active faults and strictly regulates construction in the corridors along active faults (*earthquake fault zones*). It also defines the criteria for identifying active faults, giving legal weight to terms such as *active*, and establishes a process for reviewing building proposals in and adjacent to Earthquake Fault Zones.

Under the Alquist-Priolo Act, faults are zoned and construction along or across them is strictly regulated if they are "sufficiently active" and "well-defined." A fault is considered *sufficiently active* if one or more of its segments or strands shows evidence of surface displacement during Holocene time (defined for purposes of the Act as referring to approximately 11,000 years). A fault is considered *well defined* if its trace can be clearly identified by a trained geologist at the ground surface or in the shallow subsurface, using standard professional techniques, criteria, and judgement (Bryant and Hart 2007).

Seismic Hazards Mapping Act

Like the Alquist-Priolo Act, the Seismic Hazards Mapping Act of 1990 (PRC 2690-2699.6) is intended to reduce damage resulting from earthquakes. While the Alquist-Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act addresses other earthquake-related hazards, including strong ground shaking, liquefaction[4], and seismically induced landslides. Its provisions are similar in concept to those of the Alquist-Priolo Act: the state is charged with identifying and mapping areas at

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[3] With reference to the Alquist-Priolo Act, a *structure or human occupancy* is defined as one "used or intended for supporting or sheltering any use or occupancy, which is expected to have a human occupancy rate of more than 2,000 person-hours per year" (California Code of Regulations, Title 14, Div. 2, Section 3601 [e]).

[4] *Liquefaction* is a phenomenon in which the strength and stiffness of a soil are reduced by earthquake shaking or other rapidly applied loading. Liquefaction and related types of ground failure are of greatest concern in areas where well-sorted sandy unconsolidated sediments are present in the subsurface and the water table is comparatively shallow.

risk of strong ground shaking, liquefaction, landslides, and other corollary hazards, and cities and counties are required to regulate development within mapped Seismic Hazard Zones.

Under the Seismic Hazards Mapping Act, permit review is the primary mechanism for local regulation of development. Specifically, cities and counties are prohibited from issuing development permits for sites within Seismic Hazard Zones until appropriate site-specific geologic and/or geotechnical investigation have been carried out and measures to reduce potential damage have been incorporated into the development plans.

Local

Merced County General Plan

The Natural Resources and Health and Safety chapters of the 2030 Merced County General Plan includes goals, objectives, and policies to protect its residents from seismic hazards and other hazards related to geology and soils, including the following requirements (Merced County 2013a).

Goals:

- HS-1: Minimize the loss of life, injury, and property damage of County residents due to seismic and geologic hazards.
- NR-3: Facilitate orderly development and extraction of mineral resources while preserving open space, natural resources, and soil resources, and avoiding or mitigating significant adverse impacts.

Policies:

- Policy HS-1: Require that all new habitable structures be located and designed in compliance with the Alquist-Priolo Special Studies Zone Act and related State earthquake legislation.
- Policy HS-1.4: Require earthquake resistant design for proposed critical structures such as hospitals, fire stations, emergency communication centers, private schools, high occupancy buildings, bridges and freeway overpasses, and dams that are subject to County permitting requirements.
- Policy HS-1.6: Prohibit habitable structures on areas of unconsolidated landslide debris or in areas vulnerable to landslides.
- Policy HS-1.7: Discourage construction and grading on slopes in excess of 30%.
- Policy HS-1.8: Require the provisions of the International Building Code be used to regulate projects subject to hazards from slope instability.
- Policy HS-1.9: Require and enforce all standards contained in the International Building Code related to construction on unstable soils.
- Policy NR-3.1: Protect soil resources from erosion, contamination, and other effects that substantially reduce their value or lead to the creation of hazards.
- Policy NR-3.2: Require minimal disturbance of vegetation during construction to improve soil stability, reduce erosion, and improve stormwater quality.
- Policy NR-3.3: Encourage landowners to participate in programs that reduce soil erosion and increase soil productivity. This shall include promoting and coordinating the efforts of

University of California Cooperative Extension, various Resource Conservation Districts, and other similar agencies and organizations.

Merced County Building Standards

Unincorporated areas in Merced County must comply with 2009 International Building Code provisions, which set minimum standards for design and construction of structures. Merced County building code requires a soils report for most non-residential structures to identify potential hazards posed by unstable soils, including expansive soils and soils subject to differential settling, liquefaction, and slope failure.

Discussion

Would the project:

a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

a1. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

Less-than-Significant Impact. As described above, the project site is not located within a fault zone or near a known fault. Therefore, the potential for a surface rupture to occur at the project site is low and impacts related to rupture of a known earthquake fault are less than significant.

a2. Strong seismic ground shaking?

Less-than-Significant Impact. As discussed in the response to VI.a1, the proposed project is not located immediately adjacent to a fault zone. However, because of the project site's location within a seismically active region and in relatively close proximity to several major active faults, the project site is likely to experience strong ground shaking during the lifespan of the proposed project. All structures in the region could be affected by ground shaking in the event of an earthquake. The amount of ground shaking depends on the magnitude of the earthquake, the distance from the epicenter, and the type of earth materials between the receptor and the epicenter. The proposed project would comply with California design requirements (i.e., California Building Code), which would ensure that the project would not expose persons or property to strong seismic ground shaking hazards. The impact is less than significant.

a3. Seismic-related ground failure, including liquefaction?

No Impact, As discussed above, liquefactions hazards exist in many of the County's wetland areas. As the project site is not located on or near a wetland, the overall risk for liquefaction is low. In addition, the proposed project is not located within close proximately to an area that is mapped under the Seismic Hazards Mapping Act for being prone to earthquake hazards of liquefaction. As a result, implementation of the proposed project would not expose people or structures to substantial adverse effects involving liquefaction and no impacts would occur.

a4. Landslides?

No Impact. Landslides and other slope failures are secondary seismic effects that are common during or soon after earthquakes. Areas that are most susceptible to earthquake-induced landslides are steep slopes underlain by loose, weak soils, and areas on or adjacent to existing landslide deposits. As discussed above, the project site is relatively flat. There are no steep slopes near the project site and the area is not included or adjacent to an earthquake-induced landslide zone. Hence, the project site has a very low probability for an earthquake-induced landslide to occur. As a result, implementation of the proposed project would not expose people or structures to substantial adverse effects involving landslides and therefore there would be no impact.

b. Result in substantial erosion or the loss of topsoil?

Less-than-Significant Impact. There is potential for soil erosion to occur at the site during project construction. Approximately 6,100 cy of soils[5] and sediment would be stockpiled and reused onsite. In addition, the application of water or other dust suppressants to the stockpiles would reduce impact. This would reduce possible erosion resulting from construction as well as surface runoff during project construction.

Stockpiling excavated topsoil and minimizing erosion will offset potential soil erosion losses but would not address the loss of the soil profile within the footprint of the new facilities. Most of the project site is on land designated by the FMMP as urban and build-up land (see Figure 3.2-1) and does not contain valuable topsoil. Only a small portion of the project site would be located on FMMP-designated Farmland of Statewide Importance. Loss of high-quality soil within this portion of the project site would represent a minor fraction of the availability of high-quality soil contained on agricultural land in the vicinity of the project site. Therefore, the potential loss of topsoil is a less-than-significant impact.

c. Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?

Less-than-Significant Impact. Refer to response to VI.a3 for a description and impact discussion related to potential liquefaction impacts, and the response to VI.a4 for information related to potential landslide impacts.

Lateral spreading is a phenomenon in which surficial soil displaces along a shear zone that has formed within an underlying liquefied layer. Upon movement, the surficial soils are transported down slope by an earthquake and gravitational forces. Lateral spreading is generally the most pervasive and damaging type of ground failure generated by earthquakes. Because the project site is generally flat, impacts related to lateral spreading are less than significant.

Subsidence is the settling of parts of the earth's crusts, usually a long period of time. In Merced County, subsidence is most commonly caused by groundwater withdrawal, hypocompaction, and earthquakes. According to the Merced County General Plan, the project site is not located within a subsidence area. Therefore, impacts related to soil stability as a result of the project would be less than significant.

[5] Building construction would produce 3,900 cy of earth during Phase I and 2,200 cy of earth during Phase II of the project.

d. 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?

No Impact. As discussed above, the soils underlying the project site have a liquid limit rating and plasticity index of 0. The liquid limit and plasticity index properties of these soils would rank the soils as possessing a low shrink-swell potential. Therefore, Delhi sand and Hilmar loamy sand, the soils underlying the project site, are not expansive soils. Therefore, no impacts related to expansive soils are anticipated and no mitigation is required.

e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?

Less-than-Significant Impact. A new septic system is being proposed to process the additional domestic waste produced by the added employee count. One new septic tank would be installed but no new water delivery system would be installed. The project site already utilizes a private septic system for wastewater generated by existing restrooms in the office building. This system is in full compliance with all applicable water quality requirements and the facility is designed to be fully protective of groundwater and surface water resources. The new septic tank would be built to meet the same standards and would have to be approved by the County Environmental Health Division. The new septic tank and its connections to HCWD for wastewater treatment would be able to be accommodated by soils at the project site and therefore the impact would be less than significant.

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

Affected Environment

This section provides an analysis of climate change impacts resulting from the project. It describes greenhouse gas (GHG) emissions commonly generated, discusses recent GHG inventories, and summarizes the current regulatory framework related to GHG emissions and climate change. Environmental impacts related to climate change, as well as mitigation measures to reduce or eliminate potential impacts are also discussed.

Climate Change

The phenomenon known as the *greenhouse effect* keeps the atmosphere near the Earth's surface warm enough for the successful habitation of humans and other life forms. Present in the Earth's lower atmosphere, GHGs play a critical role in maintaining the Earth's temperature; GHGs trap some of the long-wave infrared radiation emitted from the Earth's surface that would otherwise escape to space.

Visible sunlight passes through the atmosphere without being absorbed. Some of the sunlight striking the Earth is absorbed and converted to heat, which warms the surface. The surface emits infrared radiation to the atmosphere, where some of it is absorbed by GHGs and re-emitted toward the surface; some of the heat is not trapped by GHGs and escapes into space. Human activities that emit additional GHGs to the atmosphere increase the amount of infrared radiation that gets absorbed before escaping into space, thus enhancing the greenhouse effect and amplifying the warming of the earth (Center for Climate and Energy Solutions n.d.).

Increases in fossil fuel combustion and deforestation have exponentially increased concentrations of GHGs in the atmosphere since the Industrial Revolution. Rising atmospheric concentrations of GHGs in excess of natural levels enhance the greenhouse effect, which contributes to global warming of the Earth's lower atmosphere and induces large-scale changes in ocean circulation patterns, precipitation patterns, global ice cover, biological distributions, and other changes to the Earth system that are collectively referred to as climate change.

The Intergovernmental Panel on Climate Change (IPCC) has been established by the World Meteorological Organization and United Nations Environment Programme to assess scientific, technical, and socioeconomic information relevant to the understanding of climate change, its potential impacts, and options for adaptation and mitigation. The IPCC estimates that the average global temperature rise between the years 2000 and 2100 could range from 1.1° Celsius, with no increase in GHG emissions above year 2000 levels, to 6.4° Celsius, with substantial increase in GHG emissions (Intergovernmental Panel on Climate Change 2007:97–115). Large increases in global temperatures could have substantial adverse effects on the natural and human environments on the planet and in California.

Principal Greenhouse Gases

The GHGs listed by the IPCC (CO_2, CH_4, N_2O, hydrofluorocarbons [HFCs], perfluorinated compounds (PFCs), and sulfur hexafluoride [SF_6]) are discussed in this section in order of abundance in the atmosphere. California law and the State CEQA Guidelines contain a similar definition of GHGs (Health and Safety Code Section 38505(g); 14 CCR Section 15364.5). Water vapor, the most abundant GHG, is not included in this list because its natural concentrations and fluctuations far outweigh its anthropogenic (human-made) sources.[6] The sources and sinks[7] of each of these gases are discussed in detail below. Generally, GHG emissions are quantified and presented in terms of metric tons of carbon dioxide equivalent (CO_2e) emitted per year. The primary GHGs associated with the project are CO_2, CH_4, and N_2O. HFCs, PFCs, and SF_6 are associated primarily with industrial processes and, thus, are not discussed herein.

Methods have been set forth to describe emissions of GHGs in terms of a single gas to simplify reporting and analysis. The most commonly accepted method to compare GHG emissions is the global warming potential (GWP) methodology defined in the IPCC reference documents. The IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of CO_2e, which compares the gas in question to that of the same mass of CO_2 (CO_2 has a global warming potential of 1 by definition). Table 3-9 lists the global warming potential of CO_2, CH_4, and N_2O, their lifetimes, and abundances in the atmosphere.

Table 3-9. Lifetimes and Global Warming Potential of Several Greenhouse Gases

Greenhouse Gases	Global Warming Potential (100 years)	Lifetime (years)	2005 Atmospheric Abundance
CO_2 (ppm)	1	50–200	400 ppm
CH_4 (ppb)	25	9–15	1,834 ppb
N_2O (ppb)	298	121	328 ppb

Sources: Intergovernmental Panel on Climate Change 2007; Blasing 2016

CH_4 = methane; CO_2 = carbon dioxide; N_2O = nitrous oxide; ppm = parts per million by volume; ppb = parts per billion by volume.

Carbon Dioxide

CO_2 is the most important anthropogenic GHG and accounts for more than 75% of all GHG emissions caused by humans. The primary sources of anthropogenic CO_2 in the atmosphere include the burning of fossil fuels (including motor vehicles), gas flaring, cement production, and land use changes (e.g., deforestation, oxidation of elemental carbon). CO_2 can be removed from the atmosphere by photosynthetic organisms (e.g., plants). Its atmospheric lifetime of 50–200 years ensures that atmospheric concentrations of CO_2 will remain elevated for decades even after

[6] Although water vapor plays a substantive role in the natural greenhouse effect, the change in GHGs in the atmosphere due to anthropogenic actions is enough to upset the radiative balance of the atmosphere and result in global warming.

[7] A sink removes and stores GHGs in another form. For example, vegetation is a sink because it removes atmospheric CO_2 during respiration and stores the gas as a chemical compound in its tissues.

mitigation efforts to reduce GHG concentrations are promulgated (Intergovernmental Panel on Climate Change 2007).

Methane

CH_4, the main component of natural gas, is the second most abundant GHG and has a GWP of 21 (Intergovernmental Panel on Climate Change 2007). Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and from the decay of organic waste in municipal solid waste landfills.

Nitrous Oxide

N_2O is a powerful GHG, with a GWP of 310 (Intergovernmental Panel on Climate Change 2007). Anthropogenic sources of N_2O include agricultural processes (e.g., fertilizer application), nylon production, fossil-fuel fired power plants, nitric acid production, and vehicle emissions. N_2O also is used in rocket engines, racecars, and as an aerosol spray propellant. Natural processes, such as nitrification and denitrification, can also produce N_2O, which can be released to the atmosphere by diffusion. In the United States more than 70% of N_2O emissions are related to agricultural soil management practices, particularly fertilizer application.

Regulatory Setting

Appendix G in the CEQA Guidelines state that the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to determine the project's level of impact in terms of GHG emissions. The SJVAPCD updated their CEQA guidelines to include guidance for evaluating GHG significance in December 2009.

Climate change has only recently been widely recognized as an imminent threat to the global climate, economy, and population. Thus, the national, state, and local climate change regulatory setting is complex and evolving. The following section identifies key legislation, executive orders (EOs), and seminal court cases relevant to the environmental assessment of project GHG emissions.

Federal

Environmental Protection Agency Endangerment and Cause and Contribute Findings (2009)

On December 7, 2009, the EPA signed the Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act. Under the Endangerment Finding, EPA finds that the current and projected concentrations of the six key well-mixed GHGs—CO_2, CH_4, N_2O, SF_6, PFCs, and HFCs—in the atmosphere threaten the public health and welfare of current and future generations. Under the Cause or Contribute Finding, EPA finds that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

These findings do not themselves impose any requirements on industry or other entities. However, this action is a prerequisite to finalizing EPA's proposed new corporate average fuel economy standards for light-duty vehicles, which EPA proposed in a joint proposal including the Department of Transportation's proposed corporate average fuel-economy standards.

State

The State of California has adopted legislation, and regulatory agencies have enacted policies, addressing various aspects of climate change and GHG emissions mitigation. Much of this legislation and policy activity is not directed at citizens or jurisdictions but rather establishes a broad framework for the state's long-term GHG mitigation and climate change adaptation program. The following key legislation is applicable to the project.

Assembly Bill 1493—Pavley Rules (2002, Amendments 2009, 2012 rulemaking)

Known as *Pavley I*, AB 1493 standards are the nation's first GHG standards for automobiles. AB 1493 requires ARB to adopt vehicle standards that will lower GHG emissions from new light-duty autos to the maximum extent feasible beginning in 2009. Additional strengthening of the Pavley standards (referred to previously as *Pavley II*, now referred to as the *Advanced Clean Cars* measure) has been proposed for vehicle model years 2017–2025. Together, the two standards are expected to increase average fuel economy to roughly 54.5 miles per gallon by 2025.

Executive Order S-3-05 (2005)

Signed by Governor Arnold Schwarzenegger on June 1, 2005, EO S-3-05 asserts that California is vulnerable to the effects of climate change. To combat this concern, EO S-3-05 established the following GHG emissions reduction targets for state agencies.

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80% below 1990 levels.

EOs are binding only on state agencies. Accordingly, EO S-03-05 will guide state agencies' efforts to control and regulate GHG emissions but will have no direct binding effect on local government or private actions. The Secretary of the California Environmental Protection Agency is required to report to the Governor and state legislature biannually on the impacts of global warming on California, mitigation and adaptation plans, and progress made toward reducing GHG emissions to meet the targets established in this EO.

Assembly Bill 32—California Global Warming Solutions Act (2006)

AB 32 sets the same overall year 2020 GHG emissions reduction goals as EO S-3-05, while further mandating that the ARB create a plan that includes market mechanisms and implement rules to achieve "real, quantifiable, cost-effective reductions" of GHGs. AB 32 further directs state agencies and the newly created state Climate Action Team to identify discrete early action GHG reduction measures. These actions were adopted in early 2010 and relate to truck efficiency, port electrification, tire inflation, and reduction of PFCs, propellants, and sulfur hexafluoride.

Executive Order S-01-07—Low Carbon Fuel Standard (2007)

EO S-01-07 essentially mandates: (1) that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10% by 2020; and (2) that a Low Carbon Fuel Standard (LCFS) for transportation fuels be established in California. ARB approved the LCFS on April 23, 2009, and the regulation became effective on January 12, 2010 (California Air Resources Board 2011). The U.S. District Court for the Eastern District of California ruled in December 2011 that the LCFS violates the Commerce Clause of the U.S. Constitution. ARB appealed this ruling in 2012 and on September 18, 2013, the Ninth U.S. Circuit Court of Appeals upheld the LCFS, ruling that the program does not violate the Commerce Clause and remanding the case to the Eastern District.

California Energy Efficiency Standards for Residential and Nonresidential Buildings—Green Building Code (2011), Title 24 Updates (2014, 2017)

California has adopted aggressive energy efficiency standards for new buildings and has been continually updating them for many years. In 2008, the California Building Standards Commission adopted the nation's first green building standards, which include standards for many other built environment aspects apart from energy efficiency. The California Green Building Standards Code (proposed Part 11, Title 24) was adopted as part of the California Building Standards Code (24 CCR). Part 11 establishes voluntary standards that became mandatory in the 2010 edition of the code, including planning and design for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. The current energy efficiency standards were last adopted in 2016 and took effect on January 1, 2017. The standards are planned to be updated periodically in the future, with the next updated standards planned for 2019.

Senate Bill 32 (2016)

Signed by the Governor in September 2016, Senate Bill (SB) 32 sets the statewide GHG reduction goal at 40% below 1990 levels by 2030. SB 32 directed ARB to achieve the state's more stringent GHG emission reductions in a manner that benefits the state's most disadvantaged communities and is transparent and accountable to the public and the Legislature.

Senate Bills 1078/107 and Executive Order S-14-08—Renewable Portfolio Standard (2008)

SBs 1078 and 107, California's Renewable Portfolio Standard, obligate investor-owned utilities, energy service providers, and Community Choice Aggregations to procure an additional 1% of retail sales per year from eligible renewable sources until 20% is reached, no later than 2010. The California Public Utilities Commission and California Energy Commission are jointly responsible for implementing the program. EO S-14-08 set forth a longer range target of procuring 33% of retail sales by 2020.

Senate Bills 350 and 100—De Leon (Clean Energy and Pollution Reduction Act of 2015, 100 Percent Clean Energy Act of 2017) (2015, 2018)

SB 350 was approved by the California legislature in September 2015 and signed by Governor Brown in October 2015. Its key provisions are to require the following by 2030: (1) a renewables portfolio standard of 50% and (2) a doubling of energy efficiency (electrical and natural gas) by 2030, including improvements to the efficiency of existing buildings. These mandates will be implemented by future actions of California Public Utilities Commission and California Energy Commission. SB 100 was approved by the California legislature in August 2018 and signed by Governor Brown in September 2018. Its key provisions include updating the SB 350 Renewable Portfolio Standard requirement from 50% to 60% by 2030 and establishing a 100% clean energy target for the state's retail electricity supply by December 31, 2045.

State CEQA Guidelines

The State CEQA Guidelines require lead agencies to describe, calculate, or estimate the amount of GHG emissions resulting from a project. Moreover, the guidelines emphasize the necessity to determine potential climate change effects of the project and propose mitigation as necessary. The guidelines confirm the discretion of lead agencies to determine appropriate significance thresholds, but require the preparation of an EIR if "there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with adopted regulations or requirements" (Section 15064.4).

Local

In the absence of scientific evidence supporting establishment of a numerical threshold, the SJVAPCD has adopted performance-based standards to assess project-specific GHG emission impacts on global climate change. The SJVAPCD policy provides for a tiered approach in assessing significance of project-specific GHG emission increases.

- Projects complying with an approved GHG emission reduction plan or GHG mitigation program which avoids or substantially reduces GHG emissions within the geographic area in which the project is located would be determined to have a less-than-significant individual and cumulative impact for GHG emissions. Such plans or programs must be specified in law or approved by the Lead Agency with jurisdiction over the affected resource and supported by a CEQA compliant environmental review document adopted by the Lead Agency. Projects complying with an approved GHG emission reduction plan or GHG mitigation program would not be required to implement Best Performance Standards.
- Projects implementing Best Performance Standards would not require quantification of project-specific GHG emissions. Consistent with CEQA Guidelines, such projects would be determined to have a less-than-significant individual and cumulative impact for GHG emissions.
- Projects not implementing Best Performance Standards would require 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, consistent with GHG emission reduction targets established in ARB's AB 32 Scoping Plan. Projects achieving at least a 29% GHG emission reduction compared to BAU would be determined to have a less-than-significant individual and cumulative impact for GHG.)

SJVAPCD has adopted GHG guidance to assist lead agencies in determining the level of significance of operational-related GHG emissions, pursuant to CEQA. However, much of the guidance for analyzing GHG emissions has changed in light of the rulings from the recent *Centers for Biological Diversity et al. vs. California Department of Fish and Wildlife, the Newhall Land and Farming Company* (S217763) (hereafter *Newhall Ranch*) Supreme Court opinion.

Significance Criteria

Based on the CEQA Guidelines Appendix G, an impact pertaining to climate change is considered significant if it would cause either of the following.

- Generate a significant amount of GHG emissions, either directly or indirectly.

- Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHGs.

Climate change is a global problem and GHGs are global pollutants, unlike criteria air pollutants (such as ozone precursors), which are primarily pollutants of regional and local concern. Given their long atmospheric lifetimes, GHGs emitted by many sources worldwide accumulate in the atmosphere. No single emitter of GHGs is large enough to trigger global climate change on its own. Rather, climate change is the result of the individual contributions of countless past, present, and future sources. Thus, GHG impacts are inherently cumulative.

SJVAPCD has not established a quantitative threshold for the evaluation of construction-related GHG emissions. SJVAPCD has published *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA* to assist lead agencies in determining the level of significance of operation-related GHG emissions pursuant to CEQA (San Joaquin Valley Air Pollution Control District 2009). This guidance has since been incorporated into SJVAPCD's 2015 GAMAQI.

The *Newhall Ranch* case, confirmed that the use of BAU analysis (i.e., 29% below business as usual), a performance-based approach, would be satisfactory. However, for a project-level analysis that uses ARB's statewide BAU targets, substantial evidence must be presented to support the use of those targets for a particular project at a specific location. The Court notes that this may require examination of the data behind the statewide model and adjustment to the levels of reduction from BAU used for project evaluation. To date, neither ARB nor any lead agencies have provided any guidance on how to adjust AB 32's statewide BAU target for use at the project level.

The *Newhall Ranch* decision suggested several approaches for determining significance of GHG emissions are appropriate as alternatives to the percentage below BAU approach, but did not foreclose other methodologies that may be used by lead agencies. In any case, the decision affirmed that "thresholds only define the level at which an environmental effect 'normally' is considered significant; they do not relieve the lead agency of its duty to determine the significance of an impact independently." The significance of the project's GHG emissions is, therefore, evaluated with respect to its ability to result in no net GHG emissions.

Discussion

This section describes the environmental impacts of the project in the context of GHGs. It describes the methods used to evaluate the impacts and the thresholds used to determine whether an impact would be significant. Measures to mitigate significant impacts are provided, where appropriate.

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

Construction Emissions

Construction of the project would result in GHG emissions from operation of off-road construction equipment and on-road vehicles used to transport workers, building materials, and equipment to and from the project site Construction is expected to occur in approximately 4 years, with Phase I construction occurring between 2019 and 2021, and Phase II construction occurring in 2024. GHG emissions from project construction activity were estimated using the same methodology discussed above for criteria pollutants in III. *Air Quality,* and the results of the construction analysis are summarized in Table 3-10. Refer to Appendix A for the assumptions used in the greenhouse analysis and a more detailed description of methodology.

Table 3-10. Estimated GHG Emissions from Project Construction (metric tons per year)

Year	CO_2	CH_4	N_2O	CO_2e
2019	92	< 0.1	< 0.1	94
2020	8	< 0.1	< 0.1	8
2021	40	< 0.1	< 0.1	41
2024	95	< 0.1	< 0.1	96
Total	**235**	**0.1**	**< 0.1**	**240**

CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalent, which includes the relative warming capacity (i.e., global warming potential) of each GHG

As shown in Table 3-10, it is estimated that construction of the project would result in approximately 240 metric tons of CO_2e. This is equivalent to adding 51 typical passenger vehicles to the road during the construction period (U.S. Environmental Protection Agency 2018). The emissions generated during construction of the project would primarily be the result of diesel-powered off-road construction equipment (e.g., loaders, graders, etc.) and on-road vehicles (construction worker commute trips, hauling and water truck trips, etc.). Construction emissions would cease once construction of the project is complete and, thus, are considered to be short-term. The total construction emissions amortized over a 30-year period, which is a reasonable approximation of the lifetime of the project, would equal approximately 8 metric tons per year.

As discussed above, SJVAPCD's CEQA Guidelines do not identify a GHG emission threshold for construction-related emissions. As such, the project's GHG emissions during construction have been amortized over the length of the project's lifespan and added to the project's operational emissions, which are discussed below.

Operational Emissions

During the operational phase of the project, GHG emissions would result from off-road equipment (maintenance/operation activities) and on-road vehicles (which include the additional 66 worker commute trips and one daily delivery truck trip). GHG emissions sources also include energy use, water consumption, wastewater treatment, and solid waste generation. Energy and water use at the site would result in indirect emissions that are emitted at the location of the power plant that is producing the electricity that powers the project and provides energy to transport water to the project site. However, even though electricity-related emissions do not occur at the project site, GHGs are global pollutants that affect the entire planet's atmosphere and are thus included in the project's emissions. Wastewater treatment and solid waste are also indirect sources of emissions and occur as a result of wastewater processing at the treatment plant and solid waste decomposition at the landfill, respectively. Although operation of the project would result in plastic and cardboard waste, the project sponsor has indicated that all of this solid waste would be recycled and would thus not emit methane while decaying at a landfill. Consequently, the project would not result in appreciable solid waste emissions during its operation.

The project would also result in a change in land use from the existing crop land to the warehouse facilities and asphalt that are proposed. The reduction in crop land would result in a reduced demand for water, because the land where the crops are, once removed, would no longer be watered.

Operational emissions associated with the project have been estimated using CalEEMod and operational inputs provided by the project sponsor including, the amount of projected electricity consumption, the amount of projected water consumption, and the number of employees and truck trips. With respect to electricity-related GHG emissions, CalEEMod has a built-in electricity emission factor for TID, the utility that provides electricity to the project site, of 0.790 pounds of CO_2 per megawatt hour of electricity. This emission factor is the default value for TID in CalEEMod and represents the electricity that TID provided in 2008. The project is anticipated to begin operations in 2020, which is 12 years later than the 2008 default value in CalEEMod for TID electricity. Consequently, an adjusted electricity emission factor value of 0.461 pounds CO_2 per megawatt hour was inputted into CalEEMod to reflect TID's shift towards increased renewable energy sources since 2008. The revised emission factor calculation used TID's power content label in 2008 and its most recent power content label, for 2017 (California Energy Commission 2008; Turlock Irrigation District 2018). The adjusted emission factor remains a conservative estimate, because the most recent power content label for TID electricity, 2017, is 3 years prior to when the project would be operational. TID will increase its renewable energy portfolio between 2017 and 2020 to ensure that it is on track to meet state requirements, but this additional progress is not currently accounted for in the analysis.

The analysis of operational emissions includes the emissions associated with a renewable energy tank and 60,000 sf of cold storage space that were previously approved but have not yet been constructed. Although previously approved, these structures have not yet been constructed and are included in the project-level evaluation of emissions below (Table 3-11), because these structures are directly related to the current project activities and would be constructed and operated at the same time as the project facilities.

Table 3-11. Operational Greenhouse Gas Emissions (metric tons per year)

	Estimated Total Emissions (metric tons)			
Project Component	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Phase I[1]	**1,587**	**< 1**	**< 1**	**1,609**
Area Sources	< 0.01	< 0.01	-	< 0.01
Energy Use	1,976	< 1	< 1	1,987
Mobile Sources	102	< 0.01	-	102
Solid Waste Generation[2]	-	-	-	-
Water Use	12	0	< 0.01	27
Phase II	**1,071**	**< 1**	**< 1**	**1,085**
Area Sources	< 1	< 1	-	< 1
Energy Use	1,028	< 1	< 1	1,033
Mobile Sources	32	< 1	-	32
Solid Waste Generation[2]	-	-	-	-
Water Use	11	< 1	< 1	20
Total Project	**3,161**	**< 1**	**< 1**	**3,200**
Area Sources	< 1	< 1	-	< 1
Energy Use	3,004	< 1	< 1	3,020

Project Component	Estimated Total Emissions (metric tons) CO_2	CH_4	N_2O	CO_2e
Mobile Sources	134	< 1	-	134
Solid Waste Generation[2]	-	-	-	-
Water Use	23	< 1	< 1	46
Amortized Construction Emissions	7	< 1	< 1	7
GHG Reductions from Crop Removal	-80	< 1	<1	-80
Total Net GHG Emissions	**3,087**	**< 1**	**< 1**	**3,126**

Notes:

[1] Phase I operational emissions include a renewable energy tank and 60,000 sf of cold storage that were previously approved but have not yet been constructed.

[2] Operation of the project would result in plastic and cardboard waste; however, all of this waste would be recycled and would thus not emit methane during while decaying at a landfill.

CH_4 = methane; CO_2 = carbon dioxide; CO_2e = carbon dioxide equivalent; N_2O = nitrous oxide

As shown in Table 3-11, the project would result in annual GHG emissions, in terms of CO_2e, of 3,126 metric tons per year. Most of the annual operational GHG emissions (94%) are the result of electricity consumed in the new project buildings, while employee vehicle and delivery truck trips represent 4% of the annual emissions. Emissions associated with the consumption of water and generation of wastewater are just 1% of annual emissions.

As discussed above, there is currently no applicable threshold that is appropriate for evaluating the project's GHG impacts, and, because the project would increase GHG emissions, this is a potentially significant impact. However, with the implementation of Mitigation Measures GHG-1 and GHG-2, the project would result in a net zero impact with respect to GHG emissions. Because most of the project's operational GHG emissions are the result of building energy consumption, Mitigation Measure GHG-1 requires a reduction in building energy emissions through on-site reduction measures, such as increased on-site renewable energy production (i.e., through additional solar capacity on-site) or the purchase of renewable electricity from Turlock Irrigation District. For electricity-related GHG emissions that cannot be avoided through on-site measures or purchased renewable energy and for emissions from mobile- and water-related sources, the project sponsor would be required to purchase GHG emissions offsets.

Because the project would, through the purchase of renewable energy and GHG offsets, not result in any increased GHG emissions, the project would not generate a significant amount of GHG emissions. Accordingly, GHG emissions associated with the project would be less than significant with mitigation.

Mitigation Measure GHG-1: On-Site Greenhouse Gas Emissions Reductions

The project applicant shall pursue on-site GHG emissions reduction measures to reduce impacts associated with construction and operational GHG emissions equivalent to 3,126 metric tons CO_2e annually (the sum of the operational emissions and the amortized construction emissions), which could include any combination of the following, or additional measures.

- Expand the renewable energy generation capacity at the project site by installing additional solar panels, biogas tanks, etc. If additional capacity cannot be added on-site, purchase renewable electricity from TID.

- Add electric vehicle charging stations to encourage employee electric vehicle purchases.
- Ensure that refrigeration systems are well maintained to cut energy use and extend equipment life, and check refrigerant levels, clean filters, and control operations to ensure cooling is provided only as needed.
- Insulate refrigeration supply piping to maintain a more consistent processing temperature.
- Use reflective paint on the facility roof to reduce cooling loads.
- Install skylights and occupancy sensors.

Mitigation Measure GHG-2: Greenhouse Gas Emissions Offsets

In the event that the applicant cannot achieve the 3,126 metric-ton CO_2e annual reduction in its entirety through the implementation of on-site mitigation, the project applicant shall purchase offsets to achieve the balance of this reduction. The project proponent would purchase carbon offsets annually and provide proof of the transaction and the details of the offsets including validation protocol, amounts and vintages, and purchase price prior to each subsequent year to the County.

As discussed above, the project's GHG emissions rely on the estimated carbon content of TID electricity in 2017, but the actual carbon content, and thus electricity-related GHG emissions, during the lifetime of the project will likely decrease in future years, consistent with the requirements of SB 100. Additionally, vehicle efficiency will increase in future years, which would reduce the GHG emissions associated with employee commutes and delivery vehicles. Consequently, the amount of carbon offsets required to mitigate emissions is anticipated to decrease with each subsequent year of project operation.

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

As discussed for a) above, the project would result in over 3,000 metric tons CO_2e of GHG emissions, primarily from the consumption of electricity. Smaller contributions of GHG emissions would occur from mobile- and water-related sources. In the absence of mitigation, project emissions would be potentially significant, because the increase in GHG emissions could conflict with the state's plans to reduce GHG emissions to meet the 2020, 2030, and 2050 targets, as specified in AB 32, SB 32, and EO S-3-05, respectively. Because aggressive action is needed to meet these climate change goals, mitigation is necessary to mitigate the project's contributions to GHG impacts.

Mitigation Measures GHG-1 and GHG-2, as described above, would result in the project being carbon neutral through on-site reduction measures, including purchasing additional renewable energy, increasing the generation of renewable energy on-site, and/or purchasing carbon offsets. Because the project would not result in an increase of GHG emissions, it would not conflict with the statewide GHG reduction targets in 2020, 2030, or 2050 and would not conflict with any plans to reduce GHG emissions. Accordingly, this impact would be less than significant with mitigation.

VIII. Hazards and Hazardous Materials	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
c. Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d. Be located on a site that 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?	☐	☐	☒	☐
e. Be located within an airport land use plan area or, where such a plan has not been adopted, be within two miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f. Be located within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
h. Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐

Setting

HCC uses a number of hazardous substances for cheese processing activities. In accordance with Merced County Code 18.41.050, HCC has a Hazardous Materials Business Plan (HMBP) on file with the Merced County Environmental Health Division which includes an emergency response/contingency plan and itemizes all hazardous materials on the site.

Regulatory Setting

Federal Regulations

Resource Conservation and Recovery Act

Hazardous waste in California is regulated primarily under the authority of the federal Resource Conservation and Recovery Act (RCRA) 42 U.S. Code (U.S.C.) §6901 et seq. The RCRA was established in 1976 to protect human health and the environment, reduce waste, conserve energy and natural resources, and eliminate generation of hazardous waste. Under the authority of the RCRA, the regulatory framework for managing hazardous waste, including requirements for entities that generate, store, transport, treat, and dispose of hazardous waste is found in 40 CFR 2690-299. Other applicable federal laws and regulations include the following.

- **49 CFR 172 and 173**: These regulations establish standards for the transport of hazardous materials and hazardous wastes. The standards include requirements for labeling, packaging, and shipping hazardous materials and hazardous wastes, as well as training requirements for personnel completing shipping papers and manifests.
- **40 CFR Subchapter I- Solid Wastes**: These regulations implement the provisions of the Solid Waste Act and the RCRA. They also establish the criteria for the classification of solid waste disposal facilities (landfills), hazardous waste characteristic criteria and regulatory thresholds, hazardous waste generator requirements, and requirements for management of used oil and universal wastes.

Hazardous Materials Worker Safety Requirements

The federal Occupational Safety and Health Administration and the California Occupational Safety and Health Administration are the agencies responsible for ensuring worker safety in handling and use of chemicals in the workplace. The federal regulations pertaining to worker safety are contained in CFR Title 29 (Section 1910.146 for work in pipelines or other confined spaces), as authorized in the Occupational Safety and Health Act of 1970. The regulations provide standards for safe workplaces and work practices, including standards relating to hazardous materials handling. In California, California Occupational Safety and Health Administration standards are generally more stringent than federal standards.

National Fire Plan

The National Fire Plan was developed in August 2000, after a significant wildland fire season. The Plan was developed with the goal of responding to severe wildland fires, and their associated impacts to communities. The Plan addresses five issue areas: firefighting, rehabilitation, hazardous fuels reduction, community assistance, and accountability.

State Regulations

Department of Transportation Hazardous Materials Regulations (49 CFR 100-185)

U.S. Department of Transportation Hazardous Materials Regulations cover all aspects of hazardous materials packaging, handling, and transportation. Part 107 (Hazard Materials Program), 130 (Oil Spill Prevention and Response), 172 (Emergency Response), 173 (Packaging Requirements), 174 (Rail Transportation), 176 (Vessel Transportation), 177 (Highway Transportation), 178 (Packaging

Specifications), and 180 (Packaging Maintenance) would all apply to the proposed project and/or surrounding uses.

Hazardous Waste Control Act (Section 25100 et seq.)

The Department of Toxic Substances Control is responsible for the enforcement of the Hazardous Waste Control Act (California Health and Safety Code Section 25100 et seq.), which creates the framework under which hazardous wastes are managed in California. The law provides for the development of a State hazardous waste program that administers and implements the provisions of the federal RCRA cradle-to-grave waste management system in California. It also provides for the designation of California-only hazardous waste and development of standards that are equal to or, in some cases, more stringent than federal requirements.

Use and Storage of Hazardous Materials

The Department of Toxic Substances Control has granted local agencies, such as Merced County Health Department/ Environmental Health Division, responsibility for implementing and enforcing most hazardous materials regulations in their jurisdiction under the Certified Unified Program Agency Program (Health and Safety Code Chapter 6.11). The Certified Unified Program Agency Program consolidates, coordinates, and makes consistent portions of the following hazardous materials programs:

- HMBPs (Chapter 6.95 of the HSC, Section 25501 et seq.).
- The California accidental release prevention program or acutely hazardous materials (Chapter 6.95 of the HSC, Section 25531 et seq.).
- State Uniform Fire Code requirements (Section 80.103 of the Uniform Fire Code, as adopted by the state fire marshal pursuant to the HSC, Section13143.9).
- Aboveground storage tanks (HSC, Section 25270.5 [c])).
- Underground storage tanks (Chapter 6.7 of the HSC, Section 25280 et seq.).
- Hazardous waste generator requirements (Chapter 6.5 of the HSC, Section 25100 et seq.)

Merced County Health Department/ Environmental Health Division may also act as an oversight agency for investigation and remediation of leaking underground storage tank sites and other hazardous materials release sites.

California Fire Plan

Similar to the National Fire Plan, the California Fire Plan is the State’s strategy for reducing the risk of wildfire and directs each California Department of Forestry and Fire Protection unit to prepare a Fire Management Plan for their local jurisdiction.

Madera-Mariposa-Merced Fire Unit Fire Management Plan

The Madera-Mariposa-Merced Fire Plan was developed in response to the National Fire Plan, and California Fire Plan. The goal of the plan is to reduce losses and costs associated with wildlife within the local area, and identify the steps needed to be taken to achieve this goal. Additionally, the plan identifies priority areas that would receive pre-fire management activities.

Hazardous Materials Business Plans

Businesses that handle specified quantities of chemicals are required to submit a HMBP in accordance with federal and state community right-to-know laws. This plan allows local agencies to plan appropriately for a chemical release, fire, or other incident. The HMBP must include:

- An inventory of hazardous materials with specific quantity data, storage, or containment descriptions, ingredients of mixtures, and physical and health hazard information.
- Site and facility layouts that must be coded for chemical storage areas and other facility safety information.
- Emergency response procedures for a release or threatened release of hazardous materials.
- Evacuation plans and procedures for the facility.
- Description of employee training in evacuation and safety procedures in the event of a release or threatened release of hazardous materials consistent with employee responsibilities, and proof of implementing such training on an annual basis.
- Identification of local emergency medical assistance appropriate for potential hazardous materials incidents.
- The HMBP is filed with and administered by the Certified Unified Program Agency, which ensures review by and distribution to other potentially affected agencies.

HCC has existing HMBP, which includes an emergency response plan. The existing HMBP is required to be updated to reflect the changes in hazardous materials at HCC.

Local

Merced County General Plan

The Health and Safety chapter of the 2030 Merced County General Plan includes goals, objectives, and policies to protect its residents from hazards and hazardous materials, including the following requirements (Merced County 2013a).

Goals:

- Goal HS-3: Minimize the exposure of County residents and public and private property to the effects of urban and wildland fires.
- Goal HS-4: Promote the safe operation of airports and the safety of Merced County residents by requiring that any new development within the airport area of influence be consistent with the requirements of the Merced County Airport Land Use Commission’s compatibility plan and compliant with Federal Aviation Administration regulations.
- Goal HS-5: Protect Merced County residents, visitors, and property through providing for the safe use, storage, transport, and disposal of hazardous materials and wastes.

Policies:

- Policy HS-4.1: Require that development around airports be consistent with the safety policies and land use compatibility guidelines contained in the Merced County Airport Land Use Commission’s adopted Airport Land Use Compatibility Plan.

- Policy HS-5.1: Require that hazardous materials are used, stored, transported, and disposed of in a safe manner, in compliance with local, State, and Federal safety standards.
- Policy HS-5.2: Prohibit incompatible land uses near properties that produce or store hazardous waste.
- Policy HS-5.4: Require new development proposals to protect soils, surface water, and groundwater from hazardous materials contamination.

Discussion

Would the project:

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

Less-than-Significant Impact. The proposed project construction activities would involve routine transport, use, and disposal of hazardous materials such as solvents, paints, oils, grease, and caulking. Such transport, use, and disposal must be compliant with applicable regulations such as the RCRA, U.S. Department of Transportation Hazardous Materials Regulations, and local enforcement agency regulations. Although small amounts of solvents, paints, oils, grease, and caulking would be transported, used, and disposed of during the construction phase, these materials are typically used in construction projects and would not represent a significant hazard through the transport, use, and disposal of acutely hazardous materials. Because compliance with existing regulations is mandatory, the proposed project is not expected to create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

As discussed in the project setting above, the existing HCC facility uses potentially hazardous materials on the project site for cheese processing. The expansion of the HCC facility would not result in the use of new hazardous or toxic materials, chemicals, or pesticides. However, the expansion of the existing cold storage building would require additional ammonia refrigeration. HCC would be required to update their existing HMBP to include the new or modified cheese processing facilities. Impacts related to the routine transport, use or disposal of hazardous materials due to project implementation would be less than significant.

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

Less-than-Significant Impact with Mitigation Incorporated. As described under VIII.a, typical construction-related hazardous materials would be used during construction of the proposed project, including gasoline, oil, other vehicle-related fluids, paints, solvents, and metals. It is possible that any of these substances could be released during construction activities. As described previously, compliance with federal, state, and local regulations would ensure that all hazardous materials are used, stored, and disposed properly, thereby minimizing potential impacts related to a hazardous materials release during construction activities.

As further described under Section VIII.a, proposed project activities would result in the use of additional potentially hazardous materials. The existing HMBP includes an emergency response plan to respond to accidental releases of hazardous materials. HCC's existing emergency response plan includes an inventory of equipment and first aid for personal protection, evacuation procedures, evacuation map, spill control and decontamination procedures, and incident reporting and recording requirements. HCC would be required to comply with the provisions specified in the HMBP and with all California Occupational Safety and Health Administration and federal standards for the storage and handling of fuels, flammable materials, and fire prevention.

As a portion of the project site has been used in the past for corn and winter oats production, the soils could be contaminated with pesticides and other chemicals associated with agricultural use. Mitigation Measure HM-1 would require the project applicant to prepare a soil survey to test for potential contaminants related to prior agricultural uses.

Adherence to the aforementioned regulations and implementation of Mitigation Measure HM-1 would reduce project related impacts to a less-than-significant level.

Mitigation Measure HM-1: Perform Soil Testing on the Project Site

Prior to the issuance of building permits, soil samples will be collected from the project site and analyzed for potential hazardous materials associated with agricultural use. Soil samples will be compared to the environmental screening levels as determined by the California Regional Water Quality Control Board (RWQCB) Central Valley Region. If soil samples exceed the environmental screening levels, the soil will be investigated and remediated under the oversight of Merced County Health Department/ Environmental Health Division in accordance with existing regulatory programs. Additionally, the site will be inspected by an environmental professional during preliminary grading activities.

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

No Impact. The Hilmar High School and the Elim Elementary School are located approximately 0.9 mile south of the project site at 7807 Lander Avenue. There are no schools within 0.25 mile of the project site, therefore, the proposed project would not emit or handle hazardous materials within 0.25 mile of a school. No impact would occur.

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

Less-than-Significant Impact. As of 1988**,** pursuant to Government Code Section 65962.5, the project site has been listed on the State Water Resources Control Board's Geotracker database as a cleanup program site. Wastewater with a high salt content is disposed to onsite wastewater disposal fields which has impacted groundwater on site (State Water Resources Control Board 2015). In 2004 a Cleanup and Abatement Order No. R5-2004-0722 was issued by the Central Valley RWQCB to conduct an assessment and cleanup. A final assessment concluded that "the extent and character of shallow impacted groundwater has been delineated sufficiently for remedial options to be evaluated" (State Water Resources Control Board 2015) and onsite wells are monitored quarterly to confirm an appropriate cleanup method. These 20 onsite wells are used to measure total dissolved solids, dissolved sodium, chloride, dissolved iron, nitrate as nitrogen, dissolved manganese, and sulfate (Central Valley Regional Water Quality Control Board 2018). These constituents are related to water quality, are not considered a hazardous material and would not result in a hazard to the public or environment during construction.

A 1-mile radius search from the project site of the State Water Resources Control Board Geotracker database from the project site identified five additional sites with hazardous materials (State Water Resources Control Board 2015). Of the five sites, only one case is currently open:

- The Hilmar Rocket SS site located approximately 0.5 mile south of the project site has an "Open—Assessment & Interim Remedial Action"status as of 2011. Five underground storage tanks were removed from the site between 1993 and 2004. In addition, in May of 2011, 1,537 tons of petroleum were removed from the project site (State Water Resources Control Board 2013). Site assessment activities have indicated significant petroleum impacts to the soil and groundwater.

Based on the distances to the identified sites and the direction of groundwater flow, it is unlikely that the sites pose an environmental risk to the project site. Additionally, no documented soil or groundwater contamination associated with the abutting properties was found in the records search. Although the project site is undergoing verification monitoring for cleanup, the constituents being monitored are not considered hazardous. Therefore, the project would not create a significant hazard to the public or the environment and the impact is considered less than significant.

e. For a project within an airport land use plan or, where such a plan has not been adopted, within 2 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?

and

f. For a project within the vicinity of private airstrip, would the project result in a safety hazard for people residing or working in the project area?

No Impact. The closest public use airport is Turlock Municipal Airport, located approximately 10 miles northeast of the project site. The closest private airstrip is the Turlock Airpark, located approximately 3 miles north of the project site. Due to the distance and the fact that the new project buildings would have a maximum height of approximately 40 feet, aircraft overflights would not pose a safety hazards to individuals on the project site. No impact would occur.

g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less-than-Significant Impact. Emergency response plans/evacuation plans within Merced County are provided by Merced County Office of Emergency Services. Merced County Office of Emergency Services provides preparedness before, and coordination during, large-scale emergencies and disasters. Merced County Office of Emergency Services coordinates with partner agencies including the six unincorporated cities within the county, special districts and key private agencies in providing planning, response, recovery, and mitigation activities as a result of disaster-related incidents. Merced County Office of Emergency Services maintains Emergency Operations Plans, which are guidance documents for handling and managing incidents, greater than day-to-day scale, including large or complex emergency events and disasters. The Emergency Operations Plans are written from an "all risk" perspective, addressing traditional threat areas, including fire, law enforcement, and the Emergency Medical System, but which also include agricultural terrorism, public health threats, and cyber terrorism.

Construction and operation of the proposed project would not require the closure of any public or private streets or roadways and would not impede access of emergency vehicles to the project or any surrounding areas. Furthermore, the project would provide all required emergency access in accordance with the requirements of the Merced County Fire Department. Therefore, impacts related to implementation of an emergency response/evacuation plan would be less than significant.

h. Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Less-than-Significant Impact. Government Code 51175-89 directs the California Department of Forestry and Fire Protection to map areas of very high fire hazards within Local Responsibility Areas (LRA). Mapping of these areas is based on hazard-related factors such as fuels, terrain, and weather.

According to the 2007 Merced County Hazard Severity Zones in LRA map, the project site is located in an LRA Unzoned area (California Department of Forestry and Fire Protection 2007). Unzoned areas are not considered a fire risk and therefore the proposed project would not introduce individuals or structures to an area at risk of wildland fires. Implementation of the proposed project would also require adherence to Chapter 9.24, Fire Prevention, of the County Code. Additionally, the project would be in compliance with all guidelines from the Merced County Fire Department related to fire prevention and is also subject to approval by the County Planning and Community Development Department. Therefore, the proposed project would not expose people or structures to a significant risk of loss, injury, or death from wildfires. Impacts would be less than significant.

IX. Hydrology and Water Quality	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c. 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 onsite or offsite?	☐	☐	☒	☐
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite?	☐	☐	☒	☐
e. Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
f. Otherwise substantially degrade water quality?	☐	☐	☒	☐
g. Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h. Place within a 100-year flood hazard area structures that would impede or redirect floodflows?	☐	☐	☐	☒
i. Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
j. Contribute to inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

Setting

Surface Water Hydrology and Water Quality

The proposed project is located approximately 4 miles north of the Merced River and approximately 7.5 miles east of the San Joaquin River. The Merced River flows from east to west prior to its confluence with the San Joaquin River approximately 8.3 miles southwest of the proposed project. The area surrounding the project site is dominated by agricultural land and irrigation canals. There are no natural drainages within the project limits and runoff from the existing site and proposed project would be directed to onsite retention ponds.

The water quality of the Merced River above McSwain Reservoir is typical of snowmelt from the Sierra Nevada Mountains and is good to excellent quality. However, the lower Merced River from McSwain Reservoir to the San Joaquin River confluence is typical of agricultural return flows. The Clean Water Act Section 303(d) list Final 2014 and 2016 Integrated Report identifies waters that are impaired and has listed the Merced River for being impaired for chlorpyrifos, mercury, water temperature, and toxicity (State Water Resources Control Board 2017).

The portion of the San Joaquin River from the Merced River to the Tuolumne River (approximately 15.5 miles north of the project site), is listed as being impaired for dichlorodiphenyldichloroethylene (DDE), dichlorodiphenyltrichloroethane (DDT), electrical conductivity, specific conductivity, water temperature, total dissolved solids, toxicity, and alpha-BHC (Benzenehexachloride or alpha-HCH) (State Water Resources Control Board 2017).

Groundwater Hydrology and Water Quality

According to the California Department of Water Resources Groundwater Bulletin 118, the proposed project is located in the San Joaquin Valley Groundwater Basin, Turlock-Subbasin (Basin Number 5-22.03). The total surface area of the basin is approximately 347,000 acres or 542 square miles. The Turlock-Subbasin lies between the Tuolumne and Merced Rivers and is bounded on the west by the San Joaquin River and on the east by the crystalline basement rock of the Sierra Nevada foothills (California Department of Water Resources 2006).

The groundwater quality in the subbasin is predominantly of sodium-calcium bicarbonate type, with sodium bicarbonate and sodium chloride types at the western margin and a small area in the northcentral portion of the subbasin. Total dissolved solids range from 100 to 8,300 milligrams per liter with typical ranges of 200 to 500 milligrams per liter. The Department of Public Health Services measured total dissolved solids values in 71 wells and the results ranged from 100 to 930 milligrams per liter with an average of 335 milligrams per liter (California Department of Water Resources 2006). Groundwater quality impairments in the subbasin are generally small localized areas of hard groundwater, nitrate, chloride, boron, and DBCP (California Department of Water Resources 2006).

Flooding

The Federal Emergency Management Agency (FEMA) delineates floodplains throughout the nation and presents the information on Flood Insurance Rate Maps. According to the Flood Insurance Rate Map #0647C0175G dated December 2, 2008, the proposed project is located in Flood Zone X which is considered to be outside the 100-year flood zone (Federal Emergency Management Agency 2008).

Regulatory Setting

Federal Regulations

Clean Water Act

The Clean Water Act, as amended by the Water Quality Act of 1987, is the major federal legislation governing water quality. The objective of the Clean Water Act is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Applicable sections of the federal Clean Water Act (33 U.S.C. 1251-1376) include:

- Sections 303 and 304, providing water quality standards, criteria, and guidelines.
- Section 401, requiring an applicant for any federal permit that proposes an activity that might result in discharge to waters of the United States to obtain certification from the state that the discharge will comply with other provisions of the Clean Water Act. Certification is provided by the RWQCB.
- Section 402, establishing the National Pollutant Discharge Elimination System (NPDES), a permitting system for the discharge of pollutants (except for dredged or fill material) into waters of the United States. This permit program is administered by the RWQCB. The proposed project would have a footprint of greater than 1 acre; however, the proposed project would not discharge into waters of the United States. As a result, an NPDES General Construction Permit would not be required.
- Section 404, establishing a permit program for the discharge of dredged or fill material into waters of the United States. This permit program is administered by the U.S. Army Corps of Engineers.

Federal Flood Insurance Program

Congress, alarmed by increasing costs of disaster relief, passed the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. The intent of these acts is to reduce the need for large publicly funded flood control structures and disaster relief restricting development on floodplains.

FEMA administers the National Flood Insurance Program to provide subsidized flood insurance to communities that comply with FEMA regulations limiting development in floodplains. FEMA issues Flood Insurance Rate Maps for communities participating in the National Flood Insurance Program. These maps delineate flood hazard zones in the community.

State Regulations

Porter-Cologne Water Quality Act

The State of California's Porter-Cologne Water Quality Control Act (California Water Code, Section 13000 et seq.) provides the basis for water quality regulation in California. The act requires a Report of Waste Discharge for any discharge of waste (liquid, solid, or otherwise) to land or surface waters that may impair a beneficial use of surface or groundwater of the state. Based on the report, the RWQCBs issue waste discharge requirements to minimize the effect of the discharge.

Report of Waste Discharge

The Report of Waste Discharge is pursuant to California Water Code Section 13260. Section 13260 states that persons discharging or proposing to discharge waste that could affect the quality of the waters of the State, other than into a community sewer system, will file a Report of Waste Discharge containing information which may be required by the Central Valley RWQCB. The waste discharge requirement for Hilmar Cheese Company (Order No. R5-2010-0008) includes discharge prohibitions and specifications, solids specifications, and effluent and groundwater limitations. Order R5-2010-0008 was amended by Order R5-2013-0029 to amend waste discharge from a 1 to a 2-A[8] classification. Hilmar Cheese Company requested this modified classification because of implementation of extensive treatment to reduce biochemical oxygen demand and salinity in its discharge. The proposed project would require minor modification to existing discharge requirements.

Urban Water Management Planning Act (Water Code Section 10610) per 1983 AB 797

As stated in Merced County's General Plan, the act requires all water suppliers with greater than 3,000 users, or a demand greater than 3,000 acre-feet annually, to prepare and adopt an Urban Water Management Plan by 1985, and to update the plan every 5 years.

Local Regulations

Merced County General Plan

The Water chapter of the 2030 Merced County General Plan includes goals, objectives, and policies to protect its residents from hydrologic hazards and other potential issues regarding water quality. The following goals and policies are most applicable (Merced County 2013a).

Goals:

- Goal W-1: Ensure a reliable water supply sufficient to meet the existing and future needs of the County.
- Goal W-2: Protect the quality of surface and groundwater resources to meet the needs of all users.
- Goal W-3: Maximize the efficient use and reuse of water supplies through water conservation, water recycling, and public education.
- Goal W-4: Enhance and protect County watersheds through responsible water and land use management practices that address water bodies, open spaces, soils, recreation, habitat, vegetation, groundwater recharge, and development.
- Goal HS-2: Minimize the possibility of loss of life, injury, or damage to property as a result of flood hazards.

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[8] Category 2 threat to water quality: "Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short-term violations of water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance. Category A complexity: "Any discharge of toxic wastes; any small volume discharge containing toxic waste; any facility having numerous discharge points and groundwater monitoring; or any Class 1 waste management unit."

Category A complexity: "Any discharge of toxic wastes; any small volume discharge containing toxic waste; any facility having numerous discharge points and groundwater monitoring; or any Class 1 waste management unit."

- Goal PFS-3: Ensure the management of storm water in a safe and environmentally sensitive manner through the provision of adequate storm drainage facilities that protect people, property, and the environment.

Policies:

- Policy W-1.1: Ensure that continued supplies of surface and groundwater are available to serve existing and future uses by supporting water districts and agencies in groundwater management and water supply planning; requiring that new development have demonstrated long-term water supply; and assisting both urban and agricultural water districts in efforts to use water efficiently.
- Policy W-2.1: Ensure that land uses and development on or near water resources will not impair the quality or productive capacity of these water resources.
- Policy W-2.2: Prepare updated development regulations, such as best management practices, that prevent adverse effects on water resources from construction and development activities.
- Policy W-2.3: Encourage the use of natural channels for drainage and flood control to benefit water quality and other natural resource values.
- Policy W-2.5: Enforce septic tank and onsite system regulations of the RWQCB to protect the water quality of surface water bodies and groundwater quality.
- Policy W-2.7: Monitor and enforce provisions of the U.S. Environmental Protection Agency NPDES program to control non-point source water pollution.
- Policy W-2.8: Coordinate with the State Water Resources Control Board, RWQCB, and other responsible agencies to ensure that sources of water contamination (including boron, salt, selenium, and other trace element concentrations) do not enter agricultural or domestic water supplies, and will be reduced where water quality is already affected.
- Policy W-3.6: Promote efficient water conveyance systems in new construction, including systems for recycling greywater.
- Policy HS-2.15: Encourage flood control designs that respect natural topography and vegetation of waterways while retaining dynamic flow and functional integrity.
- Policy PFS-3.1: Require storm water management plans for all Urban Communities to reduce flood risk, protect soils from erosion, control stormwater runoff, and minimize impacts on existing drainage facilities.
- Policy PFS-3.2: Require that new development in unincorporated communities include adequate stormwater drainage systems. This includes adequate capture, transport, and detention/retention of stormwater.
- Policy W-4.1: Encourage the protection of watersheds, aquifer recharge areas, and areas susceptible to ground and surface water contamination by identifying areas such as:
    - A) Consider the implementation of zoning and development regulations to protect water resources;
    - B) Encourage community drainage systems and contaminant control measures; and
    - C) Coordinate with other agencies and entities with responsibilities for water quality and watershed protection

Discussion

Would the project:

a. Violate any water quality standards or waste discharge requirements?

Less-than-Significant Impact. The proposed project involves construction in two phases. Phase I would include a cold storage facility, a dock (near the cold storage facility), asphalt, warehouse facility, and a repackaging facility. Phase II would include a cold storage facility, a dock (near the cold storage facility), asphalt, a warehouse facility, and a repackaging facility. The additional discharge from operational stormwater runoff is estimated at 49,223 cubic feet, and would be captured in the onsite retention basins; no discharge would enter the local waterways. Thus, there would be a less-than-significant impact.

b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?

Less-than-Significant Impact. Currently, 11.4 acres of the project site is under active agricultural production and is used to grow corn and oats for part of the year. The corn and winter oats are each planted for approximately half of the year, using the same agricultural land. Corn requires an estimated 36 inches of water per year on this property while oats require an estimated 18 inches of water per year on this property.

As stated in the project description, it is anticipated that operation of Phase I of the project would require approximately 28,509 gallons of water per day and operation of Phase II of the project would require approximately 21,540 gallons of water per day. The two phases combined would use approximately 18 million gallons of water annually. The proposed project would replace 11.4 acres of agricultural land used for the production of corn and oats. With an approximate area of 11.4 acres, this is an estimated 51.3 acre-feet per year, or 16.7 million gallons of water per year. This equates to a total estimated increase in water of 1.3 million gallons annually.

The increase in water usage and impervious surface created by the proposed project would be accommodated by the stormwater retention ponds. These retention ponds would allow for increased groundwater recharge to occur. The project would not deplete groundwater supplies or interfere with groundwater recharge; therefore, the impact is less than significant.

c. Substantially alter the existing drainage pattern of the site or area, including through the alteration o the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site?

Less-than-Significant Impact. As discussed in the project setting, the project site is relatively flat with no onsite streams or rivers. While the proposed project would increase the amount of impervious surface creating additional stormwater runoff, the existing retention ponds would handle the flows during the storm season. Therefore, the proposed project would not result in a significant alteration to the existing drainage pattern of the site or area, and would not result in offsite erosion or siltation. Impacts would be less than significant.

d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate of amount of surface runoff in a manner that would result in flooding on site or off site?

Less-than-Significant Impact. As discussed under Section IX.c, the proposed project would not result in a significant alteration to the existing drainage pattern of the site or area and would not result in offsite erosion or siltation. This impact is considered to be less than significant.

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

Less- than-Significant Impact. All stormwater is processed through the water reclamation plant using the onsite storm drain ponds. The proposed project would not result in offsite stormwater runoff. Additionally, HCC has not received notice from the RWQCB to submit a notice of nonapplicability or obtain an Industrial General Permit. California Code, Water Code WAT §13399.30 (a) (2), reads, "(2) Any person, including a person subject to waste discharge requirements under Section 1342(p) of Title 33 of the United States Code, that discharges, proposes to discharge, or is suspected by a regional board or the state board of discharging storm water associated with industrial activity that has not obtained coverage under an appropriate storm water NPDES permit, shall submit to the regional board, within 30 days from the date on which a notice is sent by the regional board, the appropriate notice of intent to obtain coverage or a notice of nonapplicability that specifies the basis for not needing to obtain coverage under an NPDES permit." Impacts would be less than significant.

f. Otherwise substantially degrade water quality?

Less-than-Significant Impact. As described above, the proposed project would not result in any construction or operational impacts on water quality. All potential runoff would be directed to the onsite retention ponds. Potential construction impacts are addressed above and there are no other means by which construction or operation of the proposed project would substantially degrade water quality. Impacts would be less than significant.

g. Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

No Impact. The project site is not located within a 100-year flood hazard area and the project would not include the construction of housing (Federal Emergency Management Agency 2008). As a result, the proposed project would not place housing within a flood zone. No impact would occur.

h. Place within a 100-year flood hazard area structures that would impede or redirect flood flows?

No Impact. The proposed project site is not located within a 100-year flood hazard area. As a result, the proposed project would not place structures within a flood zone that could impede or redirect flood flows. No impact would occur.

i. Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?

Less-than-Significant Impact. According to the Merced County General Plan, virtually no urban area in the County is free from flooding in the event of a dam failure. The project site is located within the potential dam failure inundation area for the New Exchequer Dam located at McClure

Reservoir and Merced River. The New Exchequer Dam is owned and maintained by Merced Irrigation District which is required by the Federal Energy Regulatory Commission to develop an Emergency Action Plan and conduct a test exercise of this plan every 5 years to ensure an effective and coordinated emergency response in the event of a dam failure. Although flooding from a dam failure could occur at the project site, the project site would not include residential units and implementation of the Emergency Action Plan would ensure that potential safety impacts to onsite employees resulting from a dam failure would be minimized. This impact is considered to be less than significant.

j. Contribute to inundation by seiche, tsunami, or mudflow?

No Impact. The project site is not located near the Pacific Ocean and is considered too far away to be subject to a tsunami. As such, project impacts related to tsunamis would not occur. Similarly, a seiche could occur within San Francisco Bay or any large body of water; however, the project site is not located along the ocean shoreline or within the vicinity of a large body of water, and the project site is not located within a flood zone. Due to the distance from any shoreline, any seiche activity would not impact the project site. Also, the proposed project would not contribute to inundation by a mudflow. The project site is relatively flat with no nearby steep slopes, the area is not included or adjacent to an earthquake-induced landslide zone, and is not within a flood zone. As a result, the proposed project would not have the potential to contribute to inundation by seiche, tsunami, or mudflow. No impact would occur.

X. Land Use and Planning	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Physically divide an established community?	☐	☐	☐	☒
b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

Setting

The project site is located in unincorporated Merced County, in a rural agricultural setting. Existing land uses on the project site and in surrounding areas include agricultural, commercial, and rural residential uses. The project site is located on a vacant agricultural parcel adjacent to the existing cheese processing facilities. There are no residential uses or associated housing units located on the project site. The nearest community is Hilmar, which is immediately south of the project site.

The project site is under the jurisdiction of the County's General Plan and zoning regulations. The General Plan Land Use designation for the project site is Agricultural (Merced County 2013b). Special agricultural commercial uses are allowed in Agricultural areas when they directly relate to and are part of an existing and permitted agricultural enterprise or operation. The existing facility is considered an agricultural processing facility and is permitted for operation by the County under a CUP.

The proposed project is subject to General Plan Policy LU-2.5 which requires a review of the following 10 criteria for the location of characteristically-specific commercial uses on large parcels or in sparsely populated areas.

1. The use requires location in a rural area because one or more of the following characteristics: unusual site area requirements, natural resource production purposes, the use is directly agricultural related, or because of specific operational characteristics which pose a health or safety problem to urban populations.
2. The use is located near or readily accessible to a probable work force.
3. The use is consistent with the intent and policies of the Agricultural, Natural Resources, and Health and Safety Elements.
4. The use will not significantly impact adjacent agricultural, recreational, natural, cultural, wildlife, or other identified Natural Resources Element.
5. The use is protected from hazards identified in the Health and Safety Element.

6. The use is not located on productive agricultural land when nonproductive agricultural land is available in the vicinity of the proposed project.
7. The use is limited in size, time of operation, or length of permit authority where necessary to ensure compatibility with adjacent land uses.
8. The use shall not have a detrimental effect on surface or groundwater resources.
9. The use shall provide adequate infrastructure and improvements to reduce impacts on county services.
10. The use shall have access to adequate transportation facilities without creating abnormally high traffic volumes and shall provide road improvements to mitigate impacts generated by the project.

The project site is not within the service boundaries of any water or wastewater purveyor. However, it is located adjacent to the northern boundary of the HCWD service area. HCWD is a public service district responsible for providing water, sewer, and storm water services to the unincorporated community of Hilmar. As part of major modification to CUP 08-011 (Major Modification No. MM11-014) in 2012, HCC annexed 34 acres south of August Road into the HCWD service area to provide sewer services to the administrative offices constructed as part of that modification.

Discussion

Would the project:

a. Physically divide an established community?

No Impact. The proposed project would involve the construction of approximately 202,100 sf of new buildings and structures and approximately 204,100 sf of new asphalt located within the existing HCC facility and vacant agricultural land in unincorporated Merced County. The community of Hilmar is located south of the project site and the proposed project would not result in the physical division of Hilmar. No impact would occur.

b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

Less-than-Significant Impact. The project site has approval for an existing CUP 08-011 approved by Merced County in 2008. The CUP allows HCC to conduct a variety of conditional uses on the site and expand the facility in a manner consistent with plans reviewed in 2008 by the County. The project consists of an application from HCC to Merced County for a modification to the existing CUP 08-011 to allow for the expansion of the existing facility. As previously discussed, this project would be consistent with the current agricultural land use designation and would meet all of the criteria listed in the Merced County General Plan for its proposed land uses. As such, the proposed project would not conflict with any applicable land use plan, policy, or regulation and potential project impacts are considered less than significant.

c. Conflict with any applicable habitat conservation plan or natural community conservation plan?

No Impact. There are no existing or proposed HCPs or NCCPs within the vicinity of the project area. The nearest HCP is the community of Santa Nella in western Merced County, which is approximately 20 miles southwest of the project area. Since there are no HCPs or NCCPs that apply to the project site, there would be no impacts to HCPs and NCCPs as a result of the proposed project.

XI. Mineral Resources	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

Setting

According to the Merced County General Plan Open Space and Conservation Element, current mineral extraction within the County is mainly limited to sand and gravel (Merced County 2013b). The project site is not located on or within the vicinity of a potential sand and gravel resource area (Merced County 2012a). The Mineral Resource Zone (MRZ) Map for Concrete Aggregate in Merced County (Clinkenbeard 1999) indicates that the project site is located in an MRZ-1 zone, indicating there are no resources present.

Discussion

Would the project:

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

and

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

No Impact. As discussed above, the project site is not located in an area with significant mineral resources. There would be no impact.

XII. Noise	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?	☐	☐	☒	☐
b. Expose persons to or generate excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c. Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d. Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
e. Be located within an airport land use plan area, or, where such a plan has not been adopted, within two miles of a public airport or public use airport and expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f. Be located in the vicinity of a private airstrip and expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Setting

Noise Background

Noise is commonly defined as unwanted sound that annoys or disturbs people and potentially causes an adverse psychological or physiological effect on human health. Because noise is an environmental pollutant that can interfere with human activities, evaluation of noise is necessary when considering the environmental impacts of a project.

Sound is mechanical energy (vibration) transmitted by pressure waves over a medium such as air or water. It is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level is the most common descriptor used to characterize the loudness of an ambient (existing) sound level. Although the decibel (dB) scale, a logarithmic scale, is used to quantify sound intensity, it does not accurately describe how sound intensity is perceived by human hearing. The human ear is not equally sensitive to all frequencies in the entire spectrum, so noise measurements are weighted more heavily for frequencies to which humans are sensitive in a process called “A-weighting,” written as “dBA” and referred to as “A-weighted decibels.” Table 3-12 summarizes typical A-weighted sound levels for different noise sources.

In general, human sound perception is such that a change in sound level of 1 dB cannot typically be perceived by the human ear, a change of 3 dB is just noticeable, a change of 5 dB is clearly noticeable, and a change of 10 dB is perceived as doubling or halving the sound level.

Different types of measurements are used to characterize the time-varying nature of sound. These measurements include the equivalent sound level (L_{eq}), the minimum and maximum sound levels (L_{min} and L_{max}), percentile-exceeded sound levels (such as L_{10}, L_{20}), the day-night sound level (L_{dn}), and the community noise equivalent level (CNEL). Sensitivity to noise increases during the evening and at night because excessive noise interferes with the ability to sleep, and the L_{dn} and CNEL values take this into consideration, as they involve averaging cumulative noise exposure over a 24-hour period. L_{dn} and CNEL values differ by less than 1 dB. As a matter of practice, L_{dn} and CNEL values are considered to be equivalent and are treated as such in this assessment.

For a point source such as a stationary compressor or construction equipment, sound attenuates based on geometry at a rate of 6 dB per doubling of distance. For a line source such as free-flowing traffic on a freeway, sound attenuates at a rate of 3 dB per doubling of distance (California Department of Transportation 2013a). Atmospheric conditions including wind, temperature gradients, and humidity can change how sound propagates over distance and can affect the level of sound received at a given location. The degree to which the ground surface absorbs acoustical energy also affects sound propagation. Sound that travels over an acoustically absorptive surface such as grass attenuates at a greater rate than sound that travels over a hard surface such as pavement. The increased attenuation is typically in the range of 1 to 2 dB per doubling of distance. Barriers such as buildings and topography that block the line of sight between a source and receiver also increase the attenuation of sound over distance.

Table 3-12. Typical A-Weighted Sound Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	100	Rock band
Jet flyover at 1,000 feet		
	100	
Gas lawnmower at 3 feet		
	90	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower, 100 feet	70	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60	
		Large business office
Quiet urban daytime	50	Dishwasher in next room
Quiet urban nighttime	40	Theater, large conference room (background)
Quiet suburban nighttime		
	30	Library

Quiet rural nighttime	20 10 0	Bedroom at night, concert hall (background) Broadcast/recording studio
Source: California Department of Transportation 2013a.		

Vibration Background

Operation of heavy construction equipment, particularly the types used for pile driving and pavement breaking, create seismic waves that radiate along the surface of the earth and downward into the earth. These surface waves can be felt as ground vibration. Vibration from operation of this equipment can result in effects ranging from annoyance of people to damage of structures. Varying geology and distance will result in different vibration levels containing different frequencies and displacements. In all cases, vibration amplitudes will decrease with increasing distance.

Perceptible ground-borne vibration is generally limited to areas within a few hundred feet of construction or vibration-generating (e.g., mining) activities. As seismic waves travel outward from a vibration source, they excite the particles of rock and soil through which they pass and cause them to oscillate. The actual distance that these particles move is usually only a few ten-thousandths to a few thousandths of an inch. The rate or velocity (in inches per second) at which these particles move is the commonly accepted descriptor of the vibration amplitude, referred to as the peak particle velocity (PPV). Table 3-13 summarizes typical vibration levels generated by construction equipment.

Table 3-13. Vibration Source Levels for Demolition and Construction Equipment

Equipment	PPV at 25 feet	PPV at 50 feet	PPV at 75 feet	PPV at 100 feet	PPV at 400 feet
Large bulldozer	0.089	0.0315	0.0171	0.0111	0.0014
Loaded trucks	0.076	0.0269	0.0146	0.0095	0.0012
Jackhammer	0.035	0.0124	0.0067	0.0044	0.0005
Small bulldozer	0.003	0.0011	0.0006	0.0004	0.0033

Sources: California Department of Transportation 2013b; Federal Transit Administration 2006.
PPV = peak particle velocity

Vibration amplitude attenuates over distance and is a complex function of how energy is imparted into the ground and the soil conditions through which the vibration is traveling. The following equation can be used to estimate the vibration level at a given distance for typical soil conditions (Federal Transit Administration 2006). PPV_{ref} is the reference PPV from Table 3-13.

$$PPV = PPV_{ref} x\ (25/\text{Distance})^{1.5}$$

Tables 3-14 and 3-15 summarize guidelines developed by California Department of Transportation for damage and annoyance potential from transient and continuous vibration that is usually associated with construction activity. Equipment or activities typical of continuous vibration include excavation equipment, static-compaction equipment, tracked vehicles, traffic on a highway, vibratory pile drivers, pile-extraction equipment, and vibratory-compaction equipment. Equipment or activities typical of single-impact (transient) or low-rate repeated impact vibration include impact pile drivers, blasting, drop balls, “pogo stick” compactors, and crack-and-seat equipment.

Table 3-14. Guideline Vibration Damage Potential Threshold Criteria

	Maximum PPV (in/sec)	
Structure and Condition	**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

Source: California Department of Transportation 2013b.

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.

Table 3-15. Guideline Vibration Annoyance Potential Critera

	Maximum PPV (in/sec)	
Structure and Condition	**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

Source: California Department of Transportation 2013b.

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.

Ambient Noise Environment

The project is located in a rural area in Merced County. Land uses surrounded the project site are mostly farm and agricultural uses, with some residential land uses also located adjacent to, or near, the project site.

The ambient noise environment on the project site and in the vicinity is mostly characteristic of a rural area, with the addition of noise from stationary equipment at the existing Hilmar Cheese Facility (including boilers, truck traffic, etc.). Noise from vehicle traffic on Lander Avenue as well as the equipment noise from the facility are the dominant noise sources at the project site. A noise measurement survey consisting of six short-term (15-minute) ambient noise measurements was conducted to quantify existing ambient noise levels in the vicinity of the project site. One long-term noise measurement, conducted near the project site in 2011, is also included for informational purposes.

The noise measurement locations are shown in Figure 3.7-1, and Table 3-16 summarizes the results of the noise measurement survey. Information pertaining to the long-term noise measurement conducted in 2012 is also included below. The complete dataset of measured noise levels is included as Appendix F. During the short-term noise measurement survey, sky conditions were clear with air temperatures ranging from the high 60s to the high 70s later in the day. The wind speed throughout the day was approximately 1 mile per hour.

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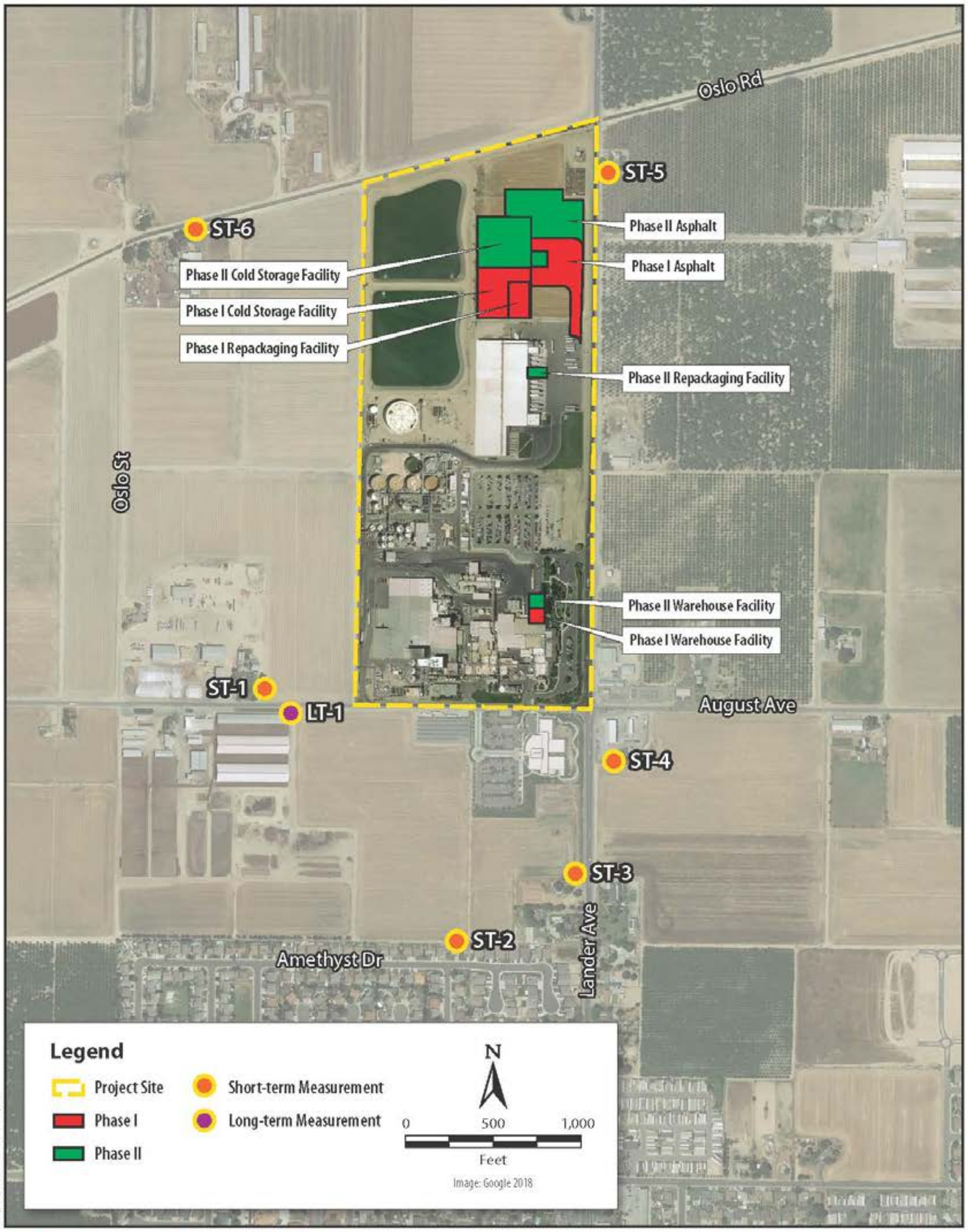

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Figure 3.7-1
Noise Measurement Locations

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The long-term noise measurement was conducted near the east driveway of Nyman Brothers (at 20445 August Avenue) about 40 feet from the center of August Avenue. The measured noise level during the 24-hour period was 72.5 L_{dn}, which is mostly dominated by vehicles traveling on August Avenue, as well as activity at the adjacent dairy farm. The high percentage of truck traffic on August Avenue also resulted in the high noise level at the measurement location.

As shown in Table 3-16, the short-term measurement taken near the northeastern corner of the project site (measurement ST-5) was 65.5 dBA L_{eq}. At this location, traffic noise from the adjacent Lander Avenue was the dominant noise source. Near the southeastern portion of the project site (Measurement ST-4), the measured ambient noise during the 15-minute measurement period was was 64.4 dBA L_{eq}. This measurement location is closer to the currently operating Hilmar Cheese Facility (which has sources of stationary noise), but the noise levels at these two locations were still similar.

The 15- minute L_{eq} noise levels measured south of the Hilmar Cheese Facility at ST-3 (near Lander Avenue) and ST-2 (in the open space/agricultural land located behind residences along Amethyst Drive) were 65.3 and 52.7 dBA L_{eq}, respectively. ST-3 was located substantially closer to, and was much more influenced by, traffic noise along Lander Avenue. ST-2 was in a quiet area mostly removed from nearby roadways.

Noise measurements to the west of the project site were also conducted. ST-1 was taken along August Avenue (near the LT-1 location) just east of the southern portion of the HCC Facility. Noise sources influencing the measurement in this area included cows at the adjacent (across August Avenue) dairy farm making noise against the metal fence while they fed, the operational equipment at the HCC Facility, as well as car and truck traffic both at the existing HCC facility and along August Avenue. The 15-minute average noise level recorded at ST-1 was 64.4 dBA L_{eq}.

A noise measurement was also taken near the residences located northwest of the project site along Oslo Road. At this location, noise from the facility was not audible, and the overall noise level recorded was 41.9 dBA $L_{eq.}$ The predominant noise in this area was the background sound of cars located on Lander Avenue, and sound of roosters nearby. Refer to Table 3-16 for a summary of the short-term noise measurements.

Table 3-16. Noise Level Measurements Near Project Site

Measurement No.[1]	Measurement Location	Date and Time	Primary Observed Noise Sources	Measured Noise Level (dBA)		
				L_{eq}	L_{max}	L_{min}
ST-1	Adjacent to home on north side of August Avenue west of Hilmar Cheese Facility (20400 block).	October 16, 2018, at 11:55 a.m.	Traffic along August Avenue, Cows clanging the feeding troughs, boiler exhaust and other operational noise from Hilmar Cheese facility, truck traffic at Hilmar Cheese Facility, and cows mooing intermittently.	64.4	71.5	57.7
ST-2	Open space behind 20144 Amethyst Drive.	October 16, 2018, at 11:20 a.m.	Relatively quiet area, with dog barks, noise from the Hilmar Cheese facility (boiler and other	52.7	63.7	50.1

Measurement No.[1]	Measurement Location	Date and Time	Primary Observed Noise Sources	Measured Noise Level (dBA)		
				L_{eq}	L_{max}	L_{min}
			equipment noise), and some intermittent cargo truck noise.			
ST-3	North of home at 8815 Lander Avenue.	October 16, 2018, at 10:25 a.m.	Predominantly vehicle traffic noise, with some noise from the Hilmar Cheese facility (boiler and other equipment noise), and intermittent dog barks in the distance.	65.3	74.4	51.7
ST-4	Driveway of home at southeast corner of Lander Avenue and August Avenue.	October 16, 2018, at 3:00 p.m.	Predominantly noise from Traffic along Lander Avenue, as well as loading/unloading (including some relatively loud clanking) noise at the adjacent work yard. Minor distant noise of dog barks intermittently.	64.4	85.8	55.5
ST-5	Home at southeast corner of Lander Avenue and Oslo Road.	October 16, 2018, at 2:32 p.m.	Consistent traffic noise from Lander Avenue. One plane overflight. Intermittent dog barking.	65.5	76.7	46.2
ST-6	Home at southeast corner of Oslo Street and Oslo Road.	October 16, 2018, at 2:02 p.m.	Very distant noise of traffic on Lander Avenue. Roosters cawing nearby.	41.9	56.0	37.7
LT-1[2]	Nyman Brothers Dairy, 20445 August Avenue (40 feet from roadway centerline)	September 20, 2012 – September 21, 2012		L_{dn}: 72.5		

See Appendix F for complete dataset of measured noise levels.

Notes:

[1] ST = short-term (15-minute) ambient noise measurement.

[2] The LT measurement was measured in 2012 in the Major Modification No. MM11-014 2012 IS/MND analysis.

dBA = A-weighted decibel; L_{eq} = equivalent; L_{max} = maximum sound level; L_{min} = minimum sound level; Ldn = day-night sound level

Regulatory Setting

Federal

There are no federal laws or regulations pertaining to noise that are relevant to the proposed project.

State

California Code of Regulations, Title 24, Part 2

Title 24 of the California Code of Regulations, Part 2, California Noise Insulation Standards, establishes minimum noise insulation standards to protect persons within new hotels, motels, dormitories, long-term care facilities, apartment houses, and dwellings other than single-family residences. Under this regulation, interior noise levels that are attributable to exterior noise sources cannot exceed the 45 L_{dn} in any habitable room. The noise metric is either the L_{dn} or the CNEL, consistent with the noise element of the local general plan.

Local

Merced County Noise Ordinance

Chapter 10.60 Noise Control of the Merced County Code establishes sound level limits for any property within the unincorporated area of the County. Section 10.60.030, *Sound level limitations,* of the County Code outlines sound level limits in the County.

> A. No person shall cause, suffer, allow, or permit the operation of any sound source on private property in such a manner as to create a sound level that results in any of the following, when measured at or within the real property line of the receiving property:
>
> > 1. Exceeds the background sound level by at least 10 dBA during daytime hours (7:00 a.m. to 10:00 p.m.) and by at least 5 dBA during nighttime hours (10:00 p.m. to 7:00 a.m.). The background sound level for purposes of this section shall be determined as set forth in Section 10.60.060 (sound measurement procedures); or assumed to be:
> >
> > 2. Sixty-five (65) dBA L_{dn} on residential real property or seventy (70) dBA L_{dn} on nonresidential real property; or
> >
> > 3. Seventy-five (75) dBA L_{max} on residential real property or eighty (80) dBA L_{max} on nonresidential real property.

Note from construction activity is exempt from these limitations, provided that it is limited to the daytime hours between 7:00 a.m. and 6:00 p.m., and all construction equipment is properly muffled and maintained. Nighttime construction is prohibited between 6:00 p.m. and 7:00 a.m., except for emergency work, or when the sound level does not exceed any applicable relative or absolute limits specified above.

Merced County General Plan

The health and safety element of the Merced County General Plan (Merced County 2013a) contains policies and guidelines that pertain to noise in the County. The following noise level standards from the General Plan have been developed in order to quantify noise effects in the County. Table 3-17 shows the noise level standards for noise-sensitive areas affected by traffic, railroad, or airport noise sources in the County.

Table 3-17. Merced County Noise Standards for New Uses Affected by Traffic, Railroad, and Airport Noise

New Land Use	Sensitive1 Outdoor Area (L_{dn})	Sensitive Interior2 Area (L_{dn})	Applicable Notes
All Residential	65	45	3
Transient Lodging	65	45	3,4
Hospitals & Nursing Homes	65	45	3, 4, 5
Theaters & Auditoriums	---	35	4
Churches, Meeting Halls, Schools, Libraries, etc.	65 65	40 40	4 4
Office Buildings	65	45	4
Commercial Buildings	---	50	4
Playgrounds, Parks, etc.	70	---	
Industry	65	50	4

Notes:

[1] Sensitive Outdoor Areas include primary outdoor activity areas associated with any given land use at which noise-sensitivity exists and the location at which the County's exterior noise level standards are applied.

[2] Sensitive Interior Areas include any interior area associated with any given land use at which noise sensitivity exists and the location at which the County's interior noise level standards are applied. Examples of sensitive interior spaces include, but are not limited to, all habitable rooms of residential and transient lodging facilities, hospital rooms, classrooms, library interiors, offices, worship spaces, theaters. Interior noise level standards are applied within noise-sensitive areas of the various land uses with windows and doors in the closed positions.

[3] Railroad warning horn usage shall not be included in the computation of Ldn.

[4] Only the interior noise level standard shall apply if there are no sensitive exterior spaces proposed for these uses.

[5] Since hospitals are often noise-generating uses, the exterior noise level standards are applicable only to clearly identified areas designated for outdoor relaxation by either hospital staff or patients

Source: Merced County 2012b

L_{dn} = day-night sound level

Table 3-18 shows the interior and exterior noise level standards for noise-sensitive areas affected by existing non-transportation noise sources in the County. In addition to these standards, the policies in this section address ways to reduce or eliminate existing and future conflicts between land uses and noise.

Table 3-18. Non-Transportation Noise Standards Median (L_{50}) / Maximum (L_{max})[1]

	Outdoor Area2		Interior3	
Receiving Land Use	Daytime	Nighttime	Day or Night	Applicable Notes
All Residential	55 / 75	50 / 70	35 / 55	
Transient Lodging	55 / 75	---	35 / 55	4
Hospitals & Nursing Homes	55 / 75	---	35 / 55	5, 6
Theaters & Auditoriums	---	---	30 / 50	6
Churches, Meeting Halls, Schools, Libraries, etc.	55 / 75	---	35 / 60	6
Office Buildings	60 / 75	---	45 / 65	6
Commercial Buildings	55 / 75	---	45 / 65	6
Playgrounds, Parks, etc.	65 / 75	---	---	6

	Outdoor Area2		Interior3	
Receiving Land Use	**Daytime**	**Nighttime**	**Day or Night**	**Applicable Notes**
Industry	60 / 80	---	50 / 70	6

Notes:

1 These standards shall be reduced by 5 dB for sounds consisting primarily of speech or music, and for recurring impulsive sounds. If the existing ambient noise level exceeds the standards in this table, then the noise level standards shall be increased at 5 dB increments to encompass the ambient.

2 Sensitive Outdoor Areas include primary outdoor activity areas associated with any given land use at which noise-sensitivity exists and the location at which the County's exterior noise level standards are applied.

3 Sensitive Interior Areas include any interior area associated with any given land use at which noise-sensitivity exists and the location at which the County's interior noise level standards are applied. Examples of sensitive interior spaces include, but are not limited to, all habitable rooms of residential and transient lodging facilities, hospital rooms, classrooms, library interiors, offices, worship spaces, theaters. Interior noise level standards are applied within noise-sensitive areas of the various land uses with windows and doors in the closed positions.

4 Outdoor activity areas of transient lodging facilities are not commonly used during nighttime hours.

5 Since hospitals are often noise-generating uses, the exterior noise level standards are applicable only to clearly identified areas designated for outdoor relaxation by either hospital staff or patients.

6 The outdoor activity areas of these uses (if any) are not typically used during nighttime hours.

7 Where median (L50) noise level data is not available for a particular noise source, average (Leq) values may be substituted for the standards of this table provided the noise source operates for at least 30 minutes. If the source operates less than 30 minutes the maximum noise level standards shown shall apply.

Source: Merced County 2012b

The following policies from the Merced County General Plan pertain to the proposed project:

- **Policy HS-7.1: Noise Standards for New Land Uses:** Require new development projects (industry, in this case) to meet the standards shown in Tables HS-1 and HS-2 (Tables 3-17 and 3-18 in this document), at the property line of the proposed use, through either project design or other noise mitigation techniques.
- **Policy HS-7.3: Existing Rural Sources:** Discourage new noise sensitive land uses in rural areas with authorized existing noise generating land uses.
- **Policy HS-7.4: New Noise or Groundborne Vibration Generating Uses:** Require new commercial and industrial uses to minimize encroachment on incompatible noise or groundborne vibration sensitive land uses. Also consider the potential for encroachment by residential and other noise or groundborne vibration sensitive land uses on adjacent lands that could significantly impact the viability of the commercial or industrial areas.
- **Policy HS-7.5: Noise Generating Activities:** Limit noise generating activities, such as construction, to hours of normal business operation.
- **Policy HS-7.7: Noise or Vibration Impacted Residential Area Monitoring:** Consider any existing residential area "noise or vibration impacted" if the exposure to exterior noise exceeds the standards shown in Table HS-2 (Table 3-18 in this document) or if groundborne vibration levels exceed 70 VdB. Identify and evaluate potential noise or groundborne vibration impacted areas and identify possible means to correct the identified noise/land use incompatibilities.
- **Policy HS-7.12: New Project Noise Mitigation Requirements:** Require new projects to include appropriate noise mitigation measures to reduce noise levels in compliance with the Table HS-2 standards within sensitive areas. If a project includes the creation of new non-transportation noise sources, require the noise generation of those sources to be mitigated so they do not exceed the interior and exterior noise level standards of Table HS-2 at existing

noise-sensitive areas in the project vicinity. However, if a noise-generating use is proposed adjacent to lands zoned for residential uses, then the noise generating use shall be responsible for mitigating its noise generation to a state of compliance with the standards shown in Table HS-2 at the property line of the generating use in anticipation of the future residential development.

Significance Criteria

In accordance with Appendix G of the CEQA Guidelines, the proposed project would be considered to have a significant impact if it would result in any of the following:

- Expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies.
- Expose persons to or generate excessive groundborne vibration or groundborne noise levels.
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
- Be located within an airport land use plan area, or, where such a plan has not been adopted, be within 2 miles of a public airport or public use airport and expose people residing or working in the project area to excessive noise levels.
- Be located in the vicinity of a private airstrip and expose people residing or working in theproject area to excessive noise levels.

Discussion

Would the project:

a. Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Construction Noise

Less-than-Significant Impact. Construction of the project would generate noise and would temporarily increase noise levels at adjacent residential and agricultural land uses. The noise levels generated during construction depend on the type of construction equipment used, the timing and duration of the noise generating activities, and the distances between construction noise sources and noise sensitive receptors. To evaluate the impacts of construction activity, construction noise levels were determined using equipment noise reference levels developed by the Federal Highway Administration.

Table 3-19 shows the list of equipment that is expected to be used for project construction. For each type of equipment that is likely to be used for proposed project construction, the L_{max} sound level values and the typical acoustical utilization factors at a source-receiver distance of 50 feet are shown, as reported in Federal Highway Administration's *Roadway Construction Noise Model User's Guide* (Federal Highway Administration 2006). An equipment utilization factor is the percentage of time each piece of construction equipment is typically operated at full power over a specified time period (e.g., 1 hour) and is used to estimate L_{eq} values from the corresponding L_{max} values. Also shown in Table 3-19 are the L_{eq} values at a distance of 50 feet, which have been calculated based on the L_{max} values and utilization factors.

Table 3-19. Noise Levels of Equipment Proposed for Project Construction

Equipment	L_{max} at 50 feet (dBA)[1]	Acoustical Usage/Utilization Factor (percent usage)[2]	L_{eq} at 50 feet
Backhoe/Loader	78	40	74
Concrete Mixer Truck	79	40	75
Concrete Pump Truck	81	20	74
Reach lift/Forklift[3]	84	40	80
Crane	81	16	73
Grader	85	40	81
Scraper	84	40	80
Tractor	84	40	80
Paver/Paving Machine	77	50	74
Water Truck[4]	76	40	72

[1] These values represent the loudest noise levels generated by each equipment type at a distance of 50 feet.

[2] The utilization factor is the percentage of time each piece of construction equipment is typically operated at full power over a specified time period.

[3] Represented by Tractor from Federal Highway Administration's *User's Guide*.

[4] Represented by Dump Truck from Federal Highway Administration's *User's Guide*.

Source: Federal Highway Administration 2006

dBA = A-weighted decibel; L_{max} = maximum sound level; L_{eq} = equivalent sound level

To evaluate the combined construction noise from simultaneous operation of multiple equipment items, construction noise levels of the three loudest pieces of equipment expected to be used during a single phase of project construction have been summed. Combining construction equipment noise levels in this manner represents a conservative scenario that ensures that the worst-case noise levels that could occur are evaluated.

The phase with the loudest proposed construction equipment is the site grading phase, during which a grader, scraper and tractor would all be used. The combined noise level (L_{max} and L_{eq}) from the operation of these three pieces of equipment operating simultaneously has been calculated as a worst-case scenario. Average 1-hour L_{eq} values were calculated using the L_{max} values and utilization factors. Anticipated average (L_{eq}) and maximum (L_{max}) construction noise at various distances from the project site for this worst-case scenario are shown in Table 3-20.

Table 3-20. Noise Levels of Equipment proposed for Project Construction

Source Data		Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Site Grading				
Source 1: Grader - Sound level (dBA) at 50 feet =		85	40%	81.0
Source 2: Scraper - Sound level (dBA) at 50 feet =		84	40%	80.0
Source 3: Tractor - Sound level (dBA) at 50 feet =		84	40%	80.0
Calculated Data:				
All Sources Combined- L_{max} sound level (dBA) at 50 feet =				89
All Sources Combined- L_{eq} sound level (dBA) at 50 feet =				85
Distance Between Source and Receiver (feet)	**Geometric Attenuation (dB)**		**Calculated Lmax Sound Level (dBA)**	**Calculated Leq Sound Level (dBA)**
50	0		89	85
100	-6		83	79
175	**-11**		**78**	**74**
200	-12		77	73
300	-16		74	70
400	-18		71	67
500	-20		69	65
600	-22		68	64
685	-23		66	62
700	-23		66	62
800	-24		65	61
900	-25		64	60
1000	-26		63	59
1200	-28		62	58
1400	-29		60	56
1600	-30		59	55
1800	-31		58	54
2000	-32		57	53
2500	-34		55	51
3000	-36		54	50

Notes:

This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Geometric attenuation based on 6 dB per doubling of distance.

dBA = A-weighted decibel; dB = decibel; L_{max} = maximum sound level; L_{eq} = equivalent sound level

The closest noise-sensitive land use to project construction areas is a residence located on Lander Avenue, south of Oslo Road, approximately 175 feet northeast of the proposed asphalt area for the

Phase 2 cold storage warehouse. As shown in Table 3-20, L_{eq} noise levels at a distance of 175 feet could be about 74 dBA L_{eq} at this nearby residence.

As described previously, noise from construction activity is exempt from the limitations in the noise ordinance so long as activity is limited to the daytime hours between 7:00 a.m. and 6:00 p.m., and all construction equipment is properly muffled and maintained. Proposed project construction would be limited to these daytime exempt hours, and all equipment would be muffled and maintained in accordance with the noise ordinance. Therefore, construction noise impacts related to the generation of noise in excess of local standards would be less than significant.

Operational Noise

Stationary Equipment

Less-than-Significant Impact. The project would include installation of new noise-generating equipment associated with operation of project facilities, which includes roof mounted HVAC equipment on each building to condition the occupied space, a roof-mounted air-handling unit on each repackaging facility, and two cooling towers (one for each of the two cold storage warehouses).

HVAC and air handling equipment can produce sound levels from 70 to 75 dBA at a distance of 50 feet (Hoover and Keith 2000). Even if two HVAC or air handling units were operating in the same exact location at 75 dBA at 50 feet, the combined noise level from the two equipment units would be 78 dBA. In this worst-case scenario, if the two units were located at the shortest distance between the proposed project buildings and the nearest residence (475 feet[9]), the attenuation over this distance would be a reduction of 20 dB. Thus, the noise from the stationary equipment at the nearest residence would be 59 dBA, which is well below the existing noise level of 65.5 at this location (refer to ST-5 in Table 3-16). Additionally, hourly nighttime noise levels in the project area, as measured during the long-term measurement, are in the low to mid-60 dBA range. In actuality, the HVAC and air handling equipment would be located at greater distances away from the nearest residence than 475 feet, because a distance of 475 feet assumes that the equipment would be located in the far corner of the building. Additional noise attenuation effects, such as molecular absorption and ground effect attenuation, would also occur and have not been incorporated into the estimate. As such, it is probable that the noise level at the nearest residence would be lower than the worst-case estimate of 59 dBA. Consequently, HVAC and air handling equipment is not expected to result in an exceedance of the County's noise ordinance, which limits noise increases to 10 dBA during daytime hours and 5 dBA during nighttime hours.

The two new cooling towers, which would be installed at the cold storage warehouses, are anticipated to have fans in the towers with a nameplate horsepower of 25. The cooling towers are expected to emit a noise level of about 69 dBA at 50 feet based on the anticipated 25 horsepower of the towers and analytical equations for cooling tower equipment (Hoover and Keith 2000). The shortest (i.e., worst-case) distance between a cooling tower and the nearest residence would be 475 feet. At this distance, noise from the cooling tower would decrease by approximately 20 dB based on geometric attenuation alone (i.e., not including ground attenuation or other effects). With cooling tower noise reduced by 20 dB, the noise at the nearest residence would be approximately 49 dBA, which is substantially below the existing noise level of 65.5 at this location (refer to ST-5 in Table

[9] 475 feet is the distance between the Phase 2 cold storage warehouse building and the residence located northeast from the site on Lander Avenue.

3-16). If the cooling tower were to operate simultaneously with and in the exact location as the HVAC and air handling equipment, it would increase the worst-case noise level described above from 59 dBA to 59.5 dBA. Consequently, cooling tower noise, even in conjunction with other stationary equipment noise, is not expected to result in an exceedance of the County's noise ordinance at the nearest sensitive land use.

Traffic Noise

Less-than-Significant Impact. The project would result in additional employees working at the site, and those employees would travel to the site on a daily basis, which would increase the traffic volumes on roadways near the project site. With respect to traffic noise, a 3 dBA increase is barely perceptible to people, while a 5 dBA increase is readily noticeable; an increase of less than 3 dBA is generally not perceptible outside of controlled laboratory conditions (California Department of Transportation 2014). A doubling of traffic volume results in a 3 dB increase in noise. Therefore as a general rule a doubling of the traffic volume is needed before the change would be perceptible. Table 3-21 shows the existing traffic volumes, the existing plus project traffic volumes, and the percentage increases for traffic on Lander Avenue and August Avenue. Because there would be 88 new employees at the project site and one additional daily truck trip, there would be 89 new daily roundtrips per day and 178 one-way trips per day. The existing plus project volumes in Table 3-21 represent a worst-case scenario, because the values assume that all 178 of the project-related trips could occur on any of the roadways. In reality, some trips would occur on August Avenue only and some trips would occur on Lander Avenue only. Nevertheless, this evaluation of traffic volumes and noise is a conservative, worst-case analysis.

Table 3-21. Existing and Cumulative Traffic Volume Increases Associated with Project Trips

	Average Daily Traffic Volumes		
Roadway Segment	**Existing Volumes**	**Worst-Case Existing + Project Volumes[1]**	**% Increase**
August Avenue			
Along project site	2,170	2,378	8%
Lander Avenue			
north of August Avenue	18,140	18,318	1%
south of August Avenue	17,880	18,058	1%

Notes:

[1] For the worst-case existing plus project scenario, it is assumed that all 178 daily one-way trips could occur on any roadway segment. As such, 178 trips are added to the existing volumes on each roadway for a worst-case increase in volumes.

As shown in Table 3-21, the project would result in an increase in traffic noise on the roadway segments near the intersection of Lander Avenue and August Avenue. The increases on these roadways would be a maximum of 8% on August Avenue along the project site, while the volume increase on Lander Avenue would be approximately 1%. Because these increases are substantially below the percentage increase that would result in a perceptible increase in noise (i.e., a 100% increase), the additional vehicle volumes from the new employees are not expected to result in a perceptible increase in noise on any roadways in the project vicinity. This impact is less than significant, and no mitigation is required.

b. Expose persons to or generate excessive groundborne vibration or groundborne noise levels?

Less-than-Significant Impact. The operation of heavy-duty construction equipment can generate localized ground-borne vibration and noise at buildings adjacent to the construction areas. Ground-borne vibration rarely causes damage to normal buildings, with the occasional exception of blasting or pile-driving during construction. Project construction is not expected to use impact or vibratory pile driving. Table 3-13 summarizes typical vibration velocity levels for the various types of construction equipment that may be used for the proposed project. Large earth-moving equipment, which would be required during proposed project construction, can generate vibration levels similar to those of a large bulldozer. As such, for evaluation of vibration impacts the vibration velocity levels for the most vibration-intensive equipment type (i.e., a large bulldozer) would be assumed to occur to provide a conservative estimate of vibration impacts from construction near the proposed project site.

The closest residence to proposed project construction areas is the residence located along Lander Avenue (south of Oslo Road) approximately 175 from the nearest project construction area.

Based on the PPV reference levels shown in Table 3-13, vibration levels from a large bulldozer could be as high as 0.089 PPV at 25 feet.[10] At a distance of 175 feet from earth-moving activities, which is the location of the nearest residence to the edge of project construction areas, vibration levels would be approximately 0.005 PPV inch per second.

As shown in Table 3-14, continuous or frequent intermittent sources of vibration, such as vibration from construction activities, could damage older residential structures if the vibration level is in excess of 0.3 inches per second, and could damage newer residential structures if the vibration level is in excess of 0.5 inches per second. A vibration level of 0.005 inches per second at the nearest residence is substantially lower than the level required to damage older structures (0.3 inches per second). Therefore, vibration impacts related to damage at nearby residences would be less than significant.

As shown in Table 3-15, continuous or frequent intermittent sources of vibration, such as vibration from construction activities, is considered to be distinctly perceptible if the vibration level is in excess of 0.04 inches per second. The large bulldozer vibration level of 0.005 inches per second 175 feet away at the nearest residence is well below this level. Therefore, vibration impacts related to annoyance would be less than significant.

Because vibration generated during construction is not expected to exceed the thresholds for building damage or perceptibility or annoyance at any nearby sensitive land uses, this impact would be less than significant.

c. Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Less-than-Significant Impact. As discussed under item a., the project would result in noise levels of 59 dBA, for a worst-case scenario, from the operation of the new stationary equipment at the new buildings. The estimated noise level from the equipment is expected to be less than the measured

10 This value is based on the distances specified and the reference levels and formula shown in Table 3-13.

daytime noise level at the nearest residence and would thus not constitute a substantial increase in ambient noise levels. Similarly, equipment noise is not expected to exceed an increase of 5 dBA over the anticipated nighttime noise levels, as determined by the nighttime hourly noise levels from the long-term measurement.

d. Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Less-than-Significant Impact. As discussed under checklist item a., although proposed project construction noise could conservatively generate noise up to 74 dBA L_{eq} at the nearest noise-sensitive land use, construction activities associated with the proposed project would occur only during exempt daytime hours. In addition, all construction equipment would be properly muffled and maintained as required by the County noise ordinance. Because project construction would occur only within allowable hours and all equipment would be properly muffled and maintained, any temporary increases in noise from construction activities would not be considered substantial. Therefore, potential construction noise impacts related to a substantial temporary increase would be less than significant. No mitigation is required.

e. For a project located within an airport land use land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels?

No Impact. The closest public airport to the project site is the Gustine Municipal Airport located over 12 miles to the southwest of the project site. The Modesto City-County Airport is located over 14 miles to the north of the project site, and the Merced County Castle Airport is located over 14.5 miles to the east of the project site. At these distances, aircraft activity from these relatively small public-use airports would not be expected to expose persons at the project site to excessive noise levels. There would be no impact related to excessive aircraft noise from public airports, and no mitigation is required.

f. For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels?

No Impact. There are no private airstrips in the vicinity of the project site. The nearest private airstrip is the Turlock Airpark, which is located almost 3 miles north of the project site. This private-use airport has an average of only 29 aircraft take-offs and landings per week. Based on the distance between the nearest private airstrip and the proposed project site, persons at the project site would not be exposed to excessive noise from any private airstrip activities. There would be no impact related to excessive aircraft noise from private airstrips, and no mitigation is required.

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

Setting

The nearest community to the project site is the community of Hilmar to the south of the project site. The proposed project is a commercial manufacturing project and does not include any residential development. According to the U.S. Census Bureau, the population of the Hilmar-Irwin Census-designated place grew from a population of 4,807 people in 2000 to 5,197 people in 2010, a growth rate of approximately 8.1% (U.S. Census Bureau 2000, 2010). The growth rate in Hilmar was substantially lower than the rest of Merced County, which experienced a growth rate of approximately 21.5% during the same time period. The Merced County Association of Governments predicts that Merced County will continue to grow approximately 35.4% between 2020 and 2040 (Merced County Association of Governments 2016).

As of September 2018, the unemployment rate in Merced County is approximately 5.9% (State of California Employment Development Department 2018). The unemployment rate has decreased substantially since August 2010 when the unemployment rate was at 16.4%. Construction of the proposed project would provide job opportunities for construction workers and operation of the proposed facilities would employ approximately 88 additional new employees.

Discussion

Would the project:

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

Less-than-Significant Impact. The project involves the expansion of the existing HCC facility and would not include the construction of any residential units. Construction of the project would result in a temporary increase in construction-related job opportunities in the local area. However, these jobs are likely to be filled by the existing construction labor force from the surrounding communities. In addition, job opportunities would be temporary, and is not likely to cause workers to relocate households to the project vicinity.

The project would result in an indirect increase in population through the establishment of new job opportunities associated with the HCC facility expansion. It is anticipated that the project would generate new jobs for approximately 88 individuals. As discussed earlier, Merced County is expected to grow by approximately 35.4% between 2020 and 2040, and it is anticipated that the majority of the new jobs would be filled by individuals currently living in the community and/or people that would commute to Hilmar from nearby areas within the County. Thus, as the anticipated growth associated with the project would be within the applicable growth projections, this incremental employment growth would not result in substantial indirect population growth beyond what has already been forecasted.

b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

No Impact. The project site is located within the existing HCC facility and vacant agricultural land. There are no existing residential structures on the project site. As such, the project would not displace any existing housing or necessitate the construction of replacement housing elsewhere. No impact would occur.

c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

No Impact. The project site is located within the existing HCC facility and vacant agricultural land. There are no existing residential structures on the project site. As such, the project would not displace any people or necessitate the construction of replacement housing elsewhere. No Impact would occur.

XIV. Public Services	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:				
a1. Fire protection?	☐	☐	☒	☐
a2. Police protection?	☐	☐	☒	☐
a3. Schools?	☐	☐	☒	☐
a4. Parks?	☐	☐	☒	☐
a5. Other public facilities?	☐	☐	☐	☒

Setting

Fire Protection

The Merced County Fire Department (MCFD) is responsible for providing fire suppression services throughout Merced County. Of the 22 fire stations located throughout the county, Hilmar Fire Station 95 located at 20021 West Falke Street, approximately 1 mile south of the project site, is the closest to the project site and would be mostly likely to respond in the event of an emergency (Merced County 2018a). Additional fire engines that could serve the project site would come from Turlock, Delhi, Stevinson, and Livingston. The MCFD has also contracted with the California Department of Forestry and Fire Protection to provide additional fire protection services.

The MCFD has established requirements for onsite water storage for fire protection and adequate fire department access. The County Fire Code (Section 10.301(c)) requires all projects to provide approved water supplies capable of delivering adequate fire flow for fire protection to all premises upon which buildings or portions of buildings are constructed. Furthermore, the County requires two access points to ensure escape and emergency service options. Existing emergency response/contingency plans maintained by HCC address procedures that would be implemented in the event of a fire-related emergency during facility operations. HCC is compliant with County requirements that establish that developers pay fair share costs for fire protection facilities and services for new developments.

As part of the major modification to CUP (08-011) (Major Modification NO. MM11-014) in 2012, HCC developed an automatic aid agreement with the MCFD and Turlock Fire Department which stipulated that the Turlock Fire Department would respond to any confirmed fire or rescue emergency at the HCC facilities. This agreement was made in order to ensure adequate response times since MCFD does not have a ladder truck necessary to service the HCC structures in the event of an emergency.

Police Services

Police services for the project site are provided by the Merced County Sheriff's Department. According to the Sheriff's Office and a preliminary evaluation of the project, they would be able to provide adequate law enforcement to the completed facility. HCC is compliant with County requirements that establish that developers pay fair share costs for law enforcement facilities and services for new developments.

Schools

Residents in the vicinity of the project site are served by the Hilmar Unified School District which offers pre-kindergarten through 12th grade to approximately 2,400 students and comprises five schools. The Hilmar Unified School District has two elementary schools, one middle school, and two high schools (Hilmar Unified School District 2018).

Parks

Refer to Section XV, Recreation, for a discussion of park and recreational facilities.

Discussion

Would the project result in substantial adverse physical impacts associated with:

a1. Fire protection?

Less-than-Significant Impact. Construction of the project would use fuels and other combustible products that have the potential to contribute to fire hazards. However, the construction contractor would be required to meet all fire safety requirements prior to initiating construction activities.

Operation of the project is not expected to generate substantial increases in demand for fire protection services as all facilities would be designed in accordance with all applicable building codes and standards. Furthermore, the proposed project would only result in minor increases in structures that would be susceptible to fire. HCC is currently in compliance with applicable County requirements for fire safety and emergency access, and all structures constructed as part of the proposed project would comply with all applicable building codes, safety and fire codes and therefore would remain in compliance once the project is completed. Additional contingencies for fire safety and prevention practices are already in place under HCC's emergency response plan. HCC would also be subject to the County's fair share development fees to provide additional fire protection services and facilities as determined by the County during the CUP approval process.

As described earlier, HCC has developed an automatic aid agreement with the MCFD and Turlock Fire Department to ensure that the project site is adequately served in an acceptable time frame in the event of a confirmed fire or rescue. As such, the project would not generate the need for new or physically altered fire station facilities, the construction of which could cause environmental impacts related to providing adequate fire protection services. Impacts would be less than significant.

a2. Police protection?

Less-than-Significant Impact. According to the Sheriff's Office and a preliminary evaluation of the project, there would be adequate law enforcement personnel and resources to provide for the completed facility. Furthermore, HCC would also be subject to the County's fair share development fees to provide additional law enforcement services and facilities. As such, the project would not generate the need for new or physically altered sheriff facilities, the construction of which could cause environmental impacts related to providing adequate police protection services. Impacts would be less than significant.

a3. Schools?

Less-than-Significant Impact. The project does not include any residential development and would not have any direct impacts related to increases in the number of students attending Hilmar Unified School District schools. However, the project would create approximately 88 new jobs during project operation, as discussed in Section XIII.a. It is anticipated that the majority of the new jobs would be filled by individuals currently living in the community and/or people that would commute to Hilmar from nearby areas within the County. Likewise, workers employed for construction of the project are not likely to result in workers relocating into the community. As such, the project would not result in any substantial increases in students attending Hilmar Unified School District schools. Impacts would be less than significant.

a4. Parks?

Less-than-Significant Impact. Open space and parks are typically provided to serve residential populations. The project does not propose residential units, and would therefore not directly increase demand on parks through increased population. As discussed in Section XIII, the project would result in approximately 88 new jobs. Since it is anticipated that many of these jobs would be filled by the local population, this increase in employment opportunities would not result in an increase in demand on recreational facilities such that there would be a need for the provision of new or physically altered facilities.

During construction, workers might use nearby parks in Hilmar for lunch breaks or other recreational purposes. However, this increase in construction workers would be temporary, and no permanent change in the usage of recreational facilities is likely to result from project construction. Therefore, the project would have a less-than-significant impact on park facilities.

a5. Other public facilities?

No Impact. The proposed project would not affect the demand for any other public services. No impact would occur.

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

Setting

Parks and recreation services are provided by the County's Parks & Recreation Department. No parks or recreational facilities are located on the project site. The closest recreation facilities are located in the community of Hilmar, south of the project site, which includes Hilmar Park located approximately 1 mile away (Merced County 2018b). The County uses an acreage/population ratio for parks to determine parkland needs in unincorporated communities.

Discussion

Would the project:

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

and

b. Include recreational facilities or require the construction of or expansion of recreational facilities that might have an adverse physical effect on the environment?

Less-than-Significant Impact. The proposed project does not include the construction or expansion of any recreational facilities or residential development. As described in Section XIV, no permanent change in the usage of recreational facilities is likely to result from project implementation. Therefore, the proposed project would not increase the use of existing park and recreational facilities, would not result in the substantial deterioration of existing parks, and would not require the construction or expansion of new recreational facilities. Impacts would be less than significant.

XVI. Transportation/Traffic	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☒	☐	☐
b. Conflict with an applicable congestion management program, including, but not limited to, level-of-service standards and travel demand measures or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d. Substantially increase hazards because of a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e. Result in inadequate emergency access?	☐	☐	☒	☐
f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

Setting

This chapter summarizes the potential transportation and traffic impacts related to construction and operation of the project based on the transportation assessment report prepared for the project by Fehr & Peers (2018). Included are a review of existing conditions, a summary of applicable policies and regulations related to transportation and traffic, and an analysis of existing and cumulative environmental impacts of the project. Where feasible, mitigation measures are recommended to reduce the level of expected impacts. The transportation assessment is included as Appendix G to this Initial Study.

Roadway System

The project site is located at the northwest and southwest corners of the Lander Avenue (SR 165)/August Avenue intersection north of the community of Hilmar in unincorporated Merced

County. Regional access to the site is provided from SR 165. Adjacent land uses are primarily agricultural and industrial. The roadways in the study area are described below.

Lander Avenue (SR 165) is a north-south oriented highway that forms the eastern boundary of the project site. Generally, one travel lane per direction is provided on Lander Avenue. Two southbound travel lanes are provided from the northern driveway to August Road; one northbound travel lane is provided on this same segment. SR 165 is a major north-south route within Merced County, connecting SR 99, approximately 4 miles north in the City of Turlock, to I-5, 35 miles to the south. No bicycle or pedestrian facilities are provided in Lander Avenue in the study area. Unrestricted access to the project site is provided from a driveway connection to SR 165. The speed limit changes from 45 miles per hour south of the project driveway to 55 miles per hour north of the driveway.

August Road is an east-west two-lane road that bisects the project site. No on-street parking is permitted within the project area and no bicycle or pedestrian facilities are provided. As the designated truck route to the facility, all trucks going to the project site enter through August Avenue. No bicycle or pedestrian facilities are provided, except for a mid-block crossing that connects the buildings located on the north side of August Avenue with the buildings located on the south side of August Avenue.

Western August Driveway (Driveway 1) is the primary heavy truck driveway for the facility, located on the western edge of the existing facility. This driveway primarily serves loading dock area and access to staff and visitor parking supplies is restricted. This driveway provides unrestricted access to the site.

Central August Driveway (Driveway 2) is located between Driveways 1 and 3 on August Avenue. The north leg of the driveway is restricted to service vehicles only and experiences very low levels of activity. The southern leg-of the driveway is off-set and serves the existing office building. These driveways provide unrestricted access to the site.

Eastern August Driveway (Driveway 3) is located on August Avenue approximately 260 feet east of the Lander Avenue/August Avenue intersection. It serves as an entry/exit for the main Visitor Center parking lot and provides unrestricted access to the site.

Lander Avenue Driveway (Driveway 4) is located on Lander Avenue approximately 800 feet north of the Lander Avenue/August Avenue intersection and provides unrestricted access to the employee parking lot as well as the Visitor Center parking lot and overflow parking lot. A dedicated left-turn lane into the site is provided from Lander Avenue, as well an acceleration lane for vehicles exiting the facility.

Traffic Conditions

Study Intersections

Project impacts on the project area roadway facilities were determined by measuring the effect project traffic would have on operations of the Lander Avenue (SR 165)/August Avenue intersection as well as site access driveways during the morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak periods. For this study, the following scenarios were evaluated:

- **Existing** – Existing (2018) conditions based on recent traffic counts.
- **Existing With Project** – Existing (2018) conditions with project-related traffic.

- **Cumulative Without Project** – Future forecast conditions, which considers local and regional traffic growth. No roadway improvements in the immediate project vicinity were assumed.
- **Cumulative With Project** – Future forecast conditions plus project-related traffic.

Analysis Methods

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

Signalized Intersections

Traffic conditions at signalized intersections were evaluated using the method developed by the Transportation Research Board, as documented in the 2010 Highway Capacity Manual (Transportation Research Board HCM2010). The 2010 Highway Capacity Manual method calculates control delay at an intersection based on inputs such as traffic volumes, lane geometry, signal phasing and timing, pedestrian crossing times, and peak hour factors. Control delay is defined as the delay directly associated with the traffic control device (i.e., a stop sign or a traffic signal) and specifically includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. These delay estimates are considered meaningful indicators of driver discomfort and frustration, fuel consumption and lost travel time. The relationship between average control delay and LOS for signalized intersections is summarized in Table 3-22.

In Merced County, acceptable operations at signalized intersections are defined as LOS D for intersections on regional roadways, such as Lander Avenue (SR 165), or LOS C for intersections on minor roadways, such as August Avenue.

Unsignalized Intersections

For unsignalized (all-way stop-controlled and side-street stop-controlled) intersections, the Transportation Research Board's 2010 Highway Capacity Manual method for unsignalized intersections was used. With this method, operations are defined by the average control delay per vehicle (measured in seconds). The control delay incorporates delay associated with deceleration, acceleration, stopping, and moving up in queue. Table 3-22 summarizes the relationship between delay and LOS for unsignalized intersections. At side-street stop-controlled intersections, the delay is calculated for each stop-controlled movement and for the left-turn movement from the major street. The intersection average delay and highest movement/approach delay are reported for side-street stop-controlled intersections.

Table 3-22. Signalized Intersection LOS Criteria

Level of Service	Description	Delay in Seconds
A	Progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	≤ 10

Level of Service	Description	Delay in Seconds
B	Progression is good, cycle lengths are short, or both. More vehicles stop than with LOS A, causing higher levels of average delay.	> 10–20
C	Higher congestion may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, though many still pass through the intersection without stopping.	> 20–35
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	> 35.0 to 55.0
E	This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	> 55.0 to 80.0
F	This level is considered unacceptable with oversaturation, which is when arrival flow rates exceed the capacity of the intersection. This level may also occur at high V/C ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to such delay levels.	> 80.0

Source: Transportation Research Board 2010

Table 3-23. Unsignalized Intersection LOS Criteria

Level of Service	Description	Delay in Seconds
A	Little or no delays	< 10
B	Short traffic delays	> 10–15
C	Average traffic delays	> 15–25
D	Long traffic delays	> 25 to 35
E	Very long traffic delays	> 35 to 50
F	Extreme traffic delays with intersection capacity exceeded	> 50

Source: Transportation Research Board 2010

Roadway Segments

Roadway segments were analyzed by comparing roadway segment volumes to daily roadway segment capacities. LOS thresholds from the 2030 Merced County General Plan Program EIR were used to evaluate the roadway segment LOS. The LOS thresholds are presented in Table 3-24. For each type of roadway, thresholds are reported in average daily traffic volume (ADT). For this analysis August Avenue is classified as a 2-lane County Road and Lander Avenue (SR 165) is defined as a 2-lane highway south of August Avenue and a 3-lane facility north of August Avenue.

Table 3-24. Roadway Segment Average Daily Volume LOS Thresholds

Roadway Classification	LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
Two-Lane Highway	2,300	7,600	14,200	20,000	27,400	<27,400
Three-Lane Highway	11,400	20,400	31,100	41,100	49,000	<49,000
Four-Lane Highway	20,500	33,200	48,000	62,200	70,600	<70,600
County Road	-	-	7,700	15,000	16,100	<16,100

Source: Fehr & Peers 2018
LOS = Level of Service

Existing Traffic Counts

Weekday morning (7:00 a.m. to 9:00 a.m.) and evening (4:00 p.m. to 6:00 p.m.) peak period intersection turning movement counts were conducted at the study intersection and primary driveways, including counts of pedestrians, bicyclists and trucks. Forty-eight-hour counts were conducted on August Avenue and California Department of Transportation data was reviewed to determine daily traffic on SR 165. For the study intersection and driveways, the single hour with the highest traffic volumes during the count periods was identified. The peak hour volumes are presented on Figure 3.16-1 along with the existing lane configuration and traffic control. The existing traffic counts are provided in Appendix A of the transportation assessment (see Appendix G).

Vehicle classification counts were conducted to determine the level of truck traffic in the area because trucks behave differently than passenger vehicles as they take longer to accelerate, decelerate, and negotiate turns. Therefore, they directly affect intersection operations. Based on the existing driveway counts at HCC, peak hour driveway volumes consist of about 85% passenger vehicles and 15% trucks during the AM peak hour and 84% passenger vehicles and 16% trucks during the PM peak hour. To reflect the operational characteristics of large trucks, the observed heavy vehicle percentages for each movement were used in the intersection operation analysis.

Existing Intersection Operations

Existing operations were evaluated using the methodology described previously for the weekday AM and PM peak hours at the study intersection and driveways, as summarized in Table 3-25. The analysis is based on the volumes, lane configurations and traffic control shown on Figure 3.16-1. Observed peak hour factors1 were used at all intersections for the existing analysis, in addition to the heavy vehicle percentages discussed previously.

As shown, the study intersection and driveways currently operate at acceptable service levels during both AM and PM peak hours, indicating good operations with little delay. Detailed intersection LOS calculation worksheets are presented in Appendix G. Field observations confirmed the calculated levels of service.

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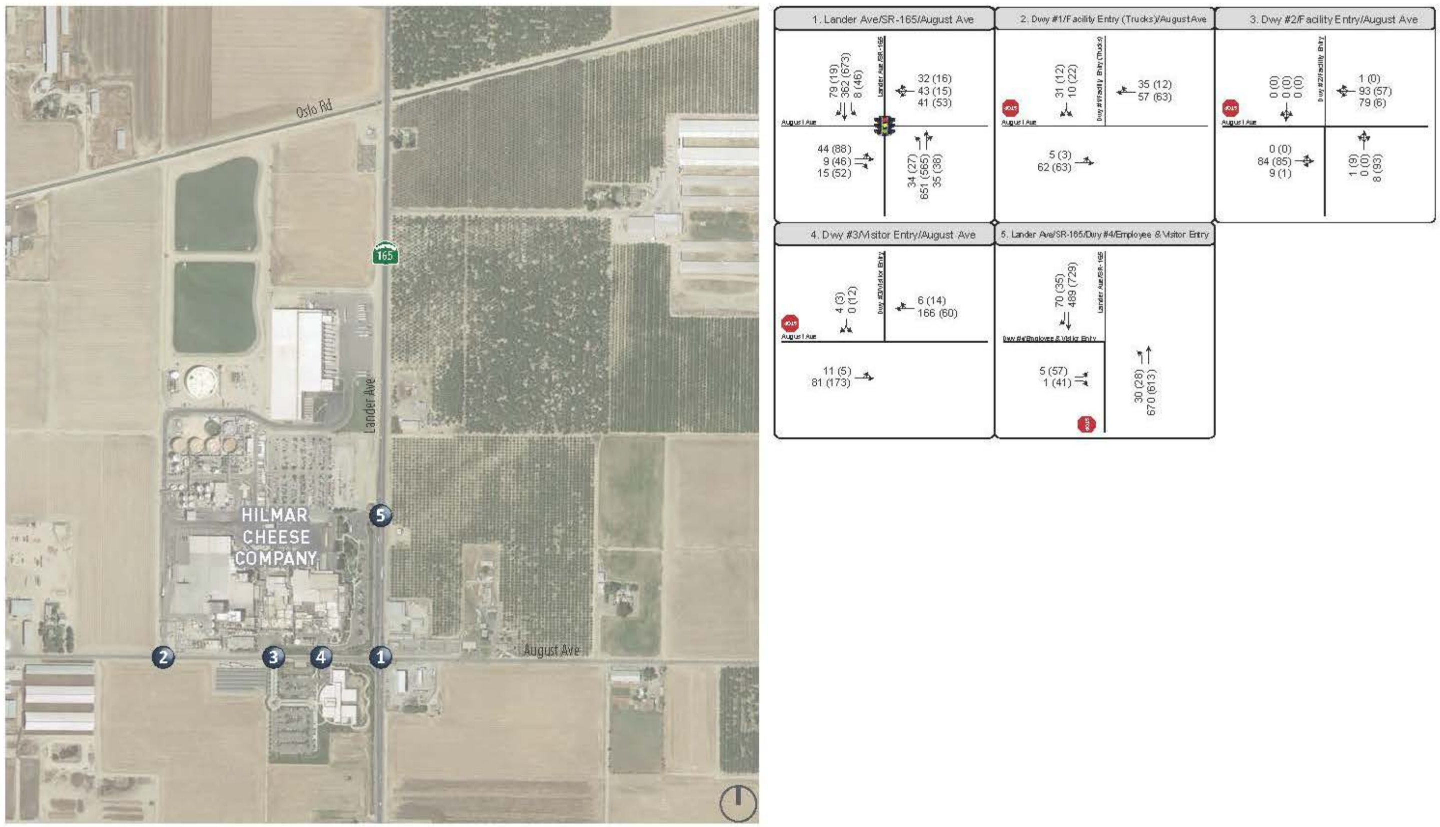

XX (YY) AM (PM) Peak Hour Traffic Volumes Signalized Intersection Stop Sign Study Intersection

Source: Fehr & Peers, 2018

Figure 3.16-1
Existing (2018) Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

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Table 3-25. Existing (2018) Peak Hour Level of Service

Location	Control[1]	Peak Hour	Delay (in seconds)[2]	LOS
1. Lander Avenue (SR 165)/August Avenue	Signal	AM	11	B
		PM	12	B
2. Driveway 1/August Avenue	SSSC	AM	2 (11)	A (B)
		PM	2 (11)	A (B)
3. Driveway 2/August Avenue	SSSC	AM	3 (8)	A (A)
		PM	4 (9)	A (A)
4. Driveway 3/August Avenue	SSSC	AM	1 (10)	A (A)
		PM	1 (11)	A (B)
5. Driveway 4/Lander Avenue	SSSC	AM	0 (19)	A (C)
		PM	2 (23)	A (C)

Notes:
[1] Signal = signalized intersection, SSSC = side street stop-controlled intersection
[2] Delay presented as seconds per vehicle; for side-street stop-controlled intersections, delay presented as Intersection average (worst approach).
Source: Fehr & Peers 2018
LOS = Level of Service; SR = State Route

Existing Roadway Operations

Existing roadway segment operations were evaluated for the weekday condition for the roadway segments in the project vicinity, as summarized in Table 3-26. The existing volumes were compared to the LOS thresholds presented in Table 3-24. As a three-lane highway, Lander Avenue north of August Avenue currently operates at LOS D, which is within the LOS standard for the roadway, while the two-lane portion of Lander Avenue south of August Avenue operates at LOS E, which is considered deficient based on Merced County standards. August Avenue in the site vicinity operates at LOS C.

Bicycle and Pedestrian Activities

Pedestrian facilities include sidewalks, crosswalks, and pedestrian signals. With the rural, agricultural setting and location along a state highway, pedestrian facilities are not provided on the public roadways adjacent to the site. However, within the existing Hilmar Cheese site, landscaped pedestrian pathways are provided to connect the various facilities and parking lots. A mid-block crossing is located on August Avenue approximately 260 feet west of Lander Avenue connecting the office building to the visitors center and other facilities north of August Avenue.

Bicycle facilities include the following:

- Bike paths (Class I) – Paved trails that are separated from roadways.
- Bike lanes (Class II) – Lanes on roadways designated for use by bicycles through striping, pavement legends, and signs.

- Bike routes (Class III) – Designated roadways for bicycle use by signs only; may or may not include additional pavement width for cyclists.

Presently no bicycle facilities exist; however, Class II bike lanes are proposed for portions of SR 165 from Bloss Avenue north to the Merced County Line. Bicycle parking is not currently provided on the site.

Table 3-26. Existing (2018) Roadway Segment Level of Service

Roadway	Location	Travel Lanes	ADT	LOS
August Avenue	Along Project Site	2	2,710	C
SR 165-Lander Avenue	North of August Avenue	3	18,140	D
SR 165-Lander Avenue	South of August Avenue	2	**17,880**	**E**

Notes: Bold indicates deficient operations
Source: Fehr & Peers 2018
ADT = Average Daily Traffic; LOS = Level of Service; SR = State Route

Transit Service

Transit service is not provided in the project site vicinity.

Rail Service

No passenger rail service or facilities are provided in the study area.

Methodology

Significant Criteria

Significance criteria are used to establish what constitutes an impact. For this analysis, in addition to the checklist from Appendix G of the CEQA Guidelines listed above, the criteria used to determine impacts on intersections and freeways are based on recently prepared environmental documents within Merced County.

- The project substantially increases hazards or congestion due to a design feature (e.g., sharp curves) or incompatible uses (e.g., farm equipment).
- The project results in inadequate emergency access.
- The project conflicts with adopted transportation policies, plans, or programs.

Definition of Significant Intersection Impact

The project would create a significant adverse impact on traffic conditions at a signalized intersection in the County if:

- The addition of project traffic causes a signalized intersection to deteriorate from an acceptable level to an unacceptable level; the Merced County General Plan specifies the following peak hour LOS standards:
  a. For roadways located within rural areas: LOS C or better (applied to August Avenue)

   b. For roadways located outside Urban Communities that serve as connectors between Urban Communities: LOS of D or better (applied to Lander Avenue)

   c. For roadways located within Urban Communities: LOS of D or better

- The project would increase traffic volumes by more than 5% at a signalized intersection operating at an unacceptable level without the project
- The addition of project traffic causes the LOS at an unsignalized intersection to degrade from an acceptable to an unacceptable service level or causes an unsignalized intersection to meet traffic signal warrants based on the peak hour volume warrant

Definition of Significant Roadway Segment Impacts

A project would create a significant adverse impact on traffic conditions of roadway segments in the County if:

- The addition of project traffic causes a roadway segment to deteriorate from an acceptable level to an unacceptable level.
- The addition of project traffic increases the volume on a roadway segment operating at an unacceptable level by more than 5%.

Project Trip Estimates

Project Trips

Project trip generation refers to the process for estimating the amount of vehicular traffic a project would add to the surrounding roadway system. Estimates of the total amount of traffic entering and exiting the project driveways are calculated for an average weekday. Separate estimates are created for the peak 1-hour periods during the morning and evening commute periods when traffic volumes on the surrounding streets are highest.

Based on the Institute of Transportation Engineers' (ITE) *Trip Generation Manual* (10th Edition) (Institute of Transportation Engineers 2008), the project is expected to generate up to 620 new daily trips including 70 peak hour trips in the AM peak hour (59 trips in and 11 trips out) and 71 peak hour trips in the PM peak hour (14 trips in and 57 trips out) upon completion of both Phases 1 and 2. Use of ITE trip generation rates may overstate actual trip generation from the project as it is expected to increase the number of employees at the site by 88, and add one additional truck trip per day. Based on each employee generating approximately 2 trips per day, and one additional round-trip truck trip, approximately 180 new daily trips could be generated. Use of the higher trip generation, as estimated using the ITE trip generation rates, to identify potential impacts to the transportation system presents a conservative assessment of potential project impacts and allows for flexibility in future staffing levels.

New vehicle trips that could be generated by the approved site uses that have not yet been constructed were calculated based on ITE's average vehicle trip generation rates (Table 6 in Appendix G). These uses could be constructed without further approvals. The approved project uses are expected to generate approximately 810 daily trips, including 122 vehicle trips during the AM peak hour and 120 trips during the PM peak hour. These trips were assigned to the roadway network and accounted for in the analysis of cumulative conditions.

Preliminary trip distribution percentages were developed based on the location of the site, the surrounding land uses, and existing travel patterns in the area as presented on Figure 3.16-2 in conjunction with the project trip assignment.

Cumulative Trips

There are a number of potential roadway improvements planned within Merced County, such as SR 165 bypass project, which would realign SR 165 from the Merced/Stanislaus County line to the south of Hilmar and widening of SR 99. Full funding of these projects has not been identified; no roadway improvements over existing conditions were included in the analysis of Cumulative conditions.

Several sources of data were reviewed during the development of cumulative traffic forecasts for the study locations, including a computerized travel demand model and historic growth rates. The 2018 Merced County Association of Governments Regional Transportation Plan/Sustainable Communities Strategy for Merced County (2018 RTP/SCS) documents expected levels of traffic growth on SR 165 through 2042 under a number of different land use and roadway network scenarios. Under the 2018 RTP/SCS scenario, traffic volumes on Lander Avenue in the project vicinity are expected to remain largely the same through 2042, with a total of 1% growth between now and 2042. Other land use and roadway network scenarios documented in the 2018 RTP/SCS projected negative traffic growth along the SR 165 corridor (Merced County Association of Governments 2018).

For the purpose of this analysis, existing through traffic on Lander Avenue and August Avenue was increased by 5%. Additionally, traffic that could be generated by the approved development on the site was added to the resulting volumes to represent Cumulative without Project forecasts, as presented on Figure 3.16-3 for intersections and for roadway segments (see Table 12 in Appendix G).

The peak hour project volumes from Figure 3.16-2 were added to the Cumulative without Project traffic volumes to determine cumulative traffic volumes with the proposed project, as presented on Figure 3.16-4.

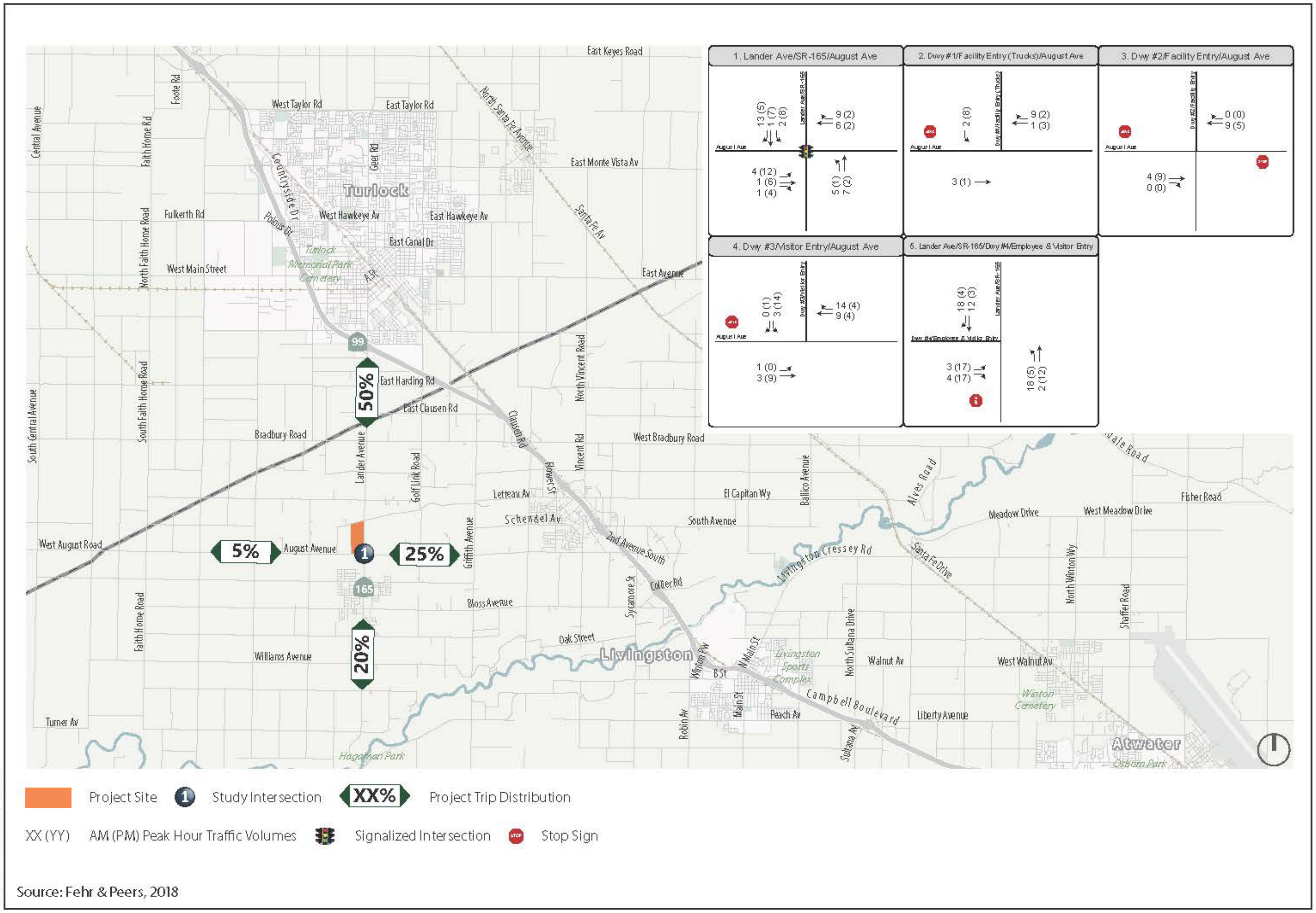

Figure 3.16-2
Project Trip Distribution Percentages and Assignment

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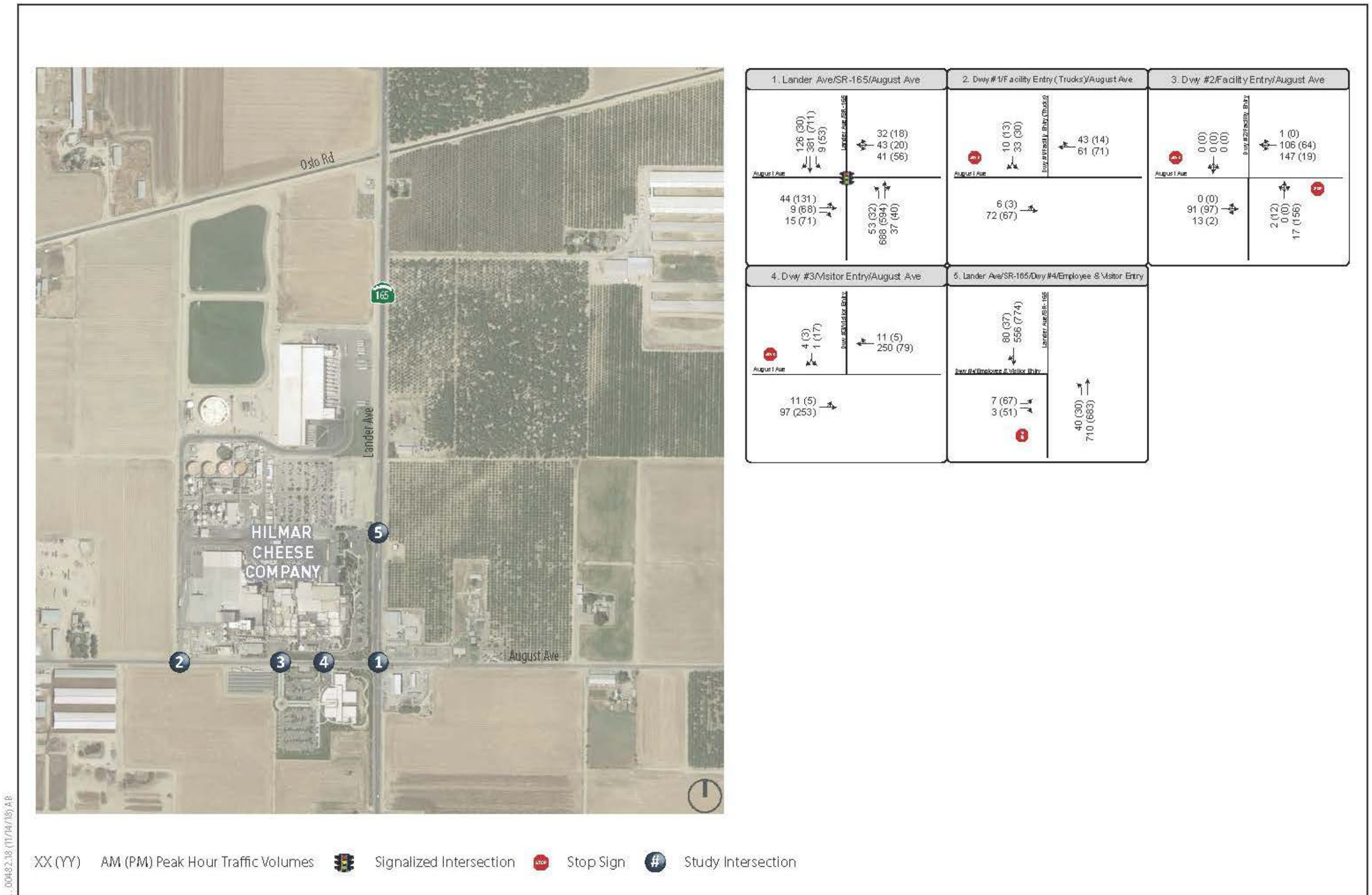

Source: Fehr & Peers, 2018

Figure 3.16-3
Cumulative Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

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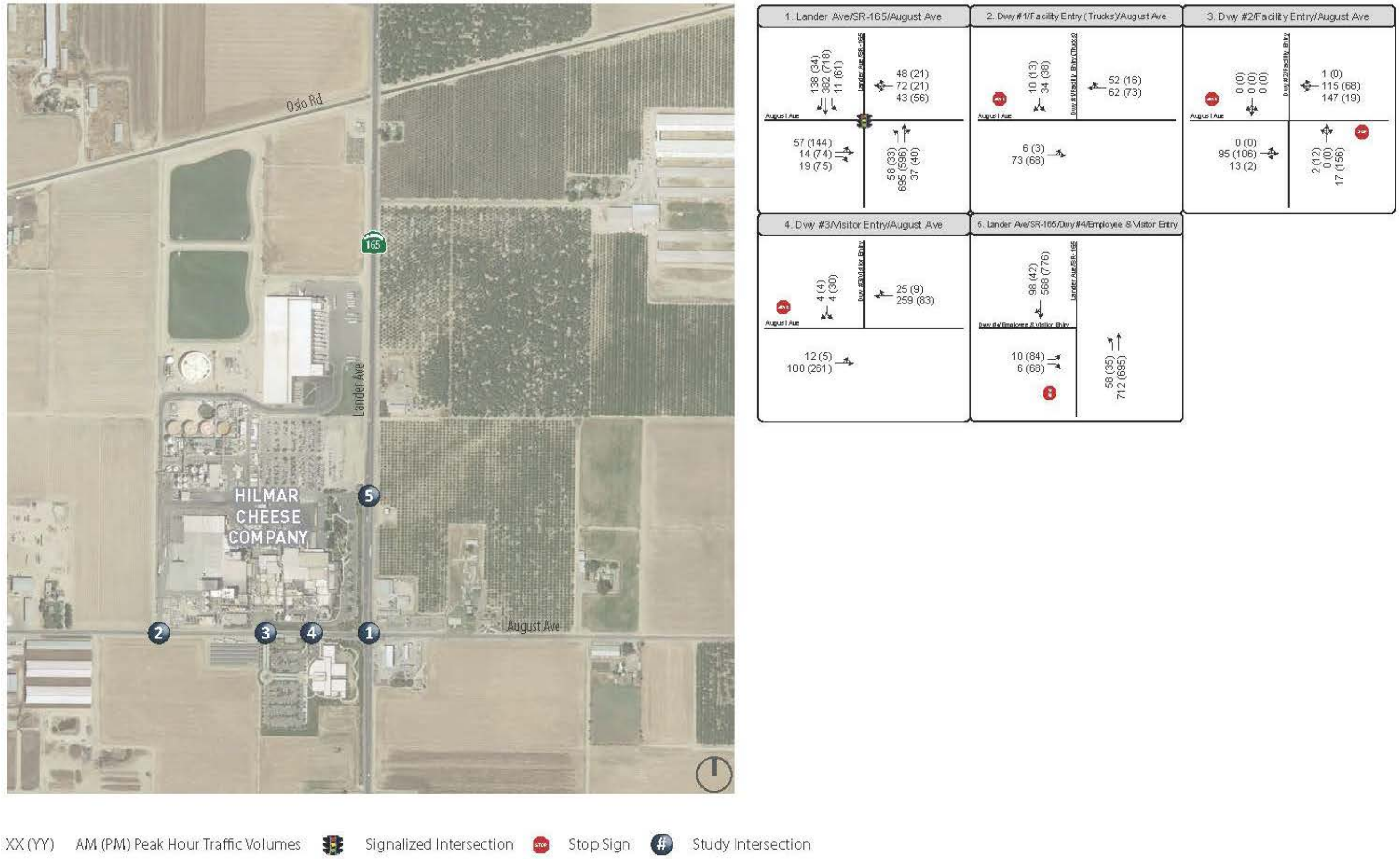

Source: Fehr & Peers, 2018

Figure 3.16-4
Cumulative with Project Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

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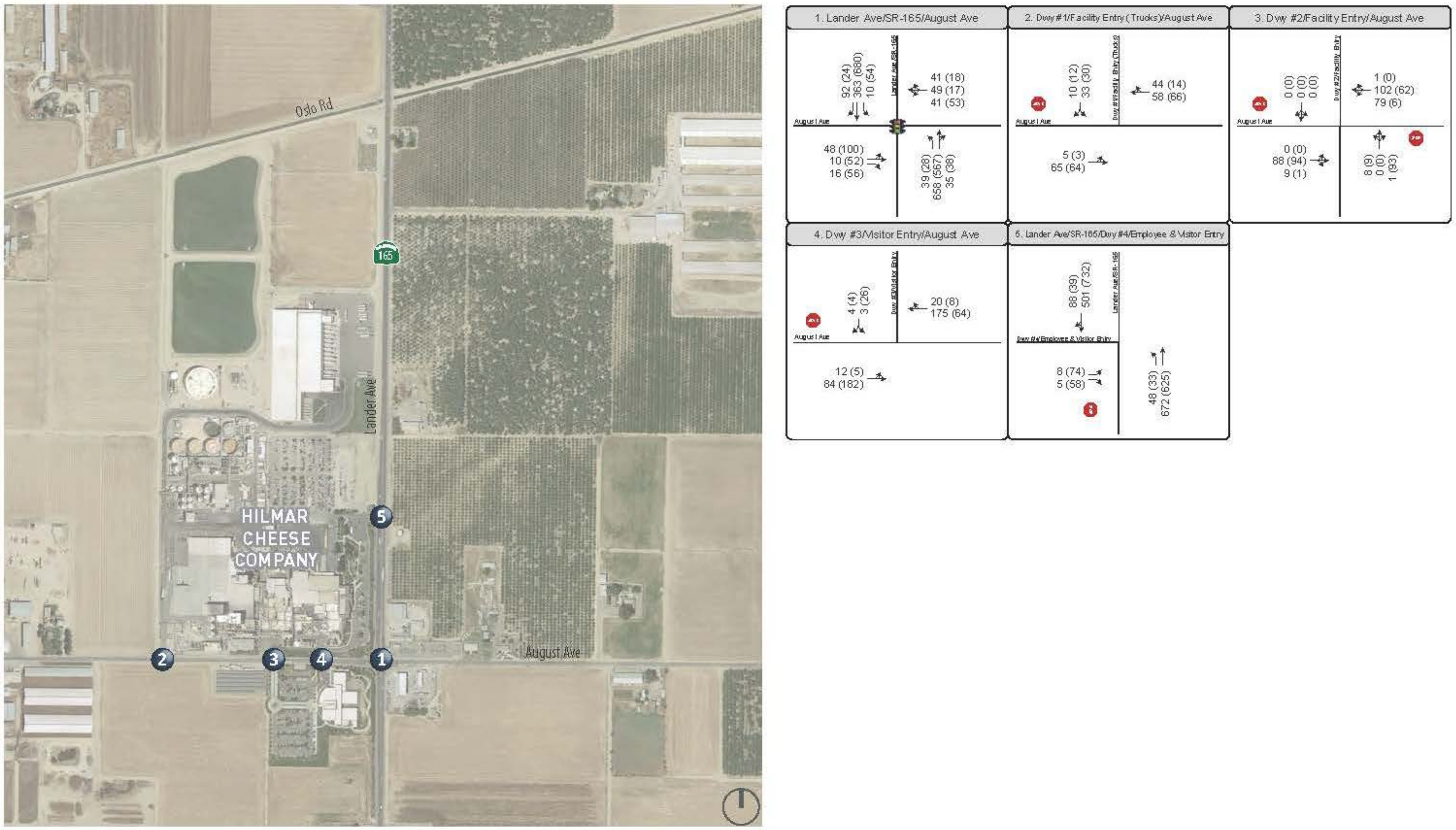

XX (YY) AM (PM) Peak Hour Traffic Volumes Signalized Intersection Stop Sign Study Intersection

Source: Fehr & Peers, 2018

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Figure 3.16-5
Existing with Project Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

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Discussion

Would the project:

a. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

and

b. Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Construction

Less-than-Significant Impact with Mitigation Incorporated.

Construction Vehicles

Given the topography of the site and proposed project activities, significant import or export of fill material would not be required. Therefore, the number of construction vehicles accessing the site would be minimal during the grading phase. Additionally, project construction would likely stage any large vehicles (i.e., earth-moving equipment, cranes, etc) on the project site prior to beginning site work and would remove these vehicles upon completion of construction. As such, a daily influx of construction equipment would be minimal. For these reasons, the proposed project would not have a significant impact due to heavy vehicles involved in construction of the site.

Construction Worker Traffic

While there would not be a large number of heavy construction vehicles accessing the site on a daily basis, there would be a number of workers involved in construction activities. Based on the initial construction phasing plan, an average of 30-construction workers are expected to be onsite during the building construction phase, with lower levels of workers needed during site preparation and wrap-up.

To assess the impact of these workers, vehicle trips per employee were estimated based on an average of 30 construction workers. This estimate was developed by applying a vehicle occupancy rate of 1.25 persons per vehicle. After applying this factor, it is anticipated that 30 construction workers would generate no more than 60 peak hour vehicle trips, and on a typical day, workers would generate no more than 24 peak hour trips (assuming all workers arrive or depart during the same peak hour). Given that 24 vehicle trips is less than the projected AM or PM peak hour trip generation for the project, traffic from construction workers is not anticipated to generate additional impacts beyond those under existing conditions. This is a conservative analysis and assumes that all the on-site workers enter and depart the site during peak traffic periods (i.e., 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.). Because workers are likely to arrive and depart at different times depending on their schedules, the actual construction-related traffic would be less than the project-related traffic. Implementation of Mitigation Measure TR-1 would minimize the effects of construction-related activity and would reduce any construction-related impacts to a less-than-significant level.

Mitigation Measure TR-1: Construction Management Plan

Prior to the issuance of a Building Permit, the project applicant will prepare a construction management plan including the following items:

- A set of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak hours; lane closure proceedings; signs, cones, and other warning devices for drivers; and designation of construction access routes;
- Permitted construction hours;
- Location of construction staging;
- Provision of onsite parking for all construction employees, site visitors, and inspectors; and
- Provisions for street sweeping to remove construction related debris on public streets.

Operation-Existing Plus Project Conditions

The existing peak hour traffic volumes (Figure 3.16-4) were added to the proposed project traffic volumes (Figure 3.16-1) to estimate the Existing Plus Project peak hour traffic volumes, as shown on Figure 3.16-5. No roadway improvements were assumed over existing conditions, except for the planned driveway consolidations and relocations.

Intersection Level of Service

Less-than-Significant Impact. The Existing with Project conditions analysis results are presented in Table 3-27. The addition of project traffic would result in increased delay at the Lander Avenue (SR 165)/August Avenue intersection during the morning and evening peak hours, although the intersection would continue to operate at acceptable service levels. The project driveways would also continue to operate at an overall LOS A with the addition of project traffic, although some vehicles waiting to turn from the site onto the major roadways may experience increased delay.

Table 3-27. Existing and Existing with Project Peak Hour Intersection Level of Service

Intersection	Control[1]	Peak Hour	Existing		Existing with Project	
			Delay[2]	LOS	Delay[2]	LOS
1. Lander Avenue (SR 165)/August Avenue	Signal	AM	11	B	12	B
		PM	12	B	12	B
2. Driveway 1/August Avenue	SSSC	AM	2 (11)	A (B)	2(11)	A(B)
		PM	2 (11)	A (B)	2(11)	A(B)
3. Driveway 2/August Avenue/Project Driveway	SSSC	AM	3 (12)	A (A)	2 (12)	A (B)
		PM	4 (9)	A (A)	4 (9)	A (B)
4. Driveway 4/August Avenue	SSSC	AM	1 (10)	A (A)	1 (11)	A (B)

Intersection	Control[1]	Peak Hour	Existing		Existing with Project	
			Delay[2]	LOS	Delay[2]	LOS
		PM	1 (11)	A (B)	1(11)	A (B)
5. Driveway 5/Lander Avenue	SSSC	AM	0 (19)	A (C)	1 (20)	A (C)
		PM	2 (23)	A (C)	2 (26)	A (D)

Notes:
1. Signal = signalized intersection, SSSC = side street stop-controlled intersection
2. Delay presented as seconds per vehicle; for side-street stop-controlled intersections, delay presented as Intersection average (worst approach).
Source: Fehr & Peers 2018
LOS = Level of Service; SR = State Route

Roadway Level of Service

Less-than-Significant Impact. Existing with Project daily roadway segment operations were evaluated, as summarized in Table 3-28. Lander Avenue south of August Avenue currently operates at a deficient LOS E. The project would add traffic to this roadway segment but it would continue to operate at LOS E. The project would increase traffic volumes on this roadway segment by 1%, which is less than the 5% increase which triggers a project specific significant impact. Therefore, the project impact is less than significant.

Table 3-28. Existing with Project Roadway Segment Levels of Service

Roadway	Location	Travel Lanes	Existing		Existing with Project		
			ADT	LOS[2]	ADT	LOS	Percent Increase
August Avenue	Along Project Site	2	2,170	C	2,966	C	9%
Lander Avenue	North of August Avenue	3	18,140	D	18,452	D	2%
Lander Avenue	South of August Avenue	2	**17,880**	**E**	**18,004**	**E**	1%

Notes: **Bold** indicates deficient operations.
Source: Fehr & Peers 2018
ADT = Average Daily Traffic; LOS = Level of Service

Operation-Cumulative Conditions

Intersection Level of Service

Less-than-Significant Impact. The Cumulative Without and With Project analysis results are presented in Table 3-29. In the Cumulative Without Project condition, the study intersection and driveways surrounding the project site are projected to operate at an average LOS B or better during both peak hours. The addition of project traffic would slightly increase delay at the Lander Avenue (SR 165)/ August Avenue during both peak hours, although the intersection would continue to operate at LOS B. The driveways would continue to operate at overall acceptable service levels.

Table 3-29. Cumulative Without and With Project Peak Hour Intersection Level of Service

Intersection	Control[1]	Peak Hour	Without Project		With Project	
			Delay[2]	LOS	Delay[2]	LOS
1. Lander Avenue (SR 165)/August Avenue	Signal	AM	12	B	14	B
		PM	15	B	16	B
2. Driveway 1/August Avenue	SSSC	AM	2 (11)	A (B)	2 (11)	A (B)
		PM	2 (11)	A (B)	3 (11)	A (B)
3. Driveway 2/August Avenue	SSSC	AM	4 (10)	A(A)	3 (10)	A (A)
		PM	5 (10)	A(A)	5 (11)	A (B)
4. Driveway 3/August Avenue	SSSC	AM	0 (11)	A (B)	1 (11)	A (B)
		PM	1 (11)	A (B)	1 (11)	A (B)
5. Driveway 4/Lander Avenue	SSSC	AM	0 (21)	A (C)	1 (23)	A (C)
		PM	2 (27)	A (D)	3 (31)	A (D)

Notes:
[1] Signal = signalized intersection, SSSC = side street stop controlled intersection
[2] Delay presented as seconds per vehicle; for side-street stop-controlled intersections, delay presented as Intersection average (worst approach).
Source: Fehr & Peers 2018
LOS = Level of Service; SR = State Route

Roadway Level of Service

Less-than-Significant Impact. Roadway segment forecasts were developed based on the method described previously and accounts for regional growth and the approved development on the project site. Proposed project traffic was added to the Without Project forecast. Daily levels of service are presented in Table 3-30. August Avenue is projected to operate at LOS C without and with the project. The three-lane segment of Lander Avenue is projected to operate at LOS D without and with the project. Lander Avenue, south of August Avenue, is projected to degrade to LOS E in the Cumulative without Project scenario. The project would increase traffic on this roadway segment. Lander Avenue (SR 165), south of August Avenue is projected to continue operating at LOS E in the cumulative condition. The project would increase traffic volumes on this roadway segment by 1%, which is less than the 5% increase which triggers a project specific significant impact. Therefore, the project impact is less than significant. Although the project specific impact is less than significant, the project applicant will be required to pay all applicable local and regional traffic impact fees that will fund the construction of future roadway improvements in Merced County prior to the issuance of Building Permits.

Table 3-30. Cumulative Roadway Segment Level of Service

			Without Project		With Project		
Roadway	Location	Travel Lanes	ADT	LOS	ADT	LOS	Percent Increase
August Avenue	Along Project Site	2	3,410	B	3,666	B	8%
Lander Avenue	North of August Avenue	3	19,450	D	19,762	D	2%
Lander Avenue	South of August Avenue	2	**18,940**	**E**	**19,064**	**E**	1%

Notes: **Bold** indicates deficient operations
Source: Fehr & Peers 2018
ADT = Average Daily Traffic; LOS = Level of Service

c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

No Impact. The project site is not located within an airport land use plan or within the vicinity of a public use airport. Turlock Municipal Airport, the closest public airport to the project site, is located approximately 10 miles to the northeast at a distance where the proposed project would not impact air traffic patterns. Turlock Airpark is located approximately 3 miles north of the project site where the proposed project similarly would not impact air traffic patterns. No impact would occur.

d. Substantially increase hazards because of a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

No Impact. The proposed project does not include construction or expansion of new roads and would not introduce incompatible uses. No impact would occur.

e. Result in inadequate emergency access?

Less-than-Significant Impact. Factors such as number of access points, roadway width, and proximity to fire stations determine whether a project provides sufficient emergency access. The closest fire station to the project site is located approximately 1.1 miles to the south at Falke Street in Hilmar-Irwin. The portion of the project site north of August Avenue has multiple points of entry from two roadways. If one entrance is blocked or obstructed, there are other entry points; therefore, the impact is less than significant.

f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

Less-than-Significant Impact with Mitigation Incorporated. As described above, there are no public transit, bicycle, or pedestrian facilities in the immediate vicinity of the project site. However, bicycles are currently used within the northern portion of the project site for employee circulation and Class II bicycle lanes are planned on Lander Avenue. The applicant would be required to provide one bicycle space for every 25 required parking spots per Merced County Code (Chapter 18.40.020); therefore, the project would not conflict with any policy or plan for bicycle facilities.

Pedestrian access is provided through a system of existing and proposed pathways and crossings, as shown on the site plan. Pathways on the north campus connect to the south campus via a mid-block crossing on August Avenue. On the southern portion of the site, a pathway from the mid-block crossing connects to the main entrance of the Phase 1 Administrative Building.

Fehr & Peers completed a pedestrian crossing assessment for the August Avenue pedestrian crossing to determine if the existing crossing treatment is appropriate for the actual level of activity that is occurring as well as projected levels of activity under project and future conditions. The crosswalk treatment identification tool combines academic research on crosswalk treatment effectiveness with national best practices. Key inputs for the tool include: speed limit, pedestrian volume, roadway volumes, crossing distance, number of lanes, presence of bicyclists, presence of transit, presence of a median, presence of on-street parking, and expected motorist compliance (yielding).

Pedestrian count data was collected at the crosswalk on August Avenue during the morning, late-morning to early afternoon (11:00 to 1:00 p.m.), and evening peak periods. Additionally, 72 hours of count data was collected in the vicinity of the crossing to document the level of vehicular activity during the times of peak pedestrian activity.

The analysis of existing conditions indicates that the existing crossing treatments are appropriate given the vehicle volumes, pedestrian volumes, and other roadway characteristics. Addition of project traffic in the existing condition does not trigger the need for additional crossing treatments, which currently include a high visibility crosswalk and pedestrian actuated warning lights.

In the cumulative conditions, pedestrian activity is expected to increase with development of the Phase 2 office building, and traffic volumes on August Avenue are expected to further increase considering the vehicle traffic generated by approved but not yet constructed uses on the site, as well as from the proposed project. With the potential increases in pedestrian activity and vehicular activity, additional crossing treatments may be required upon completion of the Phase 2 office. Additional treatments that could be considered include advance yield lines, overhead flashing beacons or a pedestrian signal, or other treatment.

Mitigation Measure TR-2 would require the monitoring of operations of the midblock crossing on August Avenue and the installation of crossing treatments if necessary.

Mitigation Measure TR-2: Monitor Midblock Crossing on August Avenue

The County of Merced shall require the applicant to monitor operations of the midblock crossing on August Avenue after completion of the currently proposed project and the Phase 2 office, and install additional crossing treatments, if necessary, based on field conditions.

Implementation of Mitigation Measure TR-2 would reduce impacts to a less-than-significant level.

XVII. Tribal Cultural Resources	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Cause a substantial adverse change in the significance of a tribal cultural resource, as defined in Public Resources Code §21074 as either a site, feature, place, or cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
• 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 §5020.1(k), or	☐	☒	☐	☐
• 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 §5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code §5024.1, the Lead Agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☐	☒

Setting

Tribal cultural resources are sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either included or determined to be eligible for inclusion in the California Register of Historical Resources or included in a local register of historical resources. ICF has prepared a detailed cultural resources inventory report (Appendix E) (ICF 2018).

Efforts to identify tribal cultural resources included formal notification by the County on September 28, 2018 to tribes that have previously requested to be notified of proposed projects in the geographic area that they are traditionally and culturally affiliated per PRC Section 21080.3.1. The County sent letters summarizing the project along with accompanying figures showing the regional and project location to the Amah Mutsun Tribal Band, Southern Sierra Miwuk Nation, Dumna Wo-Wah Tribal Government, and Northern Valley Yokuts Tribe. As of the date of this writing no tribes have responded or requested consultation.

Discussion

Would the project cause a substantial adverse change in the significance of a Tribal Cultural Resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the

landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

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

Less-than-Significant Impact with Mitigation Incorporated. No traditional cultural properties or tribal cultural resources were identified within the project area as a result of procedures conducted under the guidelines of AB 52 and per Public Resources Code Section 21080.3.1. None of the Tribes contacted (Amah Mutsun Tribal Band, Southern Sierra Miwuk Nation, Dumna Wo-Wah Tribal Government, and Northern Valley Yokuts Tribe) responded to the County to request consultation or provide evidence of resources present in the project area. Accordingly, no substantial adverse change to known tribal cultural resources is anticipated.

The proposed project would not cause a substantial adverse change in the significance of a tribal cultural resource as defined in Section 5020.1(k) because the tribes have not indicated that any tribal cultural resources exist in the project area and no know tribal cultural resources are known to exist in the project area.

Additionally, if a tribal cultural resource is unexpectedly identified during project activities, Mitigation Measure TCR-1 would be implemented. Culturally appropriate mitigation for a tribal cultural resource is different than mitigation for archeological resources, and appropriate mitigation measures should be identified through consultation with a Tribal government. In the event that a tribal cultural resource is unexpectedly identified during the course of the project, and the CEQA lead agency determines that the project may cause a substantial adverse change to it, the CEQA lead agency will rely on mitigation measures described in the Public Resources Code that, if the CEQA lead agency determines to be feasible, may avoid or minimize the significant adverse impacts. [Pub. Resources Code, § 21084.3 (b).] Therefore, Mitigation Measure TCR-1 is provided to reduce impacts to a tribal cultural resource to less-than-significant levels.

Mitigation Measure TCR-1: Standard Mitigation for Tribal Cultural Resources when no Tribal Cultural Resources have been Identified

In the event that a tribal cultural resource is unexpectedly identified during the course of the proposed project, and the CEQA lead agency determines that the project may cause a substantial adverse change to a tribal cultural esource, the CEQA lead agency will employ one or more of the following standard mitigation measures identified in PRC Section 21084.3(b):

1. Avoidance and preservation of the resources in place, including, but not limited to, planning and construction to avoid the resources and protect the cultural and natural context, or planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
2. 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:
   A. Protecting the cultural character and integrity of the resource;
   B. Protecting the traditional use of the resource;
   C. Protecting the confidentiality of the resource.

3. 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.
4. Protecting the resource.

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

No Impact. Merced County, as lead agency, has determined that there would not be any substantial adverse change to a tribal cultural resource as defined in PRC Section 5024.1 because no tribal cultural resources as defined have been identified in the project area. There would be no impact.

XVIII. Utilities and Service Systems	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c. Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or would new or expanded entitlements be needed?	☐	☐	☐	☒
e. Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g. Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

Setting

Water used by HCC is currently provided by groundwater from onsite irrigation wells. The existing HCC facility operates a 3.4 acre retention pond and onsite water reclamation facility, which process nearly all the water used at HCC for reclaimed use as irrigation water on nearby farmland or internally for non-food production applications. The administration buildings of the HCC facility connect to the HCWD wastewater system. HCWD provides wastewater services to approximately 1,500 connections (Merced County Local Agency Formation Commission 2007).

Modesto/Winton Disposal in Atwater provides solid waste collection, recycling, transportation, and disposal services to Hilmar and the project site. Hilmar is served by the Highway 59 Disposal Site in Merced. According to the California Department of Resources Recycling and Recovery (CalRecycle), the Highway 59 Disposal Site is permitted to accept up to 1,500 tons per day and has a total permitted capacity of over 30 million cy and an estimated remaining capacity of 93.4%.

Discussion

Would the project:

a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

No Impact. HCC operates a 3.4-acre retention pond and an onsite water reclamation facility on the project site, which includes a maintenance shop, wells, blower rooms, evaporator, and a water reclamation building with a boiler room. Nearly all of the process water used at HCC is reclaimed for use as irrigation water and is used on local farmland or internally for non-food production applications. The project would also utilize the existing HCC private septic system for wastewater generated from the existing restrooms in the office building.

The RWQCB Central Valley Region issued HCC a waste discharge requirement permit in January 2010 which allows the facility to discharge 1.9 million gallons per day (mgd) of process water, with the opportunity to increase discharges to 2.5 mgd, into the project's existing retention ponds. The project would be required to comply with the existing waste discharge requirement permit and would be able to accommodate additional wastewater generated by the proposed project. Therefore, there would be no impact.

b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

No Impact. Water used by HCC is currently provided by groundwater from onsite irrigation wells. The project includes continued use of existing irrigation wells. Prior to the major modification to the HCC facility in 2012, the agricultural uses on the property at the time used approximately 64,277 gallons of water per day. The previous modifications reduced the water per day consumption on the property by 58,277 gallons of water per day. Operation of the project would require approximately 50,049 gallons of water per day once all phases of the project are completed. This water consumption would still be less than what was drawn from the irrigation wells prior to the expansion made in 2012. As such, the existing wells would have the capacity to serve the project and there would be no impact.

Overall, the proposed facilities would generate approximately 770 gallons per day of sewage and approximately 49,223 cubic feet of stormwater, all of which would be treated with the existing onsite water reclamation facilities and existing septic system. Therefore, there would be no increase in wastewater generated by the project as everything would be treated on site.

c. Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

No Impact. As discussed in Section IX, *Hydrology and Water Quality*, the project would increase impervious surface area, thus creating additional stormwater runoff. However, the existing retention pond on the HCC site has the capacity to handle the additional flows during the storm season. There would be no impact.

d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or would new or expanded entitlements be needed?

No Impact. The project would increase the daily amount of water pumped from HCC's on site irrigation wells by 50,049 gallons of water per day. However, the water usage would be less than water used for agricultural uses prior to HCC facility expansion in 2012. As such, the existing wells are sufficient to serve the proposed project, and no new wells are proposed. No other water resources or entitlements would be used or significantly affected as a result of the proposed project. There would be no impact.

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

No Impact. As discussed above under the response to XVII.b, the proposed project is not projected to increase wastewater demand beyond the available capacity onsite to handle wastewater. In addition, wastewater would be treated onsite with the existing water reclamation facilities and septic system. As such, there would be no impact to the area's wastewater treatment provider.

f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Less-than-Significant Impact. The project involves the expansion of the HCC facility and would result in the addition of approximately 88 new employees. Daily solid waste generation is expected to increase by 22 cy due to the increase in employees on the project site and new operations.

The project's solid waste generation would be less than 1.5% of the total daily acceptance capacity at the Highway 59 Disposal Site. The current solid waste facility has sufficient capacity to serve the proposed project's solid waste disposal needs and impacts would be less than significant.

g. Comply with federal, state, and local statutes and regulations related to solid waste?

Less-than-Significant Impact. The State of California requires that all jurisdictions achieve compliance with AB 341, a state mandate that required jurisdictions to achieve 75% diversion of solid waste from landfills by 2020. AB 939 was designed to focus on source reduction, recycling and composting, and environmentally safe landfilling and transformation activities. As of 2017, CalRecycle has set the following targets for the Merced County Solid Waste Regional Agency:

1. Per Resident Disposal Rate: 10.7 pounds per person per day
2. Per Employee Disposal Rate Target: 38.8 pounds per person per day

In 2017, Merced County Solid Waste Regional Agency reported an annual per capita disposal rate of 5.4 pounds per person per day and a per employee rate of 18.7 per person per day (California Department of Resources Recycling and Recovery 2017). The Merced County Solid Waste Regional Agency has 43 waste diversion programs including composting, recycling, source reduction, transformation, facility recovery, policy incentives, and public education to help the community reach the target goals set by CalRecycle (California Department of Resources Recycling and Recovery 2016). It is not expected that the project would result in any physical impacts due to non-compliance with federal, state, and local statutes and regulations related to solid waste. Impacts would be less than significant.

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

Discussion

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

Less-than-Significant Impact with Mitigation Incorporated. As discussed throughout this document, the proposed project would not substantially degrade the quality of the environment. As described above under Section IV, the proposed project includes mitigation measures to reduce potential impacts to special-status animal species. Implementation of Mitigation Measures BIO-1, BIO-2 would reduce potential impacts to special-status animal species (i.e., migratory birds and raptors) to a less-than-significant level.

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

Less-than-Significant Impact with Mitigation Incorporated. The analysis of cumulative impacts was completed based on the 2030 Merced County General Plan (Merced County 2013a) and the Hilmar Community Plan (Merced County 2008). The Merced County General Plan outlines the County's goals concerning land use. The cumulative impacts discussed below are evaluated in conjunction with growth based on the adopted General Plan, which projects a population growth rate of 2.2% between 2005 and 2030, resulting in a 2030 projected population of 417,000 (Merced County 2013b:2-12). According to the Hilmar Community Plan, over the past two decades, Hilmar has roughly doubled in size and population every 10 years (Merced County 2008). The Hilmar Community Plan included five population projections for the year 2025 which ranged from 5,445 people to 20,631 people. To avoid excessive expansion into productive farmland, the Plan provides development opportunities within the central core of Hilmar and steers development toward physical barriers and away from dairies and larger parcels with productive agricultural uses.

The proposed project would result in direct impacts on biological resources, hazards and hazardous materials, transportation and traffic, and tribal cultural resources; however, all of the direct impacts would be mitigated to a level below significance with incorporation of the mitigation measures described throughout this document. While the proposed project would result in less-than-significant impacts with mitigation, cumulative impacts could occur if the project would make a cumulatively considerable contribution to impacts on a resource.

Biological resources can result in a cumulative impact if past, present, and reasonably foreseeable future project have the potential to impact biological resources. As provided in Section IV, the proposed project will implement mitigation measures that would require preconstruction surveys for nesting raptors. Although prior development has resulted in significant cumulative impacts on multiple species throughout the Central Valley through the elimination of habitat, with the implementation of Mitigation Measures BIO-1 and BIO-2 the proposed project is not expected to make a considerable contribution to significant cumulative impacts related to biological resources.

Cumulative impacts related to hazards and hazardous materials could occur where future development would place structures and people in proximity to significant sources of safety hazards or hazardous materials. Hazardous materials treatment, transport, and storage are governed by County, state, and federal regulations. There is also a potential for exposure to small amounts of hazards/hazardous materials during construction activity. However, treatment of hazards/hazardous accidental spills and releases are highly regulated and tend to be localized to small areas, and procedures and protocols exist to minimize exposure of people to hazardous materials and the cumulative impact is anticipated to be less than significant. Furthermore, with respect to the proposed project, Mitigation Measure HM-1 would require soil sampling on the project site to test for potential contaminants associated with prior agricultural use. This mitigation measure would ensure that potentially hazardous materials are identified and properly remediated if found.

The traffic analysis considers project-level and cumulative-level impacts by analyzing the contribution of the proposed project to regional roadways and evaluates the proposed project's consistency with the regional congestion management plan. As determined in Section XVI, with implementation of Mitigation Measure TR-1, potential project and cumulative impacts would be less than significant.

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

Less-than-Significant Impact with Mitigation Incorporated. The proposed project would have potentially significant environmental effects on air quality, geology and soils, hazards and hazardous materials, noise, and transportation and traffic that could cause substantial adverse effects on human beings, either directly or indirectly. However, implementation of Mitigation Measures HM-1 and TR-1 would reduce these impacts to a less-than-significant level. No other direct or indirect adverse effects on human beings have been identified.

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Chapter 4
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Personal Communications

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Appendix A
Project Construction and Operational Data and Construction Emissions

Project Construction and Operational Data and Construction Emissions

Construction Phases and Schedule

Project Element	Construction Starting Date (Day, Month, Year)	Construction Ending Date (Day, Month, Year)	Duration (months or days)	Building Sq. Ft.	Site Disturbed Area per day (acres/day)	Volume of Demolition Materials (cubic yards)
Cold Storage Warehouse Phase 1	03/01/19	11/30/19	8 Months	61,210 sf + 114,000 sf of asphalt	235,000 sq ft/ 250 working days= ~940 sq ft/ day average	Asphalt demo 20,000 sq ft x .3 ft thick =6000cubic ft = ~222 cubic yrds
Cold Storage Warehouse Phase 2	01/01/24	8/31/24	8 Months	81,294 sf + 90,068 sf of asphalt (see item #9 above)	171,362 sq ft/ 250 working days= ~685 sq ft/ day average	n/a
Repackaging Phase 1	Included in Cold Storage Phase 1 above	-	-	23,919 sf	-	n/a
Warehouse Phase 1	09/01/19	03-30-19	6 months	6,843 sf	6843 sq ft/ 125 workign days = ~55 sq ft/ day Average	~100 cubic yards to demo the (E) battery charging room
Warehouse Phase 2	06/01/24	12/31/24	6 months	6,787 sf	6743 sq ft/ 125 working days - ~54 sq ft/ day average	Asphalt Demo 5,500 sq ft x .3 ft thick =~61 cubic yards.

Previously Approved Renewable Energy Recovery System (1 tank only)

Phase	Start & End Dates	Number of Work Days
Demolition/ Site Clearing	April 1 2021	**5**
Site Excavation		**15**
Site Grading		**15**
Building Construction (tank)		**100**
Architectural Coating		**n/a**
Paving		**n/a**

Construction Details by Phase

Cold Storage Phase 1

Phase	Start & End Dates	Number of Work Days	Number of Workers per day	Equipment Type/Fuel	Number of Equipment	Horsepower	Hours/day/AVERAGE
Demolition/ Site Clearing	*3/1/19*	*5*	*3*	*-front loader/ diesel* *-10 yard dump truck/ Diesel*	*1* *1*	*Industry standards??*	*8* *8*

Site Excavation	3/8/19	8	3	-Tractor or loader or backhoe/ diesel -water truck/ diesel	1 1	? ?	8 4
Site Grading	3/18/19	10	6	-grader/ diesel -rubber tire blade/diesel -belly scraper/diesel -tractor or loader or backhoe/ diesel -water truck/ diesel	1 1 1 1 1	?	8 8 8 4 4 4
Building Construction	4/4/19	120	Average 30	- Reach lift/ Diesel - Skip loader/ diesel - Concrete pump/ diesel - Crane/ Diesel	1 1 1 1		2 1 .5 .5
Architectural Coating	8/1/19	30	5	-airless paint pump/ gas	1		4
Paving	9/1/19	7	4	-tractor/ diesel -paving machine/ diesel	1 1		8 8

Cold Storage Phase 2

Phase	Start & End Dates	Number of Work Days	Number of Workers per day	Equipment Type/Fuel	Number	Horsepower	Hours/day
SAME as above different start Date	*1/1/24*						

Repackaging Phase 1

This Will be built in conjunction/ at the same time as Cold Storage Phase #1, so the data supplied for Cold Storage Ph. #1 covers the equipment that will be used for Phase #1 Repackaging.

Phase	Start & End Dates	Number of Work Days	Number of Workers per day	Equipment Type/Fuel	Number	Horsepower	Hours/day
Demolition/ Site Clearing							
Site Excavation							
Site Grading							
Building Construction							
Architectural Coating							
Paving							

Warehouse Phase 1

Phase	Start & End Dates	Number of Work Days	Number of Workers per day	Equipment Type/Fuel	Number	Horsepower	AVERAGE Hours/day
Demo/ Site Clearing	*9-1-19*	*10*	*2*	*-front loader/ diesel* *-10 yard dump truck/ Diesel*	*1*	*Industry Standard*	*8* *8*
Site Excavation	9-15-19	10	3	-T3ractor or loader or backhoe/ diesel -water truck/ diesel	1 1		8 4
Site Grading	10-1-19	10	6	-grader/ diesel -rubber tire blade/diesel -belly scraper/diesel -tractor or loader or backhoe/ diesel -water truck/ diesel	1 1 1 1 1		8 8 4 4 4
Building Construction	10-15-19	90	Average15	- Reach lift/ Diesel - Skip loader/ diesel	1 1 1 1		2 1 .5 .5

				- Concrete pump/ diesel - Crane			
Architectural Coating	N/A			-N/A			
Paving	1/15/20	7	4	-tractor/ diesel -paving machine/ diesel	1 1		

Warehouse Phase 2

Phase	**Start & End Dates**	**Number of Work Days**	**Number of Workers per day**	**Equipment Type/Fuel**	**Number**	**Horsepower**	**Hours/day**
This will be the same data as Warehouse Ph. #1 with different start date.	*6-1-24*						

Previously Approved Renewable Energy Recovery System

Demolition/ Site Clearing	n/a				
Site Excavation	5 days	1 Tractor/ loader/ Backhoe–4 hr days 1 Excavator – 4 hr days 1 Water Truck – 2 hr days	4		
Site Grading	5 Days	1 Graders – 8 hr days 1 Belly Scraper – 8 hr days 1 tractor/ loader/ Backhoe – 4 hr days 1 Water Truck – 4 hr days	5	Balanced	

Building Construction(Tank)	70 Days	2 Reach lift – 2 hr days 1 Tractor/ loader/ Backhoe – 2 hr days	20		
Architectural Coating	n/a				

Operational Data

Project Element	Annual Electricity Usage (kWh/year)	Annual Natural Gas Usage (therms/year)	Annual Biogas Usage (BTU/year)	Annual Biogas Recovered by Renewable Energy Recovery System (BTU/year)	Annual Electricity Gained from Solar Facility (kWh/year)
Existing Facility	N/A	N/A	N/A	-	-
Cold Storage Warehouse Phase 1	4,490,000	-	-	-	-
Cold Storage Warehouse Phase 2	3,015,000	-	-	-	-
Repackaging Phase 1	2,100,000	-	-	-	-
Warehouse Phase 1	455,000	-	-	-	-
Warehouse Phase 2	395,000	-	-	-	-
Repackaging Phase 1	1,500,000				

Summary of Total Emissions

	Tons per year										Metric tons per year			
Year	ROG	NOX	CO	PM10 E	PM10 D	PM 10 T	PM2.5 E	PM2.5 D	PM2.5 T	SO2	CO2	CH4	N2O	CO2e
2019	0.1	0.6	0.5	0.0	0.2	0.2	0.0238	0.06	0.1	0.0	92	0.04	0.003	94
2020	0.0	0.0	0.0	0.0	0.0	0.0	0.0020	0.00	0.0	0.0	8	0.00	0.000	8
2021	0.0	0.2	0.2	0.0	0.0	0.1	0.0082	0.01	0.0	0.0	40	0.02	0.001	41
2022	0.0	0.0	0.0	0.0	0.0	0.0	0.0000	0.00	0.0	0.0	0	0.00	0.000	0
2023	0.0	0.0	0.0	0.0	0.0	0.0	0.0000	0.00	0.0	0.0	0	0.00	0.000	0
2024	0.1	0.4	0.4	0.0	0.2	0.2	0.0136	0.06	0.1	0.0	95	0.04	0.003	96
2025	0.0	0.0	0.0	0.0	0.0	0	0.0000	0.00	0.0	0.0	0	0.00	0.000	0
2026	0.0	0.0	0.0	0.0	0.0	0	0.0000	0.00	0.0	0.0	0	0.00	0.000	0
Total	0	1	1	0	0	0	0	0	0	0	235	0.1	0.01	240
1	2	3	4	5	7		6	8		9	10	11	12	13

Ammortized Construction GHG Emissions (MT CO2e/year)

8

Average Daily

	Pounds per Day									
Year	ROG	NOX	CO	PM10 E	PM10 D	PM 10 T	PM2.5 E	PM2.5 D	PM2.5 T	SO2
2019	1	7	6	0	2	2	0	1	1	0
2020	1	4	4	0	1	1	0	0	0	0
2021	1	3	3	0	1	1	0	0	0	0
2022										
2023										
2024	1	3	4	0	2	2	0	1	1	0
2025										
2026										

Summary of Total Fuel Consumption

Year	Gallons (diesel/gasoline)
2019	9,555
2020	864
2021	4,128
2022	0
2023	0
2024	9,816
2025	0
2026	0
Total	24,364

Phase	Code	Start Date	End Date	Working Days	Days/Week	2019	2020	2021	2022	2023	2024	2025	2026
Previously Approved Cold Storage Expansion													
Demolition/Site Clearing	1-1			0	5	0							
Site Excavation	1-2			0	5	0							
Site Grading	1-3			0	5	0							
Building Construction	1-4			0	5	0							
Paving	1-5			0	5	0							
Previously Approved Renewable Energy Recovery System (1 tank)													
Site Excavation	2-1	4/1/2021	4/21/2021	15	5			15					
Site Grading	2-2	4/22/2021	5/12/2021	15	5	0		15					
Building Construction (Tank)	2-3	5/13/2021	10/4/2021	100	5	0		100					
Paving	2-4			0	5	0							
Cold Storage Warehouse & Repackaging Phase 1													
Demolition/Site Clearing	3-1	3/1/2019	3/7/2019	5	5	5							
Site Excavation	3-2	3/8/2019	3/19/2019	8	5	8							
Site Grading	3-3	3/18/2019	3/29/2019	10	5	10							
Building Construction	3-4	4/4/2019	9/18/2019	120	5	120							
Architectural Coating	3-5	8/1/2019	9/11/2019	30	5	30							
Paving	3-6	9/1/2019	9/10/2019	7	5	7							
Warehouse Phase 1	x												
Demolition/Site Clearing	4-1	9/1/2019	9/13/2019	10	5	10							
Site Excavation	4-2	9/15/2019	9/27/2019	10	5	10							
Site Grading	4-3	10/1/2019	10/14/2019	10	5	10							
Building Construction	4-4	10/15/2019	2/17/2020	90	5	56	34						
Paving	4-5	1/15/2020	1/23/2020	7	5		7						
Cold Storage Warehouse & Repackaging Phase 2													
Demolition/Site Clearing	5-1	1/1/2024	1/8/2024	5	5						5		
Site Excavation	5-2	1/8/2024	1/18/2024	8	5						8		
Site Grading	5-3	1/18/2024	2/1/2024	10	5						10		
Building Construction	5-4	2/4/2024	7/19/2024	120	5						120		
Architectural Coating	5-5	6/2/2024	7/12/2024	30	5						30		
Paving	5-6	7/3/2024	7/12/2024	7	5						7		
Warehouse Phase 2													
Demolition/Site Clearing	6-1	6/1/2024	6/14/2024	10	5						10		
Site Excavation	6-2	6/15/2024	6/28/2024	10	5						10		
Site Grading	6-3	7/1/2024	7/15/2024	10	5						10		
Building Construction	6-4	7/15/2024	11/18/2024	90	5						90		
Paving	6-5	10/15/2024	10/24/2024	7	5						7		
						163	24	133	0	0	231		

Operational CalEEMod Output Files and Calculations

Hilmar Cheese IS/MND - Operational Phase I
Merced County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Refrigerated Warehouse-No Rail	101.35	1000sqft	2.33	101,354.00	0
Other Asphalt Surfaces	114.00	1000sqft	2.62	114,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	49
Climate Zone	3			**Operational Year**	2020
Utility Company	Turlock Irrigation District				
CO2 Intensity (lb/MWhr)	461	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Climate zone based on zip code 95324. Emission factor based on 2017 TID power content label - calculated assuming 28%

Land Use - Phase 1 Cold Stor., Re-Pack, Warehouse, dock: 61,210, 23,919, 6,843, 9,382 SF. Asphalt surface: 114,000 SF.

Off-road Equipment - construction evaluated externally

Off-road Equipment - construction evaluated externally

Off-road Equipment - construction evaluated externally

Off-road Equipment - construction evaluated externally

Off-road Equipment - construction evaluated externally

Off-road Equipment - construction evaluated externally

Trips and VMT - construction evaluated externally

Architectural Coating - construction evaluated externally

Vehicle Trips - 66 employee trips per day for Phase I, 5 days/week (19 mi roundtrip). 1 truck trip daily (C-NW), trip length of 21 miles (42 miles roundtrip).

Energy Use - Cold Storage: 4,490,000 kWh/year; Repackaging: 2,100,000 kWh/year; Warehouse: 455,000 kWh/year = 7,045,000 kWh total. Assuming all

Water And Wastewater - Phase I water consumption: 28,509 gallons per day.

Solid Waste - #40 Input waste: 9,521 lbs/day corrugated, 955 lbs/day plastic. #640 Input waste: 238 lbs/day. Total = 10,714 lbs/day, 5 days per week (260

Land Use Change - Applicant has indicated that area of approximately 11 acres will be removed to construct new facilities. Displaced water use included

Sequestration -

Waste Mitigation -

Operational Off-Road Equipment -

Fleet Mix - Used EMFAC breakdown of 75/6/20% and weighted based on 66 out of 67 trips being employees.

Stationary Sources - Process Boilers -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	150.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Interior	150.00	0.00
tblArchitecturalCoating	EF_Parking	150.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	150.00	0.00
tblArchitecturalCoating	EF_Residential_Interior	150.00	0.00
tblEnergyUse	LightingElect	2.45	0.00

tblEnergyUse	NT24E	21.99	0.00
tblEnergyUse	T24E	0.47	69.51
tblEnergyUse	T24NG	0.15	0.00
tblFleetMix	HHD	0.15	0.01
tblFleetMix	LDA	0.48	0.74
tblFleetMix	LDT1	0.03	0.06
tblFleetMix	LDT2	0.15	0.19
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.1190e-003	0.00
tblFleetMix	MCY	6.4860e-003	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MH	7.1400e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	2.3770e-003	0.00
tblFleetMix	SBUS	1.6160e-003	0.00
tblFleetMix	UBUS	2.3470e-003	0.00
tblGrading	AcresOfGrading	0.00	4.00
tblLandUse	LandUseSquareFeet	101,350.00	101,354.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	790	461
tblSolidWaste	SolidWasteGenerationRate	95.27	1,392.80
tblTripsAndVMT	VendorTripNumber	35.00	0.00
tblTripsAndVMT	WorkerTripNumber	90.00	0.00
tblTripsAndVMT	WorkerTripNumber	18.00	0.00
tblVehicleTrips	CNW_TL	7.30	42.00
tblVehicleTrips	CNW_TTP	41.00	1.00
tblVehicleTrips	CW_TL	9.50	19.00
tblVehicleTrips	CW_TTP	59.00	99.00
tblVehicleTrips	ST_TR	1.68	0.00
tblVehicleTrips	SU_TR	1.68	0.00
tblVehicleTrips	WD_TR	1.68	0.66
tblWater	IndoorWaterUseRate	23,437,187.50	10,405,785.00

2.0 Emissions Summary

2.1 Overall Construction

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4762	2.0000e-005	1.9900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.8500e-003	3.8500e-003	1.0000e-005	0.0000	4.1100e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1,473.1767	1,473.1767	0.0927	0.0192	1,481.2073
Mobile	0.0164	0.0544	0.3328	1.1300e-003	0.1152	8.0000e-004	0.1160	0.0306	7.4000e-004	0.0314	0.0000	102.1918	102.1918	2.8000e-003	0.0000	102.2619
Waste						0.0000	0.0000		0.0000	0.0000	282.7258	0.0000	282.7258	16.7086	0.0000	700.4412
Water						0.0000	0.0000		0.0000	0.0000	3.3013	11.7739	15.0751	0.3398	8.1600e-003	26.0020
Total	**0.4927**	**0.0544**	**0.3348**	**1.1300e-003**	**0.1152**	**8.1000e-004**	**0.1160**	**0.0306**	**7.5000e-004**	**0.0314**	**286.0271**	**1,587.1462**	**1,873.1733**	**17.1439**	**0.0273**	**2,309.9165**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4762	2.0000e-005	1.9900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.8500e-003	3.8500e-003	1.0000e-005	0.0000	4.1100e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1,473.1767	1,473.1767	0.0927	0.0192	1,481.2073
Mobile	0.0164	0.0544	0.3328	1.1300e-003	0.1152	8.0000e-004	0.1160	0.0306	7.4000e-004	0.0314	0.0000	102.1918	102.1918	2.8000e-003	0.0000	102.2619
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	3.3013	11.7739	15.0751	0.3398	8.1600e-003	26.0020
Total	**0.4927**	**0.0544**	**0.3348**	**1.1300e-003**	**0.1152**	**8.1000e-004**	**0.1160**	**0.0306**	**7.5000e-004**	**0.0314**	**3.3013**	**1,587.1462**	**1,590.4475**	**0.4353**	**0.0273**	**1,609.4753**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**98.85**	**0.00**	**15.09**	**97.46**	**0.00**	**30.32**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
Vegetation Land Change	-68.2000
Total	**-68.2000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0164	0.0544	0.3328	1.1300e-003	0.1152	8.0000e-004	0.1160	0.0306	7.4000e-004	0.0314	0.0000	102.1918	102.1918	2.8000e-003	0.0000	102.2619
Unmitigated	0.0164	0.0544	0.3328	1.1300e-003	0.1152	8.0000e-004	0.1160	0.0306	7.4000e-004	0.0314	0.0000	102.1918	102.1918	2.8000e-003	0.0000	102.2619

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Refrigerated Warehouse-No Rail	66.89	0.00	0.00	311,919	311,919
Total	66.89	0.00	0.00	311,919	311,919

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Refrigerated Warehouse-No Rail	19.00	7.30	42.00	99.00	0.00	1.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.484945	0.031816	0.154973	0.120992	0.021332	0.005119	0.015709	0.151573	0.002377	0.002347	0.006486	0.001616	0.000714
Refrigerated Warehouse-No Rail	0.740000	0.060000	0.190000	0.000000	0.000000	0.000000	0.000000	0.010000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,473.1767	1,473.1767	0.0927	0.0192	1,481.2073
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,473.1767	1,473.1767	0.0927	0.0192	1,481.2073
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	7.05E+06	1,473.1767	0.0927	0.0192	1,481.2073
Total		**1,473.1767**	**0.0927**	**0.0192**	**1,481.2073**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	7.05E+06	1,473.1767	0.0927	0.0192	1,481.2073
Total		**1,473.1767**	**0.0927**	**0.0192**	**1,481.2073**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons/yr								MT/yr			
Mitigated	0.4762	2.0000e-005	1.9900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.8500e-003	3.8500e-003	1.0000e-005	0.0000	4.1100e-003
Unmitigated	0.4762	2.0000e-005	1.9900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.8500e-003	3.8500e-003	1.0000e-005	0.0000	4.1100e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory					tons/yr								MT/yr			
Architectural Coating	0.0728					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4032					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.9000e-004	2.0000e-005	1.9900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.8500e-003	3.8500e-003	1.0000e-005	0.0000	4.1100e-003
Total	**0.4762**	**2.0000e-005**	**1.9900e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.8500e-003**	**3.8500e-003**	**1.0000e-005**	**0.0000**	**4.1100e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory					tons/yr								MT/yr			
Architectural Coating	0.0728					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4032					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.9000e-004	2.0000e-005	1.9900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.8500e-003	3.8500e-003	1.0000e-005	0.0000	4.1100e-003
Total	**0.4762**	**2.0000e-005**	**1.9900e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.8500e-003**	**3.8500e-003**	**1.0000e-005**	**0.0000**	**4.1100e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category		MT/yr		

Mitigated	15.0751	0.3398	8.1600e-003	26.0020
Unmitigated	15.0751	0.3398	8.1600e-003	26.0020

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	10.4058 / 0	15.0751	0.3398	8.1600e-003	26.0020
Total		**15.0751**	**0.3398**	**8.1600e-003**	**26.0020**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	10.4058 / 0	15.0751	0.3398	8.1600e-003	26.0020
Total		**15.0751**	**0.3398**	**8.1600e-003**	**26.0020**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	282.7258	16.7086	0.0000	700.4412

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e

Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	1392.8	282.7258	16.7086	0.0000	700.4412
Total		**282.7258**	**16.7086**	**0.0000**	**700.4412**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	-68.2000	0.0000	0.0000	-68.2000

11.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e

	Acres	MT			
Cropland	11 / 0	-68.2000	0.0000	0.0000	-68.2000
Total		**-68.2000**	**0.0000**	**0.0000**	**-68.2000**

Hilmar Cheese IS/MND - Operational Phase II

Merced County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Refrigerated Warehouse-No Rail	101.11	1000sqft	2.32	101,113.00	0
Other Asphalt Surfaces	90.07	1000sqft	2.07	90,068.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	49
Climate Zone	3			**Operational Year**	2024
Utility Company	Turlock Irrigation District				
CO2 Intensity (lb/MWhr)	461	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Climate zone based on zip code 95324. Emission factor based on 2017 TID power content label - calculated assuming 28% eligible renewables, 42% non-renewable, 30% hydroelectric (also based on 2008 power content label for TID).

Land Use - Phase 2 Cold Stor., Re-Pack, Warehouse, dock: 81,294, 5,070, 6,787, 7,962 SF. Asphalt surface: 90,068 SF.

Construction Phase - Construction evaluated externally

Off-road Equipment - construction evaluated externally

Off-road Equipment - construction evaluated externally

Off-road Equipment - construction evaluated externally

Off-road Equipment - construction evaluated externally

Off-road Equipment - construction evaluated externally

Off-road Equipment - construction evaluated externally

Trips and VMT - construction evaluated externally

Architectural Coating - construction evaluated externally

Vehicle Trips - 22 employee trips per day for Phase II, 5 days/week. 1 truck trip per day. 19 miles roundtrip.

Energy Use - Cold Storage: 3,015,000 kWh/year; Repackaging: 1,500,000 kWh/year; Warehouse: 395,000 kWh/year = 4,910,000 kWh total. Assuming all else, is in building envelope.

Water And Wastewater - Phase II water consumption: 21,540 gallons per day. Displaced crop water = 16,7 million gallons/year.

Solid Waste - #40 Input waste: 9,521 lbs/day corrugated, 955 lbs/day plastic. #640 Input waste: 238 lbs/day. Total = 10,714 lbs/day, 5 days per week (260 days/year).

Land Use Change -

Sequestration -

Waste Mitigation -

Operational Off-Road Equipment -

Fleet Mix - 22 daily trips will be employee vehicles. 1 daily trip will be truck delivery. Used EMFAC breakdown of 75/6/20% for LDA/LDT1/LDT2 vehicles.

Stationary Sources - Process Boilers -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_EF_Parking	150	0
tblAreaCoating	Area_Parking	5404	0
tblEnergyUse	LightingElect	2.45	0.00
tblEnergyUse	NT24E	21.99	0.00
tblEnergyUse	T24E	0.47	48.60
tblEnergyUse	T24NG	0.15	0.00

tblFleetMix	HHD	0.16	0.00
tblFleetMix	LDA	0.51	0.75
tblFleetMix	LDT1	0.03	0.06
tblFleetMix	LDT2	0.16	0.20
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	4.1640e-003	0.00
tblFleetMix	MCY	5.9960e-003	0.00
tblFleetMix	MDV	0.10	0.00
tblFleetMix	MH	5.5900e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	2.3900e-003	0.00
tblFleetMix	SBUS	1.4960e-003	0.00
tblFleetMix	UBUS	1.9750e-003	0.00
tblGrading	AcresOfGrading	0.00	4.00
tblLandUse	LandUseSquareFeet	101,110.00	101,113.00
tblLandUse	LandUseSquareFeet	90,070.00	90,068.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	790	461
tblSolidWaste	SolidWasteGenerationRate	95.04	1,392.80
tblTripsAndVMT	VendorTripNumber	31.00	0.00
tblTripsAndVMT	WorkerTripNumber	80.00	0.00
tblTripsAndVMT	WorkerTripNumber	16.00	0.00
tblVehicleEF	HHD	1.57	2.28
tblVehicleEF	HHD	7.3920e-003	0.01
tblVehicleEF	HHD	0.08	0.13
tblVehicleEF	HHD	1.91	3.42
tblVehicleEF	HHD	0.56	0.71
tblVehicleEF	HHD	0.73	1.07
tblVehicleEF	HHD	5,778.57	6,208.32
tblVehicleEF	HHD	1,486.84	1,586.41
tblVehicleEF	HHD	2.28	2.82
tblVehicleEF	HHD	16.02	26.42

tblVehicleEF	HHD	1.72	3.98
tblVehicleEF	HHD	20.60	20.56
tblVehicleEF	HHD	3.4080e-003	0.03
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	5.8340e-003	0.02
tblVehicleEF	HHD	1.5000e-005	3.1000e-005
tblVehicleEF	HHD	3.2600e-003	0.03
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.9650e-003	8.9580e-003
tblVehicleEF	HHD	5.5820e-003	0.02
tblVehicleEF	HHD	1.4000e-005	2.8000e-005
tblVehicleEF	HHD	3.3000e-005	5.6000e-005
tblVehicleEF	HHD	1.1640e-003	1.8800e-003
tblVehicleEF	HHD	0.51	0.91
tblVehicleEF	HHD	1.7000e-005	2.7000e-005
tblVehicleEF	HHD	0.08	0.14
tblVehicleEF	HHD	8.4000e-005	1.7300e-004
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.01	0.02
tblVehicleEF	HHD	3.5000e-005	4.6000e-005
tblVehicleEF	HHD	3.3000e-005	5.6000e-005
tblVehicleEF	HHD	1.1640e-003	1.8800e-003
tblVehicleEF	HHD	0.59	1.04
tblVehicleEF	HHD	1.7000e-005	2.7000e-005
tblVehicleEF	HHD	0.10	0.16
tblVehicleEF	HHD	8.4000e-005	1.7300e-004
tblVehicleEF	HHD	0.02	0.04
tblVehicleEF	HHD	1.48	2.15
tblVehicleEF	HHD	7.4040e-003	0.01
tblVehicleEF	HHD	0.08	0.12
tblVehicleEF	HHD	1.39	2.50
tblVehicleEF	HHD	0.56	0.72
tblVehicleEF	HHD	0.68	0.99
tblVehicleEF	HHD	6,121.88	6,572.68
tblVehicleEF	HHD	1,486.84	1,586.41
tblVehicleEF	HHD	2.28	2.82
tblVehicleEF	HHD	16.53	27.26
tblVehicleEF	HHD	1.64	3.79
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tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	5.8340e-003	0.02
tblVehicleEF	HHD	1.5000e-005	3.1000e-005
tblVehicleEF	HHD	2.7490e-003	0.02
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.9650e-003	8.9580e-003
tblVehicleEF	HHD	5.5820e-003	0.02
tblVehicleEF	HHD	1.4000e-005	2.8000e-005

tblVehicleEF	HHD	7.9000e-005	1.3900e-004
tblVehicleEF	HHD	1.3040e-003	2.1800e-003
tblVehicleEF	HHD	0.49	0.86
tblVehicleEF	HHD	3.4000e-005	6.1000e-005
tblVehicleEF	HHD	0.08	0.14
tblVehicleEF	HHD	8.3000e-005	1.7700e-004
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.01	0.02
tblVehicleEF	HHD	3.4000e-005	4.5000e-005
tblVehicleEF	HHD	7.9000e-005	1.3900e-004
tblVehicleEF	HHD	1.3040e-003	2.1800e-003
tblVehicleEF	HHD	0.55	0.98
tblVehicleEF	HHD	3.4000e-005	6.1000e-005
tblVehicleEF	HHD	0.10	0.16
tblVehicleEF	HHD	8.3000e-005	1.7700e-004
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tblVehicleEF	HHD	1,486.84	1,586.41
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tblVehicleEF	HHD	15.31	25.27
tblVehicleEF	HHD	1.75	4.05
tblVehicleEF	HHD	20.61	20.56
tblVehicleEF	HHD	4.1460e-003	0.03
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	5.8340e-003	0.02
tblVehicleEF	HHD	1.5000e-005	3.1000e-005
tblVehicleEF	HHD	3.9660e-003	0.03
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.9650e-003	8.9580e-003
tblVehicleEF	HHD	5.5820e-003	0.02
tblVehicleEF	HHD	1.4000e-005	2.8000e-005
tblVehicleEF	HHD	1.2000e-005	1.7000e-005
tblVehicleEF	HHD	1.1730e-003	1.9630e-003
tblVehicleEF	HHD	0.56	0.98
tblVehicleEF	HHD	7.0000e-006	1.0000e-005
tblVehicleEF	HHD	0.08	0.14
tblVehicleEF	HHD	9.2000e-005	1.8500e-004
tblVehicleEF	HHD	0.02	0.04
tblVehicleEF	HHD	0.05	0.05
tblVehicleEF	HHD	0.01	0.02
tblVehicleEF	HHD	3.6000e-005	4.8000e-005
tblVehicleEF	HHD	1.2000e-005	1.7000e-005
tblVehicleEF	HHD	1.1730e-003	1.9630e-003

tblVehicleEF	HHD	0.63	1.12
tblVehicleEF	HHD	7.0000e-006	1.0000e-005
tblVehicleEF	HHD	0.10	0.16
tblVehicleEF	HHD	9.2000e-005	1.8500e-004
tblVehicleEF	HHD	0.02	0.04
tblVehicleEF	LDA	3.7280e-003	5.5940e-003
tblVehicleEF	LDA	4.6290e-003	8.3830e-003
tblVehicleEF	LDA	0.53	0.70
tblVehicleEF	LDA	1.06	1.66
tblVehicleEF	LDA	242.47	283.17
tblVehicleEF	LDA	53.93	62.38
tblVehicleEF	LDA	0.04	0.06
tblVehicleEF	LDA	0.06	0.11
tblVehicleEF	LDA	1.7600e-003	1.8740e-003
tblVehicleEF	LDA	2.2480e-003	2.3800e-003
tblVehicleEF	LDA	1.6210e-003	1.7270e-003
tblVehicleEF	LDA	2.0670e-003	2.1890e-003
tblVehicleEF	LDA	0.04	0.06
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	9.3700e-003	0.01
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.06	0.11
tblVehicleEF	LDA	2.4280e-003	2.8370e-003
tblVehicleEF	LDA	5.5700e-004	6.5200e-004
tblVehicleEF	LDA	0.04	0.06
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.01	0.02
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.07	0.12
tblVehicleEF	LDA	4.2820e-003	6.4380e-003
tblVehicleEF	LDA	3.8140e-003	6.9100e-003
tblVehicleEF	LDA	0.66	0.87
tblVehicleEF	LDA	0.87	1.37
tblVehicleEF	LDA	266.11	310.92
tblVehicleEF	LDA	53.93	62.38
tblVehicleEF	LDA	0.04	0.06
tblVehicleEF	LDA	0.06	0.10
tblVehicleEF	LDA	1.7600e-003	1.8740e-003
tblVehicleEF	LDA	2.2480e-003	2.3800e-003
tblVehicleEF	LDA	1.6210e-003	1.7270e-003
tblVehicleEF	LDA	2.0670e-003	2.1890e-003
tblVehicleEF	LDA	0.11	0.16
tblVehicleEF	LDA	0.12	0.17
tblVehicleEF	LDA	0.07	0.09
tblVehicleEF	LDA	0.01	0.02
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.05	0.09
tblVehicleEF	LDA	2.6660e-003	3.1170e-003
tblVehicleEF	LDA	5.5400e-004	6.4700e-004

tblVehicleEF	LDA	0.11	0.16
tblVehicleEF	LDA	0.12	0.17
tblVehicleEF	LDA	0.07	0.09
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.06	0.10
tblVehicleEF	LDA	3.5090e-003	5.2840e-003
tblVehicleEF	LDA	5.4280e-003	9.8630e-003
tblVehicleEF	LDA	0.49	0.65
tblVehicleEF	LDA	1.28	2.02
tblVehicleEF	LDA	234.00	273.22
tblVehicleEF	LDA	53.93	62.38
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.07	0.12
tblVehicleEF	LDA	1.7600e-003	1.8740e-003
tblVehicleEF	LDA	2.2480e-003	2.3800e-003
tblVehicleEF	LDA	1.6210e-003	1.7270e-003
tblVehicleEF	LDA	2.0670e-003	2.1890e-003
tblVehicleEF	LDA	0.01	0.02
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.01	0.02
tblVehicleEF	LDA	8.8270e-003	0.01
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.07	0.13
tblVehicleEF	LDA	2.3430e-003	2.7370e-003
tblVehicleEF	LDA	5.6100e-004	6.5900e-004
tblVehicleEF	LDA	0.01	0.02
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.01	0.02
tblVehicleEF	LDA	0.01	0.02
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.08	0.15
tblVehicleEF	LDT1	0.01	0.02
tblVehicleEF	LDT1	0.02	0.03
tblVehicleEF	LDT1	1.36	2.07
tblVehicleEF	LDT1	3.36	5.12
tblVehicleEF	LDT1	305.77	345.84
tblVehicleEF	LDT1	68.23	75.61
tblVehicleEF	LDT1	0.14	0.21
tblVehicleEF	LDT1	0.19	0.29
tblVehicleEF	LDT1	2.8520e-003	3.5870e-003
tblVehicleEF	LDT1	3.6900e-003	4.6870e-003
tblVehicleEF	LDT1	2.6270e-003	3.3060e-003
tblVehicleEF	LDT1	3.3930e-003	4.3110e-003
tblVehicleEF	LDT1	0.20	0.26
tblVehicleEF	LDT1	0.36	0.47
tblVehicleEF	LDT1	0.13	0.16
tblVehicleEF	LDT1	0.03	0.05
tblVehicleEF	LDT1	0.20	0.26
tblVehicleEF	LDT1	0.23	0.37
tblVehicleEF	LDT1	3.0740e-003	3.4860e-003

tblVehicleEF	LDT1	7.4100e-004	8.4700e-004
tblVehicleEF	LDT1	0.20	0.26
tblVehicleEF	LDT1	0.36	0.47
tblVehicleEF	LDT1	0.13	0.16
tblVehicleEF	LDT1	0.04	0.07
tblVehicleEF	LDT1	0.20	0.26
tblVehicleEF	LDT1	0.25	0.40
tblVehicleEF	LDT1	0.01	0.02
tblVehicleEF	LDT1	0.01	0.02
tblVehicleEF	LDT1	1.65	2.50
tblVehicleEF	LDT1	2.75	4.20
tblVehicleEF	LDT1	334.24	377.68
tblVehicleEF	LDT1	68.23	75.61
tblVehicleEF	LDT1	0.13	0.20
tblVehicleEF	LDT1	0.18	0.27
tblVehicleEF	LDT1	2.8520e-003	3.5870e-003
tblVehicleEF	LDT1	3.6900e-003	4.6870e-003
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tblVehicleEF	LDT1	3.3930e-003	4.3110e-003
tblVehicleEF	LDT1	0.50	0.64
tblVehicleEF	LDT1	0.45	0.60
tblVehicleEF	LDT1	0.27	0.34
tblVehicleEF	LDT1	0.03	0.05
tblVehicleEF	LDT1	0.19	0.25
tblVehicleEF	LDT1	0.19	0.30
tblVehicleEF	LDT1	3.3630e-003	3.8110e-003
tblVehicleEF	LDT1	7.3100e-004	8.3100e-004
tblVehicleEF	LDT1	0.50	0.64
tblVehicleEF	LDT1	0.45	0.60
tblVehicleEF	LDT1	0.27	0.34
tblVehicleEF	LDT1	0.05	0.08
tblVehicleEF	LDT1	0.19	0.25
tblVehicleEF	LDT1	0.21	0.33
tblVehicleEF	LDT1	0.01	0.02
tblVehicleEF	LDT1	0.02	0.03
tblVehicleEF	LDT1	1.28	1.96
tblVehicleEF	LDT1	4.11	6.29
tblVehicleEF	LDT1	295.56	334.43
tblVehicleEF	LDT1	68.23	75.61
tblVehicleEF	LDT1	0.15	0.24
tblVehicleEF	LDT1	0.21	0.32
tblVehicleEF	LDT1	2.8520e-003	3.5870e-003
tblVehicleEF	LDT1	3.6900e-003	4.6870e-003
tblVehicleEF	LDT1	2.6270e-003	3.3060e-003
tblVehicleEF	LDT1	3.3930e-003	4.3110e-003
tblVehicleEF	LDT1	0.07	0.08
tblVehicleEF	LDT1	0.37	0.48
tblVehicleEF	LDT1	0.05	0.06
tblVehicleEF	LDT1	0.03	0.04
tblVehicleEF	LDT1	0.24	0.32
tblVehicleEF	LDT1	0.27	0.44

tblVehicleEF	LDT1	2.9710e-003	3.3710e-003
tblVehicleEF	LDT1	7.5500e-004	8.6800e-004
tblVehicleEF	LDT1	0.07	0.08
tblVehicleEF	LDT1	0.37	0.48
tblVehicleEF	LDT1	0.05	0.06
tblVehicleEF	LDT1	0.04	0.06
tblVehicleEF	LDT1	0.24	0.32
tblVehicleEF	LDT1	0.30	0.48
tblVehicleEF	LDT2	6.1790e-003	9.0650e-003
tblVehicleEF	LDT2	8.0130e-003	0.01
tblVehicleEF	LDT2	0.78	1.06
tblVehicleEF	LDT2	1.67	2.60
tblVehicleEF	LDT2	343.64	392.86
tblVehicleEF	LDT2	76.30	86.59
tblVehicleEF	LDT2	0.08	0.13
tblVehicleEF	LDT2	0.13	0.23
tblVehicleEF	LDT2	1.9020e-003	1.9360e-003
tblVehicleEF	LDT2	2.4860e-003	2.6040e-003
tblVehicleEF	LDT2	1.7500e-003	1.7810e-003
tblVehicleEF	LDT2	2.2860e-003	2.3950e-003
tblVehicleEF	LDT2	0.08	0.10
tblVehicleEF	LDT2	0.14	0.19
tblVehicleEF	LDT2	0.06	0.07
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.09
tblVehicleEF	LDT2	0.11	0.18
tblVehicleEF	LDT2	3.4430e-003	3.9390e-003
tblVehicleEF	LDT2	7.9100e-004	9.1100e-004
tblVehicleEF	LDT2	0.08	0.10
tblVehicleEF	LDT2	0.14	0.19
tblVehicleEF	LDT2	0.06	0.07
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.07	0.09
tblVehicleEF	LDT2	0.12	0.20
tblVehicleEF	LDT2	7.0740e-003	0.01
tblVehicleEF	LDT2	6.6000e-003	0.01
tblVehicleEF	LDT2	0.97	1.31
tblVehicleEF	LDT2	1.38	2.14
tblVehicleEF	LDT2	376.33	430.26
tblVehicleEF	LDT2	76.30	86.59
tblVehicleEF	LDT2	0.07	0.12
tblVehicleEF	LDT2	0.12	0.21
tblVehicleEF	LDT2	1.9020e-003	1.9360e-003
tblVehicleEF	LDT2	2.4860e-003	2.6040e-003
tblVehicleEF	LDT2	1.7500e-003	1.7810e-003
tblVehicleEF	LDT2	2.2860e-003	2.3950e-003
tblVehicleEF	LDT2	0.19	0.24
tblVehicleEF	LDT2	0.17	0.24
tblVehicleEF	LDT2	0.12	0.15
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.07	0.09

tblVehicleEF	LDT2	0.09	0.15
tblVehicleEF	LDT2	3.7720e-003	4.3160e-003
tblVehicleEF	LDT2	7.8600e-004	9.0300e-004
tblVehicleEF	LDT2	0.19	0.24
tblVehicleEF	LDT2	0.17	0.24
tblVehicleEF	LDT2	0.12	0.15
tblVehicleEF	LDT2	0.03	0.04
tblVehicleEF	LDT2	0.07	0.09
tblVehicleEF	LDT2	0.10	0.16
tblVehicleEF	LDT2	5.8300e-003	8.5890e-003
tblVehicleEF	LDT2	9.4120e-003	0.02
tblVehicleEF	LDT2	0.73	1.00
tblVehicleEF	LDT2	2.03	3.17
tblVehicleEF	LDT2	331.92	379.46
tblVehicleEF	LDT2	76.30	86.59
tblVehicleEF	LDT2	0.09	0.14
tblVehicleEF	LDT2	0.14	0.25
tblVehicleEF	LDT2	1.9020e-003	1.9360e-003
tblVehicleEF	LDT2	2.4860e-003	2.6040e-003
tblVehicleEF	LDT2	1.7500e-003	1.7810e-003
tblVehicleEF	LDT2	2.2860e-003	2.3950e-003
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.15	0.20
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.01	0.02
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.13	0.21
tblVehicleEF	LDT2	3.3250e-003	3.8040e-003
tblVehicleEF	LDT2	7.9800e-004	9.2100e-004
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.15	0.20
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.14	0.23
tblVehicleEF	LHD1	4.2620e-003	4.8380e-003
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.13	0.14
tblVehicleEF	LHD1	1.25	1.57
tblVehicleEF	LHD1	2.11	2.62
tblVehicleEF	LHD1	9.56	9.58
tblVehicleEF	LHD1	676.45	692.34
tblVehicleEF	LHD1	25.26	26.45
tblVehicleEF	LHD1	0.11	0.11
tblVehicleEF	LHD1	2.30	2.76
tblVehicleEF	LHD1	0.83	0.91
tblVehicleEF	LHD1	1.1780e-003	1.1950e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	7.8300e-004	9.5700e-004

tblVehicleEF	LHD1	1.1270e-003	1.1440e-003
tblVehicleEF	LHD1	2.6100e-003	2.5920e-003
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	7.2000e-004	8.8000e-004
tblVehicleEF	LHD1	3.3630e-003	3.6090e-003
tblVehicleEF	LHD1	0.10	0.10
tblVehicleEF	LHD1	0.01	0.02
tblVehicleEF	LHD1	1.3700e-003	1.4100e-003
tblVehicleEF	LHD1	0.16	0.18
tblVehicleEF	LHD1	0.30	0.29
tblVehicleEF	LHD1	0.21	0.27
tblVehicleEF	LHD1	6.6110e-003	6.7770e-003
tblVehicleEF	LHD1	2.9200e-004	3.1400e-004
tblVehicleEF	LHD1	3.3630e-003	3.6090e-003
tblVehicleEF	LHD1	0.10	0.10
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.3700e-003	1.4100e-003
tblVehicleEF	LHD1	0.20	0.23
tblVehicleEF	LHD1	0.30	0.29
tblVehicleEF	LHD1	0.23	0.29
tblVehicleEF	LHD1	4.2620e-003	4.8380e-003
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	0.01	0.02
tblVehicleEF	LHD1	0.13	0.14
tblVehicleEF	LHD1	1.27	1.60
tblVehicleEF	LHD1	1.96	2.42
tblVehicleEF	LHD1	9.56	9.58
tblVehicleEF	LHD1	676.45	692.34
tblVehicleEF	LHD1	25.26	26.45
tblVehicleEF	LHD1	0.11	0.11
tblVehicleEF	LHD1	2.18	2.62
tblVehicleEF	LHD1	0.78	0.85
tblVehicleEF	LHD1	1.1780e-003	1.1950e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	7.8300e-004	9.5700e-004
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tblVehicleEF	LHD1	2.6100e-003	2.5920e-003
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tblVehicleEF	LHD1	7.2000e-004	8.8000e-004
tblVehicleEF	LHD1	8.0510e-003	8.7570e-003
tblVehicleEF	LHD1	0.12	0.12
tblVehicleEF	LHD1	0.01	0.02
tblVehicleEF	LHD1	2.8330e-003	3.0060e-003
tblVehicleEF	LHD1	0.16	0.19
tblVehicleEF	LHD1	0.29	0.29
tblVehicleEF	LHD1	0.20	0.25
tblVehicleEF	LHD1	6.6110e-003	6.7770e-003
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tblVehicleEF	LHD1	8.0510e-003	8.7570e-003
tblVehicleEF	LHD1	0.12	0.12

tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	2.8330e-003	3.0060e-003
tblVehicleEF	LHD1	0.20	0.23
tblVehicleEF	LHD1	0.29	0.29
tblVehicleEF	LHD1	0.22	0.28
tblVehicleEF	LHD1	4.2620e-003	4.8380e-003
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.13	0.14
tblVehicleEF	LHD1	1.23	1.54
tblVehicleEF	LHD1	2.30	2.85
tblVehicleEF	LHD1	9.56	9.58
tblVehicleEF	LHD1	676.45	692.34
tblVehicleEF	LHD1	25.26	26.45
tblVehicleEF	LHD1	0.11	0.11
tblVehicleEF	LHD1	2.35	2.82
tblVehicleEF	LHD1	0.89	0.97
tblVehicleEF	LHD1	1.1780e-003	1.1950e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	7.8300e-004	9.5700e-004
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tblVehicleEF	LHD1	2.6100e-003	2.5920e-003
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	7.2000e-004	8.8000e-004
tblVehicleEF	LHD1	1.1420e-003	1.1820e-003
tblVehicleEF	LHD1	0.10	0.11
tblVehicleEF	LHD1	0.01	0.02
tblVehicleEF	LHD1	6.0700e-004	6.0100e-004
tblVehicleEF	LHD1	0.16	0.18
tblVehicleEF	LHD1	0.33	0.32
tblVehicleEF	LHD1	0.23	0.28
tblVehicleEF	LHD1	6.6110e-003	6.7760e-003
tblVehicleEF	LHD1	2.9600e-004	3.1800e-004
tblVehicleEF	LHD1	1.1420e-003	1.1820e-003
tblVehicleEF	LHD1	0.10	0.11
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	6.0700e-004	6.0100e-004
tblVehicleEF	LHD1	0.19	0.22
tblVehicleEF	LHD1	0.33	0.32
tblVehicleEF	LHD1	0.25	0.31
tblVehicleEF	LHD2	2.9630e-003	3.4680e-003
tblVehicleEF	LHD2	8.8480e-003	0.01
tblVehicleEF	LHD2	6.5580e-003	9.8340e-003
tblVehicleEF	LHD2	0.11	0.12
tblVehicleEF	LHD2	0.72	0.94
tblVehicleEF	LHD2	1.03	1.36
tblVehicleEF	LHD2	14.68	14.93
tblVehicleEF	LHD2	705.81	727.99
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tblVehicleEF	LHD2	0.12	0.13

tblVehicleEF	LHD2	1.31	2.06
tblVehicleEF	LHD2	0.43	0.53
tblVehicleEF	LHD2	1.3640e-003	1.4610e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.5100e-004	4.4500e-004
tblVehicleEF	LHD2	1.3050e-003	1.3980e-003
tblVehicleEF	LHD2	2.7250e-003	2.7220e-003
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.2300e-004	4.0900e-004
tblVehicleEF	LHD2	1.2020e-003	1.5640e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	5.3200e-004	6.4000e-004
tblVehicleEF	LHD2	0.13	0.15
tblVehicleEF	LHD2	0.07	0.10
tblVehicleEF	LHD2	0.09	0.13
tblVehicleEF	LHD2	1.4300e-004	1.4500e-004
tblVehicleEF	LHD2	6.8510e-003	7.0690e-003
tblVehicleEF	LHD2	2.2800e-004	2.4100e-004
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tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	5.3200e-004	6.4000e-004
tblVehicleEF	LHD2	0.15	0.17
tblVehicleEF	LHD2	0.07	0.10
tblVehicleEF	LHD2	0.10	0.15
tblVehicleEF	LHD2	2.9630e-003	3.4680e-003
tblVehicleEF	LHD2	8.9590e-003	0.01
tblVehicleEF	LHD2	6.2180e-003	9.2930e-003
tblVehicleEF	LHD2	0.11	0.12
tblVehicleEF	LHD2	0.72	0.95
tblVehicleEF	LHD2	0.96	1.26
tblVehicleEF	LHD2	14.68	14.93
tblVehicleEF	LHD2	705.81	727.99
tblVehicleEF	LHD2	20.87	21.52
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	1.24	1.96
tblVehicleEF	LHD2	0.41	0.50
tblVehicleEF	LHD2	1.3640e-003	1.4610e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.5100e-004	4.4500e-004
tblVehicleEF	LHD2	1.3050e-003	1.3980e-003
tblVehicleEF	LHD2	2.7250e-003	2.7220e-003
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.2300e-004	4.0900e-004
tblVehicleEF	LHD2	2.8630e-003	3.7740e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	1.0860e-003	1.3500e-003

tblVehicleEF	LHD2	0.13	0.15
tblVehicleEF	LHD2	0.07	0.10
tblVehicleEF	LHD2	0.08	0.13
tblVehicleEF	LHD2	1.4300e-004	1.4500e-004
tblVehicleEF	LHD2	6.8510e-003	7.0700e-003
tblVehicleEF	LHD2	2.2600e-004	2.3900e-004
tblVehicleEF	LHD2	2.8630e-003	3.7740e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	1.0860e-003	1.3500e-003
tblVehicleEF	LHD2	0.15	0.18
tblVehicleEF	LHD2	0.07	0.10
tblVehicleEF	LHD2	0.09	0.14
tblVehicleEF	LHD2	2.9630e-003	3.4680e-003
tblVehicleEF	LHD2	8.7300e-003	0.01
tblVehicleEF	LHD2	6.9340e-003	0.01
tblVehicleEF	LHD2	0.11	0.12
tblVehicleEF	LHD2	0.71	0.93
tblVehicleEF	LHD2	1.12	1.47
tblVehicleEF	LHD2	14.68	14.93
tblVehicleEF	LHD2	705.81	727.99
tblVehicleEF	LHD2	20.87	21.52
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	1.33	2.10
tblVehicleEF	LHD2	0.46	0.57
tblVehicleEF	LHD2	1.3640e-003	1.4610e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.5100e-004	4.4500e-004
tblVehicleEF	LHD2	1.3050e-003	1.3980e-003
tblVehicleEF	LHD2	2.7250e-003	2.7220e-003
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.2300e-004	4.0900e-004
tblVehicleEF	LHD2	4.2000e-004	5.2300e-004
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	2.3800e-004	2.7600e-004
tblVehicleEF	LHD2	0.12	0.15
tblVehicleEF	LHD2	0.08	0.11
tblVehicleEF	LHD2	0.09	0.14
tblVehicleEF	LHD2	1.4300e-004	1.4500e-004
tblVehicleEF	LHD2	6.8510e-003	7.0690e-003
tblVehicleEF	LHD2	2.2900e-004	2.4300e-004
tblVehicleEF	LHD2	4.2000e-004	5.2300e-004
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	2.3800e-004	2.7600e-004
tblVehicleEF	LHD2	0.14	0.17
tblVehicleEF	LHD2	0.08	0.11
tblVehicleEF	LHD2	0.10	0.15
tblVehicleEF	MCY	0.46	0.43

tblVehicleEF	MCY	0.16	0.17
tblVehicleEF	MCY	20.68	22.64
tblVehicleEF	MCY	10.08	10.01
tblVehicleEF	MCY	174.64	170.41
tblVehicleEF	MCY	46.82	48.46
tblVehicleEF	MCY	1.17	1.19
tblVehicleEF	MCY	0.32	0.32
tblVehicleEF	MCY	2.0280e-003	1.8640e-003
tblVehicleEF	MCY	3.3460e-003	3.9850e-003
tblVehicleEF	MCY	1.8980e-003	1.7510e-003
tblVehicleEF	MCY	3.1540e-003	3.7730e-003
tblVehicleEF	MCY	1.58	1.57
tblVehicleEF	MCY	0.96	0.99
tblVehicleEF	MCY	0.77	0.78
tblVehicleEF	MCY	2.44	2.50
tblVehicleEF	MCY	0.40	0.44
tblVehicleEF	MCY	2.21	2.27
tblVehicleEF	MCY	2.1550e-003	2.1450e-003
tblVehicleEF	MCY	6.9800e-004	7.1500e-004
tblVehicleEF	MCY	1.58	1.57
tblVehicleEF	MCY	0.96	0.99
tblVehicleEF	MCY	0.77	0.78
tblVehicleEF	MCY	2.99	3.03
tblVehicleEF	MCY	0.40	0.44
tblVehicleEF	MCY	2.40	2.47
tblVehicleEF	MCY	0.46	0.42
tblVehicleEF	MCY	0.14	0.14
tblVehicleEF	MCY	20.86	22.81
tblVehicleEF	MCY	9.10	9.14
tblVehicleEF	MCY	174.64	170.41
tblVehicleEF	MCY	46.82	48.46
tblVehicleEF	MCY	1.02	1.03
tblVehicleEF	MCY	0.29	0.29
tblVehicleEF	MCY	2.0280e-003	1.8640e-003
tblVehicleEF	MCY	3.3460e-003	3.9850e-003
tblVehicleEF	MCY	1.8980e-003	1.7510e-003
tblVehicleEF	MCY	3.1540e-003	3.7730e-003
tblVehicleEF	MCY	4.04	4.03
tblVehicleEF	MCY	1.47	1.48
tblVehicleEF	MCY	1.96	1.99
tblVehicleEF	MCY	2.37	2.42
tblVehicleEF	MCY	0.38	0.43
tblVehicleEF	MCY	1.87	1.91
tblVehicleEF	MCY	2.1560e-003	2.1450e-003
tblVehicleEF	MCY	6.7100e-004	6.9000e-004
tblVehicleEF	MCY	4.04	4.03
tblVehicleEF	MCY	1.47	1.48
tblVehicleEF	MCY	1.96	1.99
tblVehicleEF	MCY	2.92	2.93
tblVehicleEF	MCY	0.38	0.43
tblVehicleEF	MCY	2.03	2.08

tblVehicleEF	MCY	0.48	0.45
tblVehicleEF	MCY	0.19	0.20
tblVehicleEF	MCY	22.29	24.56
tblVehicleEF	MCY	11.67	11.54
tblVehicleEF	MCY	174.64	170.41
tblVehicleEF	MCY	46.82	48.46
tblVehicleEF	MCY	1.27	1.29
tblVehicleEF	MCY	0.34	0.34
tblVehicleEF	MCY	2.0280e-003	1.8640e-003
tblVehicleEF	MCY	3.3460e-003	3.9850e-003
tblVehicleEF	MCY	1.8980e-003	1.7510e-003
tblVehicleEF	MCY	3.1540e-003	3.7730e-003
tblVehicleEF	MCY	0.43	0.43
tblVehicleEF	MCY	1.00	1.05
tblVehicleEF	MCY	0.22	0.22
tblVehicleEF	MCY	2.56	2.65
tblVehicleEF	MCY	0.46	0.51
tblVehicleEF	MCY	2.64	2.73
tblVehicleEF	MCY	2.1850e-003	2.1800e-003
tblVehicleEF	MCY	7.3700e-004	7.5400e-004
tblVehicleEF	MCY	0.43	0.43
tblVehicleEF	MCY	1.00	1.05
tblVehicleEF	MCY	0.22	0.22
tblVehicleEF	MCY	3.13	3.20
tblVehicleEF	MCY	0.46	0.51
tblVehicleEF	MCY	2.87	2.96
tblVehicleEF	MDV	0.01	0.02
tblVehicleEF	MDV	0.02	0.03
tblVehicleEF	MDV	1.33	2.01
tblVehicleEF	MDV	3.34	4.79
tblVehicleEF	MDV	486.98	541.41
tblVehicleEF	MDV	106.66	116.75
tblVehicleEF	MDV	0.17	0.26
tblVehicleEF	MDV	0.31	0.45
tblVehicleEF	MDV	1.9590e-003	2.1210e-003
tblVehicleEF	MDV	2.5010e-003	2.8730e-003
tblVehicleEF	MDV	1.8060e-003	1.9590e-003
tblVehicleEF	MDV	2.2990e-003	2.6460e-003
tblVehicleEF	MDV	0.12	0.13
tblVehicleEF	MDV	0.24	0.27
tblVehicleEF	MDV	0.09	0.10
tblVehicleEF	MDV	0.03	0.05
tblVehicleEF	MDV	0.13	0.14
tblVehicleEF	MDV	0.26	0.39
tblVehicleEF	MDV	4.8800e-003	5.4350e-003
tblVehicleEF	MDV	1.1260e-003	1.2530e-003
tblVehicleEF	MDV	0.12	0.13
tblVehicleEF	MDV	0.24	0.27
tblVehicleEF	MDV	0.09	0.10
tblVehicleEF	MDV	0.05	0.08
tblVehicleEF	MDV	0.13	0.14

tblVehicleEF	MDV	0.29	0.43
tblVehicleEF	MDV	0.01	0.02
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	1.64	2.44
tblVehicleEF	MDV	2.76	3.98
tblVehicleEF	MDV	532.04	591.51
tblVehicleEF	MDV	106.66	116.75
tblVehicleEF	MDV	0.15	0.24
tblVehicleEF	MDV	0.29	0.42
tblVehicleEF	MDV	1.9590e-003	2.1210e-003
tblVehicleEF	MDV	2.5010e-003	2.8730e-003
tblVehicleEF	MDV	1.8060e-003	1.9590e-003
tblVehicleEF	MDV	2.2990e-003	2.6460e-003
tblVehicleEF	MDV	0.29	0.31
tblVehicleEF	MDV	0.28	0.31
tblVehicleEF	MDV	0.19	0.20
tblVehicleEF	MDV	0.04	0.06
tblVehicleEF	MDV	0.12	0.14
tblVehicleEF	MDV	0.22	0.32
tblVehicleEF	MDV	5.3350e-003	5.9420e-003
tblVehicleEF	MDV	1.1150e-003	1.2390e-003
tblVehicleEF	MDV	0.29	0.31
tblVehicleEF	MDV	0.28	0.31
tblVehicleEF	MDV	0.19	0.20
tblVehicleEF	MDV	0.05	0.09
tblVehicleEF	MDV	0.12	0.14
tblVehicleEF	MDV	0.24	0.35
tblVehicleEF	MDV	0.01	0.02
tblVehicleEF	MDV	0.02	0.03
tblVehicleEF	MDV	1.24	1.92
tblVehicleEF	MDV	4.07	5.81
tblVehicleEF	MDV	470.83	523.45
tblVehicleEF	MDV	106.66	116.75
tblVehicleEF	MDV	0.18	0.28
tblVehicleEF	MDV	0.34	0.50
tblVehicleEF	MDV	1.9590e-003	2.1210e-003
tblVehicleEF	MDV	2.5010e-003	2.8730e-003
tblVehicleEF	MDV	1.8060e-003	1.9590e-003
tblVehicleEF	MDV	2.2990e-003	2.6460e-003
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	0.24	0.27
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	0.03	0.05
tblVehicleEF	MDV	0.15	0.17
tblVehicleEF	MDV	0.31	0.46
tblVehicleEF	MDV	4.7170e-003	5.2550e-003
tblVehicleEF	MDV	1.1390e-003	1.2720e-003
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	0.24	0.27
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	0.04	0.07

tblVehicleEF	MDV	0.15	0.17
tblVehicleEF	MDV	0.34	0.50
tblVehicleEF	MH	0.04	0.06
tblVehicleEF	MH	0.03	0.04
tblVehicleEF	MH	2.52	4.96
tblVehicleEF	MH	6.03	8.37
tblVehicleEF	MH	1,219.42	1,238.17
tblVehicleEF	MH	57.67	60.79
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tblVehicleEF	MH	0.88	1.07
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.04
tblVehicleEF	MH	1.1670e-003	1.7260e-003
tblVehicleEF	MH	3.2360e-003	3.2320e-003
tblVehicleEF	MH	0.03	0.04
tblVehicleEF	MH	1.0730e-003	1.5960e-003
tblVehicleEF	MH	1.47	1.96
tblVehicleEF	MH	0.09	0.12
tblVehicleEF	MH	0.37	0.48
tblVehicleEF	MH	0.12	0.20
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	0.35	0.49
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.8200e-004	7.5400e-004
tblVehicleEF	MH	1.47	1.96
tblVehicleEF	MH	0.09	0.12
tblVehicleEF	MH	0.37	0.48
tblVehicleEF	MH	0.16	0.28
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	0.38	0.54
tblVehicleEF	MH	0.04	0.07
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	2.61	5.15
tblVehicleEF	MH	5.42	7.55
tblVehicleEF	MH	1,219.42	1,238.17
tblVehicleEF	MH	57.67	60.79
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tblVehicleEF	MH	0.83	1.01
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.04
tblVehicleEF	MH	1.1670e-003	1.7260e-003
tblVehicleEF	MH	3.2360e-003	3.2320e-003
tblVehicleEF	MH	0.03	0.04
tblVehicleEF	MH	1.0730e-003	1.5960e-003
tblVehicleEF	MH	3.53	4.80
tblVehicleEF	MH	0.11	0.14
tblVehicleEF	MH	0.76	1.02
tblVehicleEF	MH	0.12	0.21
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	0.32	0.46
tblVehicleEF	MH	0.01	0.01

tblVehicleEF	MH	6.7100e-004	7.4000e-004
tblVehicleEF	MH	3.53	4.80
tblVehicleEF	MH	0.11	0.14
tblVehicleEF	MH	0.76	1.02
tblVehicleEF	MH	0.17	0.29
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	0.35	0.50
tblVehicleEF	MH	0.03	0.06
tblVehicleEF	MH	0.03	0.04
tblVehicleEF	MH	2.42	4.82
tblVehicleEF	MH	6.70	9.35
tblVehicleEF	MH	1,219.42	1,238.17
tblVehicleEF	MH	57.67	60.79
tblVehicleEF	MH	1.77	2.28
tblVehicleEF	MH	0.95	1.15
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.04
tblVehicleEF	MH	1.1670e-003	1.7260e-003
tblVehicleEF	MH	3.2360e-003	3.2320e-003
tblVehicleEF	MH	0.03	0.04
tblVehicleEF	MH	1.0730e-003	1.5960e-003
tblVehicleEF	MH	0.47	0.60
tblVehicleEF	MH	0.10	0.13
tblVehicleEF	MH	0.19	0.24
tblVehicleEF	MH	0.11	0.20
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	0.37	0.53
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.9300e-004	7.7100e-004
tblVehicleEF	MH	0.47	0.60
tblVehicleEF	MH	0.10	0.13
tblVehicleEF	MH	0.19	0.24
tblVehicleEF	MH	0.16	0.27
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	0.41	0.59
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	5.0090e-003	0.01
tblVehicleEF	MHD	0.05	0.08
tblVehicleEF	MHD	0.26	0.50
tblVehicleEF	MHD	0.39	0.89
tblVehicleEF	MHD	4.34	7.29
tblVehicleEF	MHD	178.12	175.78
tblVehicleEF	MHD	1,199.46	1,222.37
tblVehicleEF	MHD	41.00	46.07
tblVehicleEF	MHD	0.51	1.25
tblVehicleEF	MHD	1.21	2.60
tblVehicleEF	MHD	13.84	13.37
tblVehicleEF	MHD	1.7300e-004	0.01
tblVehicleEF	MHD	3.2990e-003	0.06
tblVehicleEF	MHD	6.8900e-004	1.0740e-003
tblVehicleEF	MHD	1.6500e-004	0.01

tblVehicleEF	MHD	3.1510e-003	0.05
tblVehicleEF	MHD	6.3400e-004	9.8800e-004
tblVehicleEF	MHD	1.2490e-003	2.2180e-003
tblVehicleEF	MHD	0.04	0.06
tblVehicleEF	MHD	0.02	0.05
tblVehicleEF	MHD	5.0800e-004	8.4600e-004
tblVehicleEF	MHD	0.05	0.16
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	0.26	0.43
tblVehicleEF	MHD	1.7080e-003	1.6860e-003
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	4.8600e-004	5.8800e-004
tblVehicleEF	MHD	1.2490e-003	2.2180e-003
tblVehicleEF	MHD	0.04	0.06
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	5.0800e-004	8.4600e-004
tblVehicleEF	MHD	0.06	0.18
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	0.28	0.47
tblVehicleEF	MHD	0.01	0.02
tblVehicleEF	MHD	5.1120e-003	0.01
tblVehicleEF	MHD	0.05	0.07
tblVehicleEF	MHD	0.18	0.35
tblVehicleEF	MHD	0.40	0.90
tblVehicleEF	MHD	4.02	6.74
tblVehicleEF	MHD	188.80	186.32
tblVehicleEF	MHD	1,199.46	1,222.37
tblVehicleEF	MHD	41.00	46.07
tblVehicleEF	MHD	0.52	1.29
tblVehicleEF	MHD	1.15	2.47
tblVehicleEF	MHD	13.80	13.32
tblVehicleEF	MHD	1.4600e-004	9.2630e-003
tblVehicleEF	MHD	3.2990e-003	0.06
tblVehicleEF	MHD	6.8900e-004	1.0740e-003
tblVehicleEF	MHD	1.3900e-004	8.8620e-003
tblVehicleEF	MHD	3.1510e-003	0.05
tblVehicleEF	MHD	6.3400e-004	9.8800e-004
tblVehicleEF	MHD	3.0500e-003	5.5370e-003
tblVehicleEF	MHD	0.05	0.07
tblVehicleEF	MHD	0.02	0.05
tblVehicleEF	MHD	1.1000e-003	1.9160e-003
tblVehicleEF	MHD	0.05	0.16
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	0.25	0.41
tblVehicleEF	MHD	1.8090e-003	1.7860e-003
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	4.8000e-004	5.7900e-004
tblVehicleEF	MHD	3.0500e-003	5.5370e-003
tblVehicleEF	MHD	0.05	0.07
tblVehicleEF	MHD	0.02	0.06
tblVehicleEF	MHD	1.1000e-003	1.9160e-003

tblVehicleEF	MHD	0.06	0.19
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	0.27	0.44
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	4.8980e-003	0.01
tblVehicleEF	MHD	0.06	0.08
tblVehicleEF	MHD	0.35	0.67
tblVehicleEF	MHD	0.39	0.87
tblVehicleEF	MHD	4.73	7.97
tblVehicleEF	MHD	163.63	161.49
tblVehicleEF	MHD	1,199.46	1,222.37
tblVehicleEF	MHD	41.00	46.07
tblVehicleEF	MHD	0.48	1.19
tblVehicleEF	MHD	1.24	2.66
tblVehicleEF	MHD	13.88	13.44
tblVehicleEF	MHD	2.1000e-004	0.01
tblVehicleEF	MHD	3.2990e-003	0.06
tblVehicleEF	MHD	6.8900e-004	1.0740e-003
tblVehicleEF	MHD	2.0100e-004	0.01
tblVehicleEF	MHD	3.1510e-003	0.05
tblVehicleEF	MHD	6.3400e-004	9.8800e-004
tblVehicleEF	MHD	4.0300e-004	6.6800e-004
tblVehicleEF	MHD	0.04	0.06
tblVehicleEF	MHD	0.02	0.06
tblVehicleEF	MHD	2.1200e-004	3.2900e-004
tblVehicleEF	MHD	0.05	0.16
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	0.28	0.46
tblVehicleEF	MHD	1.5700e-003	1.5510e-003
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	4.9300e-004	6.0000e-004
tblVehicleEF	MHD	4.0300e-004	6.6800e-004
tblVehicleEF	MHD	0.04	0.06
tblVehicleEF	MHD	0.03	0.07
tblVehicleEF	MHD	2.1200e-004	3.2900e-004
tblVehicleEF	MHD	0.06	0.18
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	0.30	0.50
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.0790e-003	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.25	0.34
tblVehicleEF	OBUS	0.51	0.77
tblVehicleEF	OBUS	4.96	6.05
tblVehicleEF	OBUS	208.99	220.66
tblVehicleEF	OBUS	1,322.88	1,358.46
tblVehicleEF	OBUS	60.65	62.05
tblVehicleEF	OBUS	0.49	1.45
tblVehicleEF	OBUS	1.07	2.64
tblVehicleEF	OBUS	4.48	4.56
tblVehicleEF	OBUS	4.5000e-005	6.8600e-004

tblVehicleEF	OBUS	3.0480e-003	0.01
tblVehicleEF	OBUS	8.2500e-004	7.7100e-004
tblVehicleEF	OBUS	4.3000e-005	6.5600e-004
tblVehicleEF	OBUS	2.8990e-003	0.01
tblVehicleEF	OBUS	7.5900e-004	7.0900e-004
tblVehicleEF	OBUS	2.2000e-003	2.4130e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	6.8100e-004	7.2000e-004
tblVehicleEF	OBUS	0.05	0.10
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.31	0.39
tblVehicleEF	OBUS	2.0040e-003	2.1160e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	6.9400e-004	7.2700e-004
tblVehicleEF	OBUS	2.2000e-003	2.4130e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	6.8100e-004	7.2000e-004
tblVehicleEF	OBUS	0.06	0.12
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.34	0.42
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.2670e-003	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.24	0.30
tblVehicleEF	OBUS	0.52	0.79
tblVehicleEF	OBUS	4.48	5.47
tblVehicleEF	OBUS	220.52	232.86
tblVehicleEF	OBUS	1,322.88	1,358.46
tblVehicleEF	OBUS	60.65	62.05
tblVehicleEF	OBUS	0.51	1.49
tblVehicleEF	OBUS	1.01	2.51
tblVehicleEF	OBUS	4.44	4.51
tblVehicleEF	OBUS	3.8000e-005	5.7800e-004
tblVehicleEF	OBUS	3.0480e-003	0.01
tblVehicleEF	OBUS	8.2500e-004	7.7100e-004
tblVehicleEF	OBUS	3.7000e-005	5.5300e-004
tblVehicleEF	OBUS	2.8990e-003	0.01
tblVehicleEF	OBUS	7.5900e-004	7.0900e-004
tblVehicleEF	OBUS	5.2750e-003	5.8460e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	1.3770e-003	1.4930e-003
tblVehicleEF	OBUS	0.05	0.10
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.29	0.36
tblVehicleEF	OBUS	2.1150e-003	2.2330e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	6.8500e-004	7.1700e-004
tblVehicleEF	OBUS	5.2750e-003	5.8460e-003

tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	1.3770e-003	1.4930e-003
tblVehicleEF	OBUS	0.06	0.12
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.32	0.40
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	6.8770e-003	0.01
tblVehicleEF	OBUS	0.03	0.04
tblVehicleEF	OBUS	0.27	0.39
tblVehicleEF	OBUS	0.50	0.76
tblVehicleEF	OBUS	5.48	6.69
tblVehicleEF	OBUS	193.06	203.80
tblVehicleEF	OBUS	1,322.88	1,358.46
tblVehicleEF	OBUS	60.65	62.05
tblVehicleEF	OBUS	0.47	1.38
tblVehicleEF	OBUS	1.09	2.70
tblVehicleEF	OBUS	4.54	4.63
tblVehicleEF	OBUS	5.5000e-005	8.3400e-004
tblVehicleEF	OBUS	3.0480e-003	0.01
tblVehicleEF	OBUS	8.2500e-004	7.7100e-004
tblVehicleEF	OBUS	5.3000e-005	7.9800e-004
tblVehicleEF	OBUS	2.8990e-003	0.01
tblVehicleEF	OBUS	7.5900e-004	7.0900e-004
tblVehicleEF	OBUS	7.5400e-004	8.0100e-004
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	3.5500e-004	3.6500e-004
tblVehicleEF	OBUS	0.05	0.10
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.34	0.41
tblVehicleEF	OBUS	1.8530e-003	1.9550e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.0200e-004	7.3800e-004
tblVehicleEF	OBUS	7.5400e-004	8.0100e-004
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	3.5500e-004	3.6500e-004
tblVehicleEF	OBUS	0.06	0.12
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.37	0.45
tblVehicleEF	SBUS	0.81	0.85
tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	SBUS	0.08	0.10
tblVehicleEF	SBUS	3.94	4.09
tblVehicleEF	SBUS	0.91	1.21
tblVehicleEF	SBUS	4.45	5.42
tblVehicleEF	SBUS	1,338.68	1,359.83
tblVehicleEF	SBUS	1,126.20	1,139.71
tblVehicleEF	SBUS	25.46	25.21
tblVehicleEF	SBUS	11.83	14.68

tblVehicleEF	SBUS	4.11	5.53
tblVehicleEF	SBUS	16.96	17.11
tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	3.1600e-004	3.6200e-004
tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	SBUS	2.7430e-003	2.7470e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	2.9100e-004	3.3300e-004
tblVehicleEF	SBUS	3.1080e-003	3.8180e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	0.46	0.49
tblVehicleEF	SBUS	1.0080e-003	1.0700e-003
tblVehicleEF	SBUS	0.12	0.14
tblVehicleEF	SBUS	8.6980e-003	0.01
tblVehicleEF	SBUS	0.22	0.27
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	3.3100e-004	3.4600e-004
tblVehicleEF	SBUS	3.1080e-003	3.8180e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	0.65	0.68
tblVehicleEF	SBUS	1.0080e-003	1.0700e-003
tblVehicleEF	SBUS	0.14	0.17
tblVehicleEF	SBUS	8.6980e-003	0.01
tblVehicleEF	SBUS	0.25	0.30
tblVehicleEF	SBUS	0.81	0.85
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.07	0.08
tblVehicleEF	SBUS	3.79	3.90
tblVehicleEF	SBUS	0.93	1.24
tblVehicleEF	SBUS	3.01	3.67
tblVehicleEF	SBUS	1,410.75	1,433.23
tblVehicleEF	SBUS	1,126.20	1,139.71
tblVehicleEF	SBUS	25.46	25.21
tblVehicleEF	SBUS	12.21	15.15
tblVehicleEF	SBUS	3.90	5.25
tblVehicleEF	SBUS	16.94	17.08
tblVehicleEF	SBUS	9.0330e-003	0.01
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	3.1600e-004	3.6200e-004
tblVehicleEF	SBUS	8.6420e-003	0.01
tblVehicleEF	SBUS	2.7430e-003	2.7470e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	2.9100e-004	3.3300e-004
tblVehicleEF	SBUS	7.3700e-003	9.2450e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	0.46	0.48
tblVehicleEF	SBUS	1.9750e-003	2.2240e-003

tblVehicleEF	SBUS	0.12	0.14
tblVehicleEF	SBUS	7.5760e-003	0.01
tblVehicleEF	SBUS	0.18	0.22
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	3.0700e-004	3.1600e-004
tblVehicleEF	SBUS	7.3700e-003	9.2450e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	0.65	0.68
tblVehicleEF	SBUS	1.9750e-003	2.2240e-003
tblVehicleEF	SBUS	0.14	0.17
tblVehicleEF	SBUS	7.5760e-003	0.01
tblVehicleEF	SBUS	0.20	0.24
tblVehicleEF	SBUS	0.81	0.85
tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	SBUS	0.10	0.12
tblVehicleEF	SBUS	4.15	4.34
tblVehicleEF	SBUS	0.89	1.18
tblVehicleEF	SBUS	5.88	7.15
tblVehicleEF	SBUS	1,239.15	1,258.47
tblVehicleEF	SBUS	1,126.20	1,139.71
tblVehicleEF	SBUS	25.46	25.21
tblVehicleEF	SBUS	11.30	14.03
tblVehicleEF	SBUS	4.20	5.65
tblVehicleEF	SBUS	16.99	17.14
tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	3.1600e-004	3.6200e-004
tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	SBUS	2.7430e-003	2.7470e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	2.9100e-004	3.3300e-004
tblVehicleEF	SBUS	1.1400e-003	1.2840e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	0.47	0.49
tblVehicleEF	SBUS	5.4300e-004	5.4600e-004
tblVehicleEF	SBUS	0.11	0.14
tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	SBUS	0.26	0.32
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	3.5500e-004	3.7400e-004
tblVehicleEF	SBUS	1.1400e-003	1.2840e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	0.66	0.69
tblVehicleEF	SBUS	5.4300e-004	5.4600e-004
tblVehicleEF	SBUS	0.14	0.17
tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	SBUS	0.29	0.35
tblVehicleEF	UBUS	0.84	0.95

tblVehicleEF	UBUS	0.07	0.06
tblVehicleEF	UBUS	4.99	5.59
tblVehicleEF	UBUS	9.77	10.08
tblVehicleEF	UBUS	1,910.50	1,966.02
tblVehicleEF	UBUS	147.28	143.24
tblVehicleEF	UBUS	5.83	7.80
tblVehicleEF	UBUS	12.39	12.76
tblVehicleEF	UBUS	0.49	0.50
tblVehicleEF	UBUS	0.10	0.14
tblVehicleEF	UBUS	1.0240e-003	8.0600e-004
tblVehicleEF	UBUS	0.21	0.21
tblVehicleEF	UBUS	0.10	0.14
tblVehicleEF	UBUS	9.4200e-004	7.4100e-004
tblVehicleEF	UBUS	7.8550e-003	6.9590e-003
tblVehicleEF	UBUS	0.09	0.08
tblVehicleEF	UBUS	3.3290e-003	2.8240e-003
tblVehicleEF	UBUS	0.38	0.51
tblVehicleEF	UBUS	0.01	0.01
tblVehicleEF	UBUS	0.89	0.86
tblVehicleEF	UBUS	0.01	0.02
tblVehicleEF	UBUS	1.6530e-003	1.6170e-003
tblVehicleEF	UBUS	7.8550e-003	6.9590e-003
tblVehicleEF	UBUS	0.09	0.08
tblVehicleEF	UBUS	3.3290e-003	2.8240e-003
tblVehicleEF	UBUS	1.25	1.51
tblVehicleEF	UBUS	0.01	0.01
tblVehicleEF	UBUS	0.97	0.95
tblVehicleEF	UBUS	0.84	0.95
tblVehicleEF	UBUS	0.06	0.06
tblVehicleEF	UBUS	5.02	5.62
tblVehicleEF	UBUS	7.88	8.13
tblVehicleEF	UBUS	1,910.50	1,966.02
tblVehicleEF	UBUS	147.28	143.24
tblVehicleEF	UBUS	5.53	7.41
tblVehicleEF	UBUS	12.29	12.67
tblVehicleEF	UBUS	0.49	0.50
tblVehicleEF	UBUS	0.10	0.14
tblVehicleEF	UBUS	1.0240e-003	8.0600e-004
tblVehicleEF	UBUS	0.21	0.21
tblVehicleEF	UBUS	0.10	0.14
tblVehicleEF	UBUS	9.4200e-004	7.4100e-004
tblVehicleEF	UBUS	0.02	0.02
tblVehicleEF	UBUS	0.11	0.10
tblVehicleEF	UBUS	6.5600e-003	5.7180e-003
tblVehicleEF	UBUS	0.38	0.51
tblVehicleEF	UBUS	0.01	9.5370e-003
tblVehicleEF	UBUS	0.78	0.76
tblVehicleEF	UBUS	0.01	0.02
tblVehicleEF	UBUS	1.6200e-003	1.5830e-003
tblVehicleEF	UBUS	0.02	0.02
tblVehicleEF	UBUS	0.11	0.10

tblVehicleEF	UBUS	6.5600e-003	5.7180e-003
tblVehicleEF	UBUS	1.26	1.52
tblVehicleEF	UBUS	0.01	9.5370e-003
tblVehicleEF	UBUS	0.86	0.83
tblVehicleEF	UBUS	0.84	0.95
tblVehicleEF	UBUS	0.07	0.07
tblVehicleEF	UBUS	4.95	5.55
tblVehicleEF	UBUS	11.88	12.28
tblVehicleEF	UBUS	1,910.50	1,966.02
tblVehicleEF	UBUS	147.28	143.24
tblVehicleEF	UBUS	5.95	7.96
tblVehicleEF	UBUS	12.50	12.86
tblVehicleEF	UBUS	0.49	0.50
tblVehicleEF	UBUS	0.10	0.14
tblVehicleEF	UBUS	1.0240e-003	8.0600e-004
tblVehicleEF	UBUS	0.21	0.21
tblVehicleEF	UBUS	0.10	0.14
tblVehicleEF	UBUS	9.4200e-004	7.4100e-004
tblVehicleEF	UBUS	2.9160e-003	2.5200e-003
tblVehicleEF	UBUS	0.09	0.09
tblVehicleEF	UBUS	1.7640e-003	1.4510e-003
tblVehicleEF	UBUS	0.38	0.51
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	1.00	0.97
tblVehicleEF	UBUS	0.01	0.02
tblVehicleEF	UBUS	1.6900e-003	1.6550e-003
tblVehicleEF	UBUS	2.9160e-003	2.5200e-003
tblVehicleEF	UBUS	0.09	0.09
tblVehicleEF	UBUS	1.7640e-003	1.4510e-003
tblVehicleEF	UBUS	1.25	1.51
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	1.09	1.07
tblVehicleTrips	CNW_TTP	41.00	0.00
tblVehicleTrips	CW_TL	9.50	19.00
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	ST_TR	1.68	0.00
tblVehicleTrips	SU_TR	1.68	0.00
tblVehicleTrips	WD_TR	1.68	0.22
tblWater	IndoorWaterUseRate	23,381,687.50	7,862,100.00
tblWater	OutdoorWaterUseRate	0.00	-16,700,000.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Area	0.4712	2.0000e-005	1.7500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.4200e-003	3.4200e-003	1.0000e-005	0.0000	3.6400e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1,027.5665	1,027.5665	0.0646	0.0134	1,033.1680
Mobile	5.2500e-003	0.0105	0.1090	3.5000e-004	0.0378	2.4000e-004	0.0380	0.0100	2.2000e-004	0.0103	0.0000	31.9339	31.9339	7.8000e-004	0.0000	31.9534
Waste						0.0000	0.0000		0.0000	0.0000	282.7258	0.0000	282.7258	16.7086	0.0000	700.4412
Water						0.0000	0.0000		0.0000	0.0000	2.4943	-3.3265	-0.8322	0.2560	6.0100e-003	7.3570
Total	**0.4764**	**0.0105**	**0.1108**	**3.5000e-004**	**0.0378**	**2.5000e-004**	**0.0380**	**0.0100**	**2.3000e-004**	**0.0103**	**285.2201**	**1,056.1773**	**1,341.3974**	**17.0300**	**0.0194**	**1,772.9231**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4712	2.0000e-005	1.7500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.4200e-003	3.4200e-003	1.0000e-005	0.0000	3.6400e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1,027.5665	1,027.5665	0.0646	0.0134	1,033.1680
Mobile	5.2500e-003	0.0105	0.1090	3.5000e-004	0.0378	2.4000e-004	0.0380	0.0100	2.2000e-004	0.0103	0.0000	31.9339	31.9339	7.8000e-004	0.0000	31.9534
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	2.4943	-3.3265	-0.8322	0.2560	6.0100e-003	7.3570
Total	**0.4764**	**0.0105**	**0.1108**	**3.5000e-004**	**0.0378**	**2.5000e-004**	**0.0380**	**0.0100**	**2.3000e-004**	**0.0103**	**2.4943**	**1,056.1773**	**1,058.6716**	**0.3214**	**0.0194**	**1,072.4819**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**99.13**	**0.00**	**21.08**	**98.11**	**0.00**	**39.51**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.2500e-003	0.0105	0.1090	3.5000e-004	0.0378	2.4000e-004	0.0380	0.0100	2.2000e-004	0.0103	0.0000	31.9339	31.9339	7.8000e-004	0.0000	31.9534
Unmitigated	5.2500e-003	0.0105	0.1090	3.5000e-004	0.0378	2.4000e-004	0.0380	0.0100	2.2000e-004	0.0103	0.0000	31.9339	31.9339	7.8000e-004	0.0000	31.9534

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Refrigerated Warehouse-No Rail	22.24	0.00	0.00	102,486	102,486
Total	22.24	0.00	0.00	102,486	102,486

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Refrigerated Warehouse-No Rail	19.00	7.30	7.30	100.00	0.00	0.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.510644	0.028911	0.156693	0.100614	0.015429	0.004164	0.015358	0.155771	0.002390	0.001975	0.005996	0.001496	0.000559
Refrigerated Warehouse-No Rail	0.748000	0.057000	0.195000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,027.5665	1,027.5665	0.0646	0.0134	1,033.1680
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,027.5665	1,027.5665	0.0646	0.0134	1,033.1680
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	4.91E+06	1,027.5665	0.0646	0.0134	1,033.1680
Total		**1,027.5665**	**0.0646**	**0.0134**	**1,033.1680**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	4.91E+06	1,027.5665	0.0646	0.0134	1,033.1680
Total		**1,027.5665**	**0.0646**	**0.0134**	**1,033.1680**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4712	2.0000e-005	1.7500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.4200e-003	3.4200e-003	1.0000e-005	0.0000	3.6400e-003
Unmitigated	0.4712	2.0000e-005	1.7500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.4200e-003	3.4200e-003	1.0000e-005	0.0000	3.6400e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0703					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Consumer Products	0.4007					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.6000e-004	2.0000e-005	1.7500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.4200e-003	3.4200e-003	1.0000e-005	0.0000	3.6400e-003
Total	**0.4712**	**2.0000e-005**	**1.7500e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.4200e-003**	**3.4200e-003**	**1.0000e-005**	**0.0000**	**3.6400e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0703					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4007					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.6000e-004	2.0000e-005	1.7500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.4200e-003	3.4200e-003	1.0000e-005	0.0000	3.6400e-003
Total	**0.4712**	**2.0000e-005**	**1.7500e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.4200e-003**	**3.4200e-003**	**1.0000e-005**	**0.0000**	**3.6400e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	-0.8322	0.2560	6.0100e-003	7.3570
Unmitigated	-0.8322	0.2560	6.0100e-003	7.3570

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / -16.7	-12.2223	-0.0008	-0.0002	-12.2889
Refrigerated Warehouse-No Rail	7.8621 / 0	11.3900	0.2568	6.1600e-003	19.6458
Total		**-0.8322**	**0.2560**	**6.0000e-003**	**7.3570**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e

Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / -16.7	-12.2223	-0.0008	-0.0002	-12.2889
Refrigerated Warehouse-No	7.8621 / 0	11.3900	0.2568	6.1600e-003	19.6458
Total		**-0.8322**	**0.2560**	**6.0000e-003**	**7.3570**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	282.7258	16.7086	0.0000	700.4412

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No	1392.8	282.7258	16.7086	0.0000	700.4412
Total		**282.7258**	**16.7086**	**0.0000**	**700.4412**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Hilmar Cheese IS/MND - Operational Previously Approved not yet Built

Merced County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	29.40	1000sqft	0.67	29,403.00	0
Refrigerated Warehouse-No Rail	60.00	1000sqft	1.38	60,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	49
Climate Zone	3			**Operational Year**	2020
Utility Company	Turlock Irrigation District				
CO2 Intensity (lb/MWhr)	461	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Climate zone based on zip code 95324. Emission factor based on 2017 TID power content label - calculated assuming 28%

Land Use - Previously approved cold storage has not yet been constructed: 60,000 SF. 1 of 5 renewable energy tanks not yet constructed. Total for all 5

Construction Phase - Construction evaluated externally

Off-road Equipment - construction evaluated externally

Off-road Equipment - construction evaluated externally

Off-road Equipment - construction evaluated externally

Off-road Equipment - construction evaluated externally

Off-road Equipment - construction evaluated externally

Off-road Equipment - construction evaluated externally

Trips and VMT - construction evaluated externally

Architectural Coating - construction evaluated externally

Vehicle Trips - No new employees for previously approved cold storage warehouse or tank.

Energy Use - Previously Approved Cold Storage: 2,225,000 kWh/year + 1/5 of Previously Approved Renewable Energy System (900,000 kWh). Only 1

Water And Wastewater - Little to no water consumed, according to applicant.

Solid Waste - waste tonnage based on volume to weight relationship from Phases I and II

Land Use Change -

Sequestration -

Waste Mitigation -

Operational Off-Road Equipment -

Stationary Sources - Process Boilers -

Table Name	Column Name	Default Value	New Value
tblEnergyUse	LightingElect	2.70	0.00
tblEnergyUse	LightingElect	2.45	0.00
tblEnergyUse	NT24E	4.16	0.00
tblEnergyUse	NT24E	21.99	0.00
tblEnergyUse	NT24NG	3.84	0.00
tblEnergyUse	T24E	1.96	6.12
tblEnergyUse	T24E	0.47	37.08

tblEnergyUse	T24NG	17.03	0.00
tblEnergyUse	T24NG	0.15	0.00
tblLandUse	LandUseSquareFeet	29,400.00	29,403.00
tblProjectCharacteristics	CO2IntensityFactor	790	461
tblSolidWaste	SolidWasteGenerationRate	36.46	0.00
tblSolidWaste	SolidWasteGenerationRate	56.40	7.68
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	ST_TR	1.68	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	SU_TR	1.68	0.00
tblVehicleTrips	WD_TR	6.97	0.00
tblVehicleTrips	WD_TR	1.68	0.00
tblWater	IndoorWaterUseRate	6,798,750.00	0.00
tblWater	IndoorWaterUseRate	13,875,000.00	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4114	1.0000e-005	8.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.6000e-003	1.6000e-003	0.0000	0.0000	1.7000e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	502.8471	502.8471	0.0316	6.5400e-003	505.5882
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	1.5590	0.0000	1.5590	0.0921	0.0000	3.8623
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.4114**	**1.0000e-005**	**8.3000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.5590**	**502.8487**	**504.4077**	**0.1238**	**6.5400e-003**	**509.4522**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4114	1.0000e-005	8.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.6000e-003	1.6000e-003	0.0000	0.0000	1.7000e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	502.8471	502.8471	0.0316	6.5400e-003	505.5882
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.4114**	**1.0000e-005**	**8.3000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**502.8487**	**502.8487**	**0.0316**	**6.5400e-003**	**505.5899**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**

Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**100.00**	**0.00**	**0.31**	**74.44**	**0.00**	**0.76**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.00	0.00	0.00		
Refrigerated Warehouse-No Rail	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
Refrigerated Warehouse-No Rail	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.484945	0.031816	0.154973	0.120992	0.021332	0.005119	0.015709	0.151573	0.002377	0.002347	0.006486	0.001616	0.000714
Refrigerated Warehouse-No Rail	0.484945	0.031816	0.154973	0.120992	0.021332	0.005119	0.015709	0.151573	0.002377	0.002347	0.006486	0.001616	0.000714

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	502.8471	502.8471	0.0316	6.5400e-003	505.5882
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	502.8471	502.8471	0.0316	6.5400e-003	505.5882
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	179946	37.6279	2.3700e-003	4.9000e-004	37.8330
Refrigerated Warehouse-No Rail	2.22E+06	465.2192	0.0293	6.0500e-003	467.7552
Total		**502.8471**	**0.0316**	**6.5400e-003**	**505.5882**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	179946	37.6279	2.3700e-003	4.9000e-004	37.8330
Refrigerated Warehouse-No Rail	2.2248e+006	465.2192	0.0293	6.0500e-003	467.7552
Total		**502.8471**	**0.0316**	**6.5400e-003**	**505.5882**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4114	1.0000e-005	8.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.6000e-003	1.6000e-003	0.0000	0.0000	1.7000e-003
Unmitigated	0.4114	1.0000e-005	8.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.6000e-003	1.6000e-003	0.0000	0.0000	1.7000e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0622					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3492					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	8.0000e-005	1.0000e-005	8.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.6000e-003	1.6000e-003	0.0000	0.0000	1.7000e-003
Total	**0.4114**	**1.0000e-005**	**8.3000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.6000e-003**	**1.6000e-003**	**0.0000**	**0.0000**	**1.7000e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0622					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3492					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	8.0000e-005	1.0000e-005	8.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.6000e-003	1.6000e-003	0.0000	0.0000	1.7000e-003
Total	**0.4114**	**1.0000e-005**	**8.3000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.6000e-003**	**1.6000e-003**	**0.0000**	**0.0000**	**1.7000e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			

Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	1.5590	0.0921	0.0000	3.8623

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e

Land Use	tons	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	7.68	1.5590	0.0921	0.0000	3.8623
Total		**1.5590**	**0.0921**	**0.0000**	**3.8623**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

This tab calculates the vehicle fleet mix for operational trips. Operational trips for Phase I include employee trips and 1 delivery truck. CalEEMod default includes all vehicle types which is not representative of the project trips

Operational Trips Breakdown	Phase 1		
22 out of 23 daily trips will be employees commuting =		99%	employee trips
1 out of 23 daily trips will be delivery trips =		1%	delivery trips
Merced County Breakdown (assuming employee commute vehicles only)			
LDA Percentage		74.8%	
LDT1 Percentage		5.7%	
LDT2 Percentage		19.5%	
Weighted Breakdown after including Delivery Trip (for use CalEEMod)			
LDA Percentage		74%	
LDT1 Percentage		6%	
LDT2 Percentage		19%	
HD Vehicles percentage (for deliveries)		1%	

This tab calculates the emission factor for Turlock Irrigation District electricity for project operation, based on RPS. The CalEEMod default is from 2008 and is not representative.

RPS Calculation for Turlock Irrigation District (TID)						
TID 2008 (Based on CEC Power Content Label)	**Percentage**	**Emission Factor (lbs CO2/kWh)**		1st quarter	2nd quarter	3rd quarter
hydro	21.3%	0.000		23.0%	21.0%	20.0%
Nuclear	0.0%	0.000		0.0%	0.0%	0.0%
renewable	5.0%	0.000		5.0%	5.0%	5.0%
non-renewable	73.7%	1.072		72.0%	74.0%	75.0%
total	100.0%	0.790	*2008 emission factor from CalEEMod	100.0%	100.0%	100.0%
TID 2017 (Based on TID 2018 Power Content Label)	**Percentage**	**Emission Factor (lbs CO2/kWh)**				
hydro	29.0%	0.000				
Nuclear	0.0%	0.000				
renewable	28.0%	0.000				
non-renewable	43.0%	1.072				
total	100.0%	0.461				

Health Risk Assessment Methodology, Results, and Calculations

Health Risk Assessment Methodology

TAC Inventory

The TAC inventory includes emissions associated with short-term construction activity and uses the same methodology as the mass emissions analysis for identifying mass daily criteria pollutant emissions. The TAC inventory is based on the total PM10 exhaust emissions generated on-site, and all PM10 exhaust emissions from off-road equipment during construction was assumed to be DPM.

Air Dispersion Modeling

The HRA uses EPA's AERMOD model, version 18081, to model annual average concentrations at nearby receptors. Modeling inputs, including emission rate (in grams per second) and source characteristics (release height, stack diameter, plume width, etc.), were based on guidance provided by OEHHA and SJVAPCD. Meteorological data was obtained from ARB for the Merced location, which is approximately 20 miles southeast of the project site.

Emissions associated with construction activities were treated as individual area sources equal to the size of the proposed buildings associated with the project. Emissions from construction activities were modeled based on normal construction hours and days (7 am to 6 pm on weekdays). Construction-related area sources were assumed to have a 3.00-meter (9.84 feet) release height.

A receptor is defined as a point where a person (e.g. resident) may be located for a given period of time. With respect to cancer and chronic health effects, all locations where a person could be located for extended periods of time, such as a residence or school, need to be identified. Sensitive receptor locations were placed at the nearest residences located on Lander Avenue and August Avenue, and in the residential development south of the project site on Amethyst Drive, Peacock Way, Diamond Lane, Garnet Court, Onyx Court, Ivory Court, Cameo Way, and Tiffany Lane. According to SJVAPCD guidance, residential cancer risks assume a 70-year exposure (San Joaquin Valley Air Pollution Control District 2015).

Risk Calculations

OEHHA has established health risk thresholds for both cancer and non-cancer health effects.

SJVAPCD currently recommends a maximum incremental cancer risk project-level CEQA significance threshold of twenty in one million (2.0 x 10-5) to reflect new OEHHA guidance (California Office of Environmental Health Hazard Assessment 2015), and recommends that other lead agencies use this significance threshold when approving permits for new or modified stationary sources (San Joaquin Valley Air Pollution Control District 2015).

The approach to estimating cancer risk from long-term inhalation exposure to carcinogens requires calculating a range of potential doses and multiplying by cancer potency factors in units of inverse dose to obtain a range of cancer risks. For cancer risk, the risk for each age group is calculated using the appropriate breathing rates (DBR), age sensitivity factors (ASFs), exposure duration (ED), and cancer risks calculated for individual age groups are summed to estimate cancer risk for the 70-year exposure duration SJVAPCD recommends for residential and sensitive receptor locations.

Chronic cancer and hazard risks were calculated for DPM according to the following steps:

1. Calculate dose:

$$\text{Dose-air} = (C_{air}) \times \{BR/BW\} \times A \times EF \times 10^{-6}$$

Where,

Dose-air	Dose through inhalation (mg/kg/d).
Cair	Concentration in air (μg/m^3)
{BR/BW}	Daily breathing rate normalized to body weight (L/kg body weight-day)
A	Inhalation absorption factor, 1.
EF	Exposure frequency (unitless), days/365 days
10-6	micrograms to milligrams conversion; liters to cubic meters conversion

2. Calculate cancer risk.

$Risk_{inh\text{-}res}$ = $DOSE_{air}$ x CPF x ASF x ED / AT x FAH

Where,

$Risk_{inh\text{-}res}$	inhalation cancer risk
$DOSE_{air}$	daily inhalation dose (mg/kg-day)
CPF	Inhalation Cancer Potency Factor
ASF	Age Sensitivity Factor for a specified age group (unitless)
ED	Exposure Duration (in years) for a specified age group.
AT	Averaging Time for lifetime cancer risk for all receptor types.
FAH	Fraction of time spent at home (unitless) (only applies to residential receptors)

3. Calculate chronic hazard quotient:

Chronic Hazard = C_{air} / Chronic REL

Where,

Cair	Concentration in air (μg/m^3)
REL	Chronic Reference Exposure Level (REL); REL for DPM is 5.0.

OEHHA's 2015 update addresses accounts for the increased sensitivity to early-in-life exposure to carcinogens. Table 1 summarizes key age-specific factors used in the HRA. OEHHA recommends risk to be analyzed for the following exposure durations (residency times): 30 years for the maximally exposed individual resident; 9 years for central tendency; and 70 years for maximum lifetime. The 9-, 30-, and 70-year exposures are chosen to coincide with U.S. EPA's estimates of the average (9 years), high-end estimates (30-years) of residence time, and a lifetime residency (70 years) (California Office of Environmental Health Hazard Assessment 2015: 8-6). SJVAPCD recommends a 70-year exposure duration for residential receptors (San Joaquin Valley Air Pollution Control District 2015: 24). Note that OEHHA has not published an acute REL for DPM.

Table 1. Key Age-Specific Factors Used in Health Risk Assessment

	Age Group					
Factor	3rd Trimester	0<2 years	2<9 years	2<16 years	16<30 years	16–70 years
Age Sensitivity Factors (ASF)[a]	10	10	3	3	1	1
Breathing Rates (DBR, BR/BW), Residential[b]	361	1090	861	745	335	290
Fraction of Time at Home (FAH)	0.85	0.85	0.72	0.72	0.72	0.73
Exposure Duration (ED) - Individual Cancer Risk -70yr[c]	0.25	2	7	14	14	54

Sources: California Office of Environmental Health Hazard Assessment 2015; San Joaquin Valley Air Pollution Control District 2015;

[a] Based on Table 8.3 in California Office of Environmental Health Hazard Assessment 2015

[b] Based on Point Estimates of Residential Daily Breathing Rates, Table 5.6, OEHHA 2015, 95^{th} percentile for all age bins (San Joaquin Valley Air Pollution Control District 2015).

[c] Based on Equation 8.2.4 A in California Office of Environmental Health Hazard Assessment 2015.

References

California Office of Environmental Health Hazard Assessment. 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Risk Assessments.* February. Available: <https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf >. Accessed: January 3, 2019.

San Joaquin Valley Air Pollution Control District. 2015. *Update to District's Risk Management Policy to Address OEHHA's Revised Risk Assessment Guidance Document*. May. Available: <http://www.valleyair.org/busind/pto/staff-report-5-28-15.pdf>. Accessed: January 3, 2019.

Health Risk Calculations - Risk Scenario 1 (Third Trimester Occurs in 2019)

Methodolology, Air Toxics Hot Spots Program Guidance Manual for the Preparation of Risk Assessments ,Final ,March 2015

https://oehha.ca.gov/air/crnr/notice-adoption-air-toxics-hot-spots-program-guidance-manual-preparation-health-risk-0

Receptor #	Receptor ID	Adjusted Avgerage Annual Concentration from AERMOD first 0.25	Adjusted Avgerage Annual Concentration from AERMOD 0-2 Years	Adjusted Avgerage Annual Concentration from AERMOD 2-9 Years	Adjusted Avgerage Annual Concentration from AERMOD 9-16 Years	Adjusted Avgerage Annual Concentration from AERMOD 16-30 Years	First 0.25 years Dose-Air (mg/kg/d)	0-2 years Dose-Air (mg/kg/d)	2-9 years Dose-Air (mg/kg/d)	9-16 years Dose-Air (mg/kg/d)	16-30 Dose-Air (mg/kg/d)	First 0.25 years Cancer Risk	0-2 years Cancer Risk	2-9 years Cancer Risk	9-16 years Cancer Risk	16-30 years Cancer Risk	Total Cancer Risk	or in cases per million	Hazard Index
1	AMETHYST	0.000085	0.000135	0.000101			2.93E-08	1.41E-07	8.34E-08	0.00E+00	0.00E+00	9.79E-10	3.77E-08	1.98E-08	0.00E+00	0.00E+00	5.85E-08	0.1	0.000
2	AMETHYST	0.000102	0.000163	0.000119			3.52E-08	1.71E-07	9.86E-08	0.00E+00	0.00E+00	1.17E-09	4.56E-08	2.34E-08	0.00E+00	0.00E+00	7.02E-08	0.1	0.000
3	AMETHYST	0.000118	0.000192	0.000138			4.08E-08	2.01E-07	1.14E-07	0.00E+00	0.00E+00	1.36E-09	5.37E-08	2.70E-08	0.00E+00	0.00E+00	8.21E-08	0.1	0.000
4	AMETHYST	0.000141	0.000231	0.000165			4.89E-08	2.41E-07	1.36E-07	0.00E+00	0.00E+00	1.63E-09	6.44E-08	3.24E-08	0.00E+00	0.00E+00	9.84E-08	0.1	0.000
5	AMETHYST	0.000176	0.000285	0.000205			6.10E-08	2.98E-07	1.69E-07	0.00E+00	0.00E+00	2.04E-09	7.96E-08	4.02E-08	0.00E+00	0.00E+00	1.22E-07	0.1	0.000
6	AMETHYST	0.000220	0.000350	0.000252			7.62E-08	3.66E-07	2.08E-07	0.00E+00	0.00E+00	2.54E-09	9.78E-08	4.95E-08	0.00E+00	0.00E+00	1.50E-07	0.1	0.000
7	AMETHYST	0.000275	0.000424	0.000310			9.53E-08	4.44E-07	2.56E-07	0.00E+00	0.00E+00	3.18E-09	1.18E-07	6.07E-08	0.00E+00	0.00E+00	1.82E-07	0.2	0.000
8	AMETHYST	0.000085	0.000136	0.000102			2.94E-08	1.42E-07	8.39E-08	0.00E+00	0.00E+00	9.83E-10	3.80E-08	1.99E-08	0.00E+00	0.00E+00	5.89E-08	0.1	0.000
9	AMETHYST	0.000103	0.000166	0.000122			3.58E-08	1.74E-07	1.01E-07	0.00E+00	0.00E+00	1.19E-09	4.65E-08	2.39E-08	0.00E+00	0.00E+00	7.16E-08	0.1	0.000
10	AMETHYST	0.000121	0.000197	0.000141			4.19E-08	2.06E-07	1.17E-07	0.00E+00	0.00E+00	1.40E-09	5.51E-08	2.77E-08	0.00E+00	0.00E+00	8.42E-08	0.1	0.000
11	AMETHYST	0.000145	0.000237	0.000169			5.00E-08	2.47E-07	1.39E-07	0.00E+00	0.00E+00	1.67E-09	6.61E-08	3.31E-08	0.00E+00	0.00E+00	1.01E-07	0.1	0.000
12	AMETHYST	0.000181	0.000294	0.000211			6.28E-08	3.07E-07	1.74E-07	0.00E+00	0.00E+00	2.10E-09	8.21E-08	4.13E-08	0.00E+00	0.00E+00	1.25E-07	0.1	0.000
13	AMETHYST	0.000228	0.000364	0.000262			7.91E-08	3.81E-07	2.16E-07	0.00E+00	0.00E+00	2.64E-09	1.02E-07	5.14E-08	0.00E+00	0.00E+00	1.56E-07	0.2	0.000
14	AMETHYST	0.000288	0.000445	0.000324			9.98E-08	4.65E-07	2.68E-07	0.00E+00	0.00E+00	3.33E-09	1.24E-07	6.36E-08	0.00E+00	0.00E+00	1.91E-07	0.2	0.000
15	AMETHYST	0.000085	0.000137	0.000102			2.95E-08	1.43E-07	8.42E-08	0.00E+00	0.00E+00	9.86E-10	3.82E-08	2.00E-08	0.00E+00	0.00E+00	5.92E-08	0.1	0.000
16	AMETHYST	0.000105	0.000169	0.000124			3.63E-08	1.77E-07	1.02E-07	0.00E+00	0.00E+00	1.21E-09	4.72E-08	2.43E-08	0.00E+00	0.00E+00	7.27E-08	0.1	0.000
17	AMETHYST	0.000124	0.000203	0.000145			4.30E-08	2.12E-07	1.20E-07	0.00E+00	0.00E+00	1.44E-09	5.66E-08	2.85E-08	0.00E+00	0.00E+00	8.65E-08	0.1	0.000
18	AMETHYST	0.000148	0.000243	0.000173			5.12E-08	2.54E-07	1.43E-07	0.00E+00	0.00E+00	1.71E-09	6.79E-08	3.39E-08	0.00E+00	0.00E+00	1.04E-07	0.1	0.000
19	AMETHYST	0.000186	0.000303	0.000217			6.46E-08	3.17E-07	1.79E-07	0.00E+00	0.00E+00	2.16E-09	8.47E-08	4.25E-08	0.00E+00	0.00E+00	1.29E-07	0.1	0.000
20	AMETHYST	0.000237	0.000379	0.000272			8.21E-08	3.96E-07	2.25E-07	0.00E+00	0.00E+00	2.74E-09	1.06E-07	5.34E-08	0.00E+00	0.00E+00	1.62E-07	0.2	0.000
21	AMETHYST	0.000302	0.000467	0.000340			1.05E-07	4.88E-07	2.80E-07	0.00E+00	0.00E+00	3.49E-09	1.30E-07	6.66E-08	0.00E+00	0.00E+00	2.01E-07	0.2	0.000
22	AMETHYST	0.000086	0.000138	0.000102			2.96E-08	1.44E-07	8.44E-08	0.00E+00	0.00E+00	9.90E-10	3.85E-08	2.01E-08	0.00E+00	0.00E+00	5.95E-08	0.1	0.000
23	AMETHYST	0.000106	0.000171	0.000126			3.67E-08	1.79E-07	1.04E-07	0.00E+00	0.00E+00	1.23E-09	4.79E-08	2.47E-08	0.00E+00	0.00E+00	7.38E-08	0.1	0.000
24	AMETHYST	0.000127	0.000208	0.000149			4.41E-08	2.18E-07	1.23E-07	0.00E+00	0.00E+00	1.47E-09	5.81E-08	2.92E-08	0.00E+00	0.00E+00	8.88E-08	0.1	0.000
25	AMETHYST	0.000152	0.000250	0.000177			5.26E-08	2.61E-07	1.46E-07	0.00E+00	0.00E+00	1.75E-09	6.98E-08	3.48E-08	0.00E+00	0.00E+00	1.06E-07	0.1	0.000
26	AMETHYST	0.000192	0.000313	0.000223			6.64E-08	3.27E-07	1.84E-07	0.00E+00	0.00E+00	2.22E-09	8.74E-08	4.38E-08	0.00E+00	0.00E+00	1.33E-07	0.1	0.000
27	AMETHYST	0.000247	0.000395	0.000283			8.54E-08	4.13E-07	2.34E-07	0.00E+00	0.00E+00	2.85E-09	1.10E-07	5.55E-08	0.00E+00	0.00E+00	1.69E-07	0.2	0.000
28	AMETHYST	0.000317	0.000492	0.000357			1.10E-07	5.14E-07	2.94E-07	0.00E+00	0.00E+00	3.67E-09	1.37E-07	6.99E-08	0.00E+00	0.00E+00	2.11E-07	0.2	0.000
29	AMETHYST	0.000086	0.000139	0.000103			2.98E-08	1.45E-07	8.47E-08	0.00E+00	0.00E+00	9.97E-10	3.89E-08	2.01E-08	0.00E+00	0.00E+00	6.00E-08	0.1	0.000
30	AMETHYST	0.000107	0.000173	0.000127			3.70E-08	1.81E-07	1.05E-07	0.00E+00	0.00E+00	1.24E-09	4.84E-08	2.50E-08	0.00E+00	0.00E+00	7.47E-08	0.1	0.000
31	AMETHYST	0.000131	0.000214	0.000153			4.52E-08	2.23E-07	1.26E-07	0.00E+00	0.00E+00	1.51E-09	5.96E-08	3.00E-08	0.00E+00	0.00E+00	9.12E-08	0.1	0.000
32	AMETHYST	0.000156	0.000258	0.000182			5.40E-08	2.69E-07	1.50E-07	0.00E+00	0.00E+00	1.80E-09	7.19E-08	3.57E-08	0.00E+00	0.00E+00	1.09E-07	0.1	0.000
33	AMETHYST	0.000197	0.000323	0.000230			6.83E-08	3.38E-07	1.90E-07	0.00E+00	0.00E+00	2.28E-09	9.03E-08	4.51E-08	0.00E+00	0.00E+00	1.38E-07	0.1	0.000
34	AMETHYST	0.000256	0.000412	0.000294			8.88E-08	4.31E-07	2.43E-07	0.00E+00	0.00E+00	2.96E-09	1.15E-07	5.77E-08	0.00E+00	0.00E+00	1.76E-07	0.2	0.000
35	AMETHYST	0.000334	0.000518	0.000375			1.16E-07	5.41E-07	3.10E-07	0.00E+00	0.00E+00	3.86E-09	1.45E-07	7.35E-08	0.00E+00	0.00E+00	2.22E-07	0.2	0.000
36	AMETHYST	0.000087	0.000141	0.000103			3.02E-08	1.47E-07	8.53E-08	0.00E+00	0.00E+00	1.01E-09	3.94E-08	2.03E-08	0.00E+00	0.00E+00	6.06E-08	0.1	0.000
37	AMETHYST	0.000108	0.000175	0.000129			3.73E-08	1.83E-07	1.06E-07	0.00E+00	0.00E+00	1.24E-09	4.89E-08	2.52E-08	0.00E+00	0.00E+00	7.54E-08	0.1	0.000
38	AMETHYST	0.000134	0.000219	0.000157			4.63E-08	2.29E-07	1.30E-07	0.00E+00	0.00E+00	1.54E-09	6.11E-08	3.08E-08	0.00E+00	0.00E+00	9.35E-08	0.1	0.000
39	AMETHYST	0.000161	0.000266	0.000187			5.56E-08	2.78E-07	1.55E-07	0.00E+00	0.00E+00	1.86E-09	7.42E-08	3.67E-08	0.00E+00	0.00E+00	1.13E-07	0.1	0.000
40	AMETHYST	0.000203	0.000334	0.000237			7.03E-08	3.49E-07	1.95E-07	0.00E+00	0.00E+00	2.35E-09	9.33E-08	4.64E-08	0.00E+00	0.00E+00	1.42E-07	0.1	0.000
41	AMETHYST	0.000267	0.000430	0.000306			9.24E-08	4.50E-07	2.53E-07	0.00E+00	0.00E+00	3.08E-09	1.20E-07	6.01E-08	0.00E+00	0.00E+00	1.83E-07	0.2	0.000
42	AMETHYST	0.000351	0.000546	0.000395			1.22E-07	5.71E-07	3.26E-07	0.00E+00	0.00E+00	4.06E-09	1.53E-07	7.75E-08	0.00E+00	0.00E+00	2.34E-07	0.2	0.000
43	AMETHYST	0.000089	0.000143	0.000104			3.07E-08	1.50E-07	8.62E-08	0.00E+00	0.00E+00	1.02E-09	4.00E-08	2.05E-08	0.00E+00	0.00E+00	6.15E-08	0.1	0.000
44	AMETHYST	0.000108	0.000177	0.000129			3.75E-08	1.85E-07	1.07E-07	0.00E+00	0.00E+00	1.25E-09	4.95E-08	2.54E-08	0.00E+00	0.00E+00	7.61E-08	0.1	0.000
45	AMETHYST	0.000136	0.000224	0.000161			4.72E-08	2.34E-07	1.33E-07	0.00E+00	0.00E+00	1.58E-09	6.25E-08	3.15E-08	0.00E+00	0.00E+00	9.56E-08	0.1	0.000
46	AMETHYST	0.000165	0.000274	0.000193			5.73E-08	2.87E-07	1.59E-07	0.00E+00	0.00E+00	1.91E-09	7.66E-08	3.78E-08	0.00E+00	0.00E+00	1.16E-07	0.1	0.000
47	AMETHYST	0.000209	0.000345	0.000244			7.24E-08	3.61E-07	2.01E-07	0.00E+00	0.00E+00	2.42E-09	9.65E-08	4.78E-08	0.00E+00	0.00E+00	1.47E-07	0.1	0.000
48	AMETHYST	0.000278	0.000449	0.000319			9.62E-08	4.69E-07	2.63E-07	0.00E+00	0.00E+00	3.21E-09	1.25E-07	6.26E-08	0.00E+00	0.00E+00	1.91E-07	0.2	0.000
49	AMETHYST	0.000371	0.000578	0.000417			1.28E-07	6.04E-07	3.44E-07	0.00E+00	0.00E+00	4.29E-09	1.61E-07	8.17E-08	0.00E+00	0.00E+00	2.47E-07	0.2	0.000
50	9562 Land	0.003217	0.003216	0.007644			1.11E-06	3.36E-06	6.31E-06	0.00E+00	0.00E+00	3.72E-08	8.98E-07	1.50E-06	0.00E+00	0.00E+00	2.43E-06	2.4	0.002
51	8815 Land	0.001002	0.001528	0.001046			3.47E-07	1.60E-06	8.64E-07	0.00E+00	0.00E+00	1.16E-08	4.27E-07	2.05E-07	0.00E+00	0.00E+00	6.44E-07	0.6	0.000
52	8798 Land	0.001385	0.002027	0.001376			4.80E-07	2.12E-06	1.14E-06	0.00E+00	0.00E+00	1.60E-08	5.66E-07	2.70E-07	0.00E+00	0.00E+00	8.52E-07	0.9	0.000
53	8883 Land	0.000638	0.000994	0.000695			2.21E-07	1.04E-06	5.74E-07	0.00E+00	0.00E+00	7.38E-09	2.78E-07	1.36E-07	0.00E+00	0.00E+00	4.21E-07	0.4	0.000
54	8765 Land	0.000753	0.001158	0.000787			2.61E-07	1.21E-06	6.50E-07	0.00E+00	0.00E+00	8.70E-09	3.23E-07	1.54E-07	0.00E+00	0.00E+00	4.86E-07	0.5	0.000
55	8742 Land	0.000937	0.001369	0.000866			3.24E-07	1.43E-06	7.15E-07	0.00E+00	0.00E+00	1.08E-08	3.82E-07	1.70E-07	0.00E+00	0.00E+00	5.63E-07	0.6	0.000
56	8716 Land	0.000814	0.001187	0.000736			2.82E-07	1.24E-06	6.08E-07	0.00E+00	0.00E+00	9.41E-09	3.31E-07	1.44E-07	0.00E+00	0.00E+00	4.85E-07	0.5	0.000
57	8696 Land	0.000733	0.001075	0.000671			2.54E-07	1.12E-06	5.54E-07	0.00E+00	0.00E+00	8.48E-09	3.00E-07	1.32E-07	0.00E+00	0.00E+00	4.40E-07	0.4	0.000
58	8672 Land	0.000693	0.001001	0.000599			2.40E-07	1.05E-06	4.95E-07	0.00E+00	0.00E+00	8.01E-09	2.79E-07	1.18E-07	0.00E+00	0.00E+00	4.05E-07	0.4	0.000
59	8664 Land	0.000657	0.000948	0.000566			2.27E-07	9.91E-07	4.67E-07	0.00E+00	0.00E+00	7.59E-09	2.65E-07	1.11E-07	0.00E+00	0.00E+00	3.83E-07	0.4	0.000
60	8650 Land	0.000626	0.000902	0.000535			2.17E-07	9.43E-07	4.42E-07	0.00E+00	0.00E+00	7.23E-09	2.52E-07	1.05E-07	0.00E+00	0.00E+00	3.64E-07	0.4	0.000
61	8636 Land	0.000590	0.000851	0.000506			2.04E-07	8.90E-07	4.18E-07	0.00E+00	0.00E+00	6.82E-09	2.38E-07	9.93E-08	0.00E+00	0.00E+00	3.44E-07	0.3	0.000
62	8620 Land	0.000563	0.000804	0.000468			1.95E-07	8.41E-07	3.86E-07	0.00E+00	0.00E+00	6.51E-09	2.25E-07	9.18E-08	0.00E+00	0.00E+00	3.23E-07	0.3	0.000
63	19886 Aug	0.004001	0.005682	0.004671			1.38E-06	5.94E-06	3.86E-06	0.00E+00	0.00E+00	4.62E-08	1.59E-06	9.16E-07	0.00E+00	0.00E+00	2.55E-06	2.5	0.001
64	19880 Aug	0.002883	0.004126	0.003305			9.98E-07	4.31E-06	2.73E-06	0.00E+00	0.00E+00	3.33E-08	1.15E-06	6.48E-07	0.00E+00	0.00E+00	1.83E-06	1.8	0.001
65	19882 Aug	0.003305	0.004735	0.003841			1.14E-06	4.95E-06	3.17E-06	0.00E+00	0.00E+00	3.82E-08	1.32E-06	7.53E-07	0.00E+00	0.00E+00	2.11E-06	2.1	0.001
66	19884 Aug	0.003431	0.004921	0.004011			1.19E-06	5.14E-06	3.31E-06	0.00E+00	0.00E+00	3.97E-08	1.37E-06	7.87E-07	0.00E+00	0.00E+00	2.20E-06	2.2	0.001
67	19888 Aug	0.003293	0.004627	0.003573			1.14E-06	4.84E-06	2.95E-06	0.00E+00	0.00E+00	3.81E-08	1.29E-06	7.01E-07	0.00E+00	0.00E+00	2.03E-06	2.0	0.001
68	20368 Aug	0.000244	0.000403	0.000287			8.44E-08	4.21E-07	2.37E-07	0.00E+00	0.00E+00	2.82E-09	1.13E-07	5.63E-08	0.00E+00	0.00E+00	1.72E-07	0.2	0.000
69	9484 Oslo	0.000520	0.001103	0.000598			1.80E-07	1.15E-06	4.93E-07	0.00E+00	0.00E+00	6.01E-09	3.08E-07	1.17E-07	0.00E+00	0.00E+00	4.31E-07	0.4	0.000
70	9725 Land	0.000819	0.000971	0.001266			2.84E-07	1.02E-06	1.05E-06	0.00E+00	0.00E+00	9.47E-09	2.71E-07	2.48E-07	0.00E+00	0.00E+00	5.29E-07	0.5	0.000
71	19738 Aug	0.001358	0.001802	0.001464			4.70E-07	1.88E-06	1.21E-06	0.00E+00	0.00E+00	1.57E-08	5.03E-07	2.87E-07	0.00E+00	0.00E+00	8.06E-07	0.8	0.000
72	19705 Aug	0.001317	0.001802	0.001444			4.56E-07	1.88E-06	1.19E-06	0.00E+00	0.00E+00	1.52E-08	5.03E-07	2.83E-07	0.00E+00	0.00E+00	8.02E-07	0.8	0.000
73	9502 Land	0.001006	0.001245	0.001211			3.48E-07	1.30E-06	1.00E-06	0.00E+00	0.00E+00	1.16E-08	3.47E-07	2.38E-07	0.00E+00	0.00E+00	5.97E-07	0.6	0.000
74	9504 Land	0.000903	0.001138	0.001082			3.12E-07	1.19E-06	8.93E-07	0.00E+00	0.00E+00	1.04E-08	3.18E-07	2.12E-07	0.00E+00	0.00E+00	5.40E-07	0.5	0.000
75	20332 Dwy	0.000957	0.001407	0.001076			3.31E-07	1.47E-06	8.88E-07	0.00E+00	0.00E+00	1.11E-08	3.93E-07	2.11E-07	0.00E+00	0.00E+00	6.15E-07	0.6	0.000
Max																	2.55E-06	2.5	0.002
Thresholds																		*20*	*1*

HRA Calculations and Values

		First 0.25 years	0-2 years	2-9 years	9-16 years	16-30	
Dose factors	$\text{Dose-air} = C_{air} \times (BR/BW) \times A \times EF \times 10^{-6}$						
	Daily Breath Rate - child (L/kg-day)	361	1090	861	745	335	95th percentile, table 5.6, OEHHA 2015, 2>16 yrs
	A	1	1	1	1	1	constant
	exposure frequency	350	350	350	350	350	
	Conversion Factor	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	(mg/ug + m3/L)
Risk Factors	$RISK_{inh-res} = DOSE_{air} \times CPF \times ASF \times ED/AT \times FAH$	0.25	0-2	2-9	9-16	16-30	
	CPF, DPM ([mg/kg-day]$^{-1}$)	1.1	1.1	1.1	1.1	1.1	OEHHA 2015, Table 7.1
			1.00	1.00	1.00	1.00	
	ASF (Average Age Sensitivity Factor, children 2-16)	10	10	3	3	1	
	ED, Exposure Duration (years)	0.25	2	7	7	14	
	AT, Average Time (days)	70	70	70	70	70	years, constant
	FAH	0.85	0.85	0.72	0.72	0.73	
Health Risk Factor, Hazard							
	Chronic Inhalation Reference Exposure Level, respiratory	5					OEHHA 2015, Table 6.3

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Hazard Index

Chronic Inhalation Reference Exposure Level, respiratory, [5

Concentration Scaling Factors to Apply to Unitized Concentrations

	Source Group 2	Source Group 3	Source Group 4	Source Group 5	Source Group 6	Source Group 7
3rd Trimester	0.0000	0.0013	0.0010	0.0000	0.0000	0.0000
0-2 Years	0.0012	0.0011	0.0012	0.0000	0.0000	0.0000
2<9 Years	0.0003	0.0000	0.0000	0.0013	0.0012	0.0000

Year Breakdown by Receptor Bin

		3rd trimester at beg of all construction			% of time for apportioning emissins to bins		
	fraction of year	3rd tri	0<2	2<9	3rd tri	0<2	2<9
2019	0.45	0.25	0.20		56%	44%	0%
2020	1.00		1.00		0%	100%	0%
2021	1.00		0.80	0.20	0%	80%	20%
2022	1.00			1.00	0%	0%	100%
2023	1.00			1.00	0%	0%	100%
2024	1.00			1.00	0%	0%	100%
		0.25	2.00	3.20			

Emissions (grams per second) by Receptor Bin					grams by bin by year			grams/second by bin by year			
Source Group 2		Days of Construction	Grams of PM10 exhaust	avg grams per second	3rd tri	0<2	2<9	3rd tri	0<2	2<9	QA Checks
	2019	0	0	0.0000	0.000	0.000	0.000				-
	2020	0	0	0.0000	0.000	0.000	0.000				-
	2021	133	7916	0.0015	0.000	6359.699	1556.039				-
	2022	0	0	0.0000	0.000	0.000	0.000				-
	2023	0	0	0.0000	0.000	0.000	0.000				-
	2024	0	0	0.0000	0.000	0.000	0.000				-
	Total	133			0.000	6359.699	1556.039	0.0000	0.0012	0.0003	-
Source Group 3											
	2019	144	13633	0.0024	7631.949	6001.012	0.000				-
	2020	0	0	0.0000	0.000	0.000	0.000				-
	2021	0	0	0.0000	0.000	0.000	0.000				-
	2022	0	0	0.0000	0.000	0.000	0.000				-
	2023	0	0	0.0000	0.000	0.000	0.000				-
	2024	0	0	0.0000	0.000	0.000	0.000				-
	Total	144			7631.949	6001.012	0.000	0.0013	0.0011	0.0000	-
Source Group 4											
	2019	87	8679	0.0025	4858.598	3820.322	0.000				-
	2020	34	1931	0.0014	0.000	1931.037	0.000				-
	2021	0	0	0.0000	0.000	0.000	0.000				-
	2022	0	0	0.0000	0.000	0.000	0.000				-
	2023	0	0	0.0000	0.000	0.000	0.000				-
	2024	0	0	0.0000	0.000	0.000	0.000				-
	Total	121			4858.598	5751.359	0.000	0.0010	0.0012	0.0000	-
Source Group 5											
	2019	0	0	0.0000	0.000	0.000	0.000				-
	2020	0	0	0.0000	0.000	0.000	0.000				-
	2021	0	0	0.0000	0.000	0.000	0.000				-
	2022	0	0	0.0000	0.000	0.000	0.000				-
	2023	0	0	0.0000	0.000	0.000	0.000				-
	2024	145	7327	0.0013	0.000	0.000	7327.132				-
	Total	145			0.000	0.000	7327.132	0.0000	0.0000	0.0013	-
Source Group 6											
	2019	0	0	0.0000	0.000	0.000	0.000				-
	2020	0	0	0.0000	0.000	0.000	0.000				-
	2021	0	0	0.0000	0.000	0.000	0.000				-
	2022	0	0	0.0000	0.000	0.000	0.000				-
	2023	0	0	0.0000	0.000	0.000	0.000				-
	2024	121	5805	0.0012	0.000	0.000	5805.221				-
	Total	121			0.000	0.000	5805.221	0.0000	0.0000	0.0012	-
Source Group 7											
	2019	163	773	0.00012	432.852	340.352	0.000				-
	2020	34	0	0.0000	0.000	0.000	0.000				-
	2021	133	129.3	0.0000	0.000	103.875	25.415				-
	2022	0	0	0.0000	0.000	0.000	0.000				-
	2023	0	0	0.0000	0.000	0.000	0.000				-
	2024	231	15.7	0.0000	0.000	0.000	15.744				-
	Total	561			432.852	444.227	41.159	0.0000	0.0000	0.0000	-

*These are concentration values that have been imported to Excel from AERMOD and represent "unitized" concentrations (modeled with a unit-emissions rate of 1 gram per second). Concentrations were modeled for each major construction activity and separated into source groups. Source Groups 2-6 represent construction of the project buildings, source Group 7 represents on-road trucks. Source Group 1 is no longer applicable and has been removed. If there are errors in the cells below, try opening the AERMOD concentration spreadsheet to which these cells are linked.

	Concentration (micrograms per cubic meter)						
Receptor Number	Source Group 2	Source Group 3	Source Group 4	Source Group 5	Source Group 6	Source Group 7	Receptor ID
1	0.04	0.03	0.04	0.03	0.04	0.05	AMETHYST
2	0.05	0.04	0.05	0.03	0.05	0.06	AMETHYST
3	0.06	0.04	0.06	0.04	0.06	0.07	AMETHYST
4	0.07	0.05	0.07	0.04	0.07	0.09	AMETHYST
5	0.09	0.06	0.10	0.05	0.10	0.12	AMETHYST
6	0.10	0.06	0.13	0.06	0.12	0.18	AMETHYST
7	0.11	0.07	0.17	0.06	0.16	0.31	AMETHYST
8	0.04	0.03	0.04	0.03	0.04	0.05	AMETHYST
9	0.05	0.04	0.05	0.03	0.05	0.06	AMETHYST
10	0.06	0.04	0.06	0.04	0.06	0.07	AMETHYST
11	0.08	0.05	0.08	0.04	0.07	0.09	AMETHYST
12	0.09	0.06	0.10	0.05	0.10	0.13	AMETHYST
13	0.11	0.07	0.14	0.06	0.13	0.19	AMETHYST
14	0.12	0.07	0.18	0.06	0.17	0.33	AMETHYST
15	0.04	0.03	0.04	0.03	0.04	0.05	AMETHYST
16	0.05	0.04	0.05	0.03	0.05	0.06	AMETHYST
17	0.07	0.04	0.06	0.04	0.06	0.07	AMETHYST
18	0.08	0.05	0.08	0.05	0.08	0.10	AMETHYST
19	0.09	0.06	0.10	0.05	0.10	0.13	AMETHYST
20	0.11	0.07	0.14	0.06	0.14	0.20	AMETHYST
21	0.13	0.08	0.19	0.07	0.18	0.34	AMETHYST
22	0.04	0.03	0.04	0.03	0.04	0.05	AMETHYST
23	0.05	0.04	0.05	0.03	0.05	0.06	AMETHYST
24	0.07	0.04	0.07	0.04	0.06	0.08	AMETHYST
25	0.08	0.05	0.08	0.05	0.08	0.10	AMETHYST
26	0.10	0.06	0.11	0.05	0.10	0.14	AMETHYST
27	0.12	0.07	0.15	0.06	0.14	0.21	AMETHYST
28	0.13	0.08	0.20	0.07	0.19	0.35	AMETHYST
29	0.04	0.03	0.04	0.03	0.04	0.05	AMETHYST
30	0.06	0.04	0.05	0.04	0.05	0.06	AMETHYST
31	0.07	0.04	0.07	0.04	0.07	0.08	AMETHYST
32	0.08	0.05	0.08	0.05	0.08	0.11	AMETHYST
33	0.10	0.06	0.11	0.05	0.11	0.15	AMETHYST
34	0.12	0.07	0.15	0.06	0.15	0.22	AMETHYST
35	0.14	0.08	0.21	0.07	0.20	0.36	AMETHYST
36	0.05	0.03	0.04	0.03	0.04	0.06	AMETHYST
37	0.06	0.04	0.05	0.04	0.05	0.07	AMETHYST
38	0.07	0.05	0.07	0.04	0.07	0.08	AMETHYST
39	0.09	0.05	0.08	0.05	0.08	0.11	AMETHYST
40	0.11	0.06	0.11	0.06	0.11	0.15	AMETHYST
41	0.13	0.07	0.16	0.06	0.15	0.22	AMETHYST
42	0.15	0.09	0.23	0.07	0.21	0.37	AMETHYST
43	0.05	0.03	0.04	0.03	0.04	0.06	AMETHYST
44	0.06	0.04	0.05	0.04	0.05	0.07	AMETHYST
45	0.07	0.05	0.07	0.04	0.07	0.09	AMETHYST
46	0.09	0.06	0.09	0.05	0.08	0.11	AMETHYST
47	0.11	0.07	0.12	0.06	0.11	0.16	AMETHYST
48	0.13	0.08	0.17	0.07	0.16	0.23	AMETHYST
49	0.15	0.09	0.24	0.07	0.23	0.38	AMETHYST
50	0.46	2.10	0.19	5.68	0.20	11.24	9562 Land
51	0.35	0.13	0.76	0.11	0.66	2.57	8815 Land
52	0.40	0.15	1.04	0.12	0.91	6.22	8798 Land
53	0.25	0.11	0.46	0.09	0.42	1.08	8883 Land
54	0.28	0.12	0.54	0.09	0.48	2.61	8765 Land
55	0.29	0.12	0.60	0.10	0.53	8.69	8742 Land
56	0.26	0.11	0.49	0.09	0.44	8.74	8716 Land
57	0.24	0.11	0.44	0.08	0.40	7.60	8696 Land
58	0.22	0.10	0.38	0.08	0.34	9.08	8672 Land
59	0.21	0.10	0.35	0.08	0.32	8.77	8664 Land
60	0.20	0.09	0.33	0.08	0.30	8.60	8650 Land
61	0.19	0.09	0.31	0.07	0.28	8.09	8636 Land
62	0.17	0.08	0.28	0.07	0.26	8.51	8620 Land
63	1.04	0.58	3.15	0.39	3.19	1.55	19886 Aug
64	0.87	0.62	2.01	0.43	2.06	1.11	19880 Aug
65	0.97	0.65	2.38	0.44	2.47	1.28	19882 Aug
66	1.02	0.68	2.46	0.46	2.58	1.34	19884 Aug
67	1.04	0.99	1.92	0.67	1.99	1.29	19888 Aug
68	0.13	0.07	0.15	0.06	0.14	0.13	20368 Aug
69	0.50	0.21	0.23	0.12	0.24	0.12	9484 Oslo
70	0.22	0.49	0.12	0.82	0.12	2.45	9725 Land
71	0.41	0.57	0.57	0.50	0.58	0.51	19738 Aug
72	0.42	0.49	0.65	0.40	0.66	0.50	19705 Aug
73	0.31	0.59	0.20	0.68	0.21	0.56	9502 Land
74	0.29	0.52	0.20	0.58	0.21	0.49	9504 Land
75	0.47	0.56	0.20	0.54	0.21	0.16	20332 Dwy

Summary of Total Emissions

Phase 1
Off-Road

	Tons per year	
Year	PM10 E	PM2.5 E
2019	-	-
2020	-	-
2021	-	-
2022	-	-
2023	-	-
2024	-	-
2025	-	-
2026	-	-
Total	-	-

Phase 1
On-Road - Employee

	Tons per year	
Year	PM10 E	PM2.5 E
2019	-	-
2020	-	-
2021	-	-
2022	-	-
2023	-	-
2024	-	-
2025	-	-
2026	-	-
Total	-	-

Phase 1
On-Road - Trucks

	Tons per year	
Year	PM10 E	PM2.5 E
2019	-	-
2020	-	-
2021	-	-
2022	-	-
2023	-	-
2024	-	-
2025	-	-
2026	-	-
Total	-	-

Phase 1
Grade-Pave

	Tons per year	
Year	PM10 E	PM2.5 E
2019	-	-
2020	-	-
2021	-	-
2022	-	-
2023	-	-
2024	-	-
2025	-	-
2026	-	-
Total	-	-

Phase 2
Off-Road

	Tons per year	
Year	PM10 E	PM2.5 E
2019	-	-
2020	-	-
2021	0.00873	0.00800
2022	-	-
2023	-	-
2024	-	-
2025	-	-
2026	-	-
Total	0.00873	0.00800

Phase 2
On-Road - Employee

	Tons per year	
Year	PM10 E	PM2.5 E
2019	-	-
2020	-	-
2021	0.00009	0.00008
2022	-	-
2023	-	-
2024	-	-
2025	-	-
2026	-	-
Total	0.00009	0.00008

Phase 2
On-Road - Trucks

	Tons per year	
Year	PM10 E	PM2.5 E
2019	-	-
2020	-	-
2021	0.00014	0.00013
2022	-	-
2023	-	-
2024	-	-
2025	-	-
2026	-	-
Total	0.00014	0.00013

Phase 2
Grade-Pave

	Tons per year	
Year	PM10 E	PM2.5 E
2019	-	-
2020	-	-
2021	-	-
2022	-	-
2023	-	-
2024	-	-
2025	-	-
2026	-	-
Total	-	-

Phase 3
Off-Road

	Tons per year	
Year	PM10 E	PM2.5 E
2019	0.01503	0.01400
2020	-	-
2021	-	-
2022	-	-
2023	-	-
2024	-	-
2025	-	-
2026	-	-
Total	0.01503	0.01400

Phase 3
On-Road - Employee

	Tons per year	
Year	PM10 E	PM2.5 E
2019	0.00017	0.00015
2020	-	-
2021	-	-
2022	-	-
2023	-	-
2024	-	-
2025	-	-
2026	-	-
Total	0.00017	0.00015

Phase 3
On-Road - Trucks

	Tons per year	
Year	PM10 E	PM2.5 E
2019	0.00035	0.00033
2020	-	-
2021	-	-
2022	-	-
2023	-	-
2024	-	-
2025	-	-
2026	-	-
Total	0.00035	0.00033

Phase 3
Grade-Pave

	Tons per year	
Year	PM10 E	PM2.5 E
2019	-	-
2020	-	-
2021	-	-
2022	-	-
2023	-	-
2024	-	-
2025	-	-
2026	-	-
Total	-	-

Phase 4
Off-Road

	Tons per year	
Year	PM10 E	PM2.5 E
2019	0.00957	0.00883
2020	0.00213	0.00197
2021	-	-
2022	-	-
2023	-	-
2024	-	-
2025	-	-
2026	-	-
Total	0.01170	0.01080

Phase 4
On-Road - Employee

	Tons per year	
Year	PM10 E	PM2.5 E
2019	0.00004	0.00004
2020	0.00002	0.00002
2021	-	-
2022	-	-
2023	-	-
2024	-	-
2025	-	-
2026	-	-
Total	0.00007	0.00006

Phase 4
On-Road - Trucks

	Tons per year	
Year	PM10 E	PM2.5 E
2019	0.00050	0.00046
2020	-	-
2021	-	-
2022	-	-
2023	-	-
2024	-	-
2025	-	-
2026	-	-
Total	0.00050	0.00046

Phase 4
Grade-Pave

	Tons per year	
Year	PM10 E	PM2.5 E
2019	-	-
2020	-	-
2021	-	-
2022	-	-
2023	-	-
2024	-	-
2025	-	-
2026	-	-
Total	-	-

Phase 5
Off-Road

	Tons per year	
Year	PM10 E	PM2.5 E
2019	-	-
2020	-	-
2021	-	-
2022	-	-
2023	-	-
2024	0.00808	0.00752
2025	-	-
2026	-	-
Total	0.00808	0.00752

Phase 5
On-Road - Employee

	Tons per year	
Year	PM10 E	PM2.5 E
2019	-	-
2020	-	-
2021	-	-
2022	-	-
2023	-	-
2024	0.00014	0.00012
2025	-	-
2026	-	-
Total	0.00014	0.00012

Phase 5
On-Road - Trucks

	Tons per year	
Year	PM10 E	PM2.5 E
2019	-	-
2020	-	-
2021	-	-
2022	-	-
2023	-	-
2024	0.00001	0.00001
2025	-	-
2026	-	-
Total	0.00001	0.00001

Phase 5
Grade-Pave

	Tons per year	
Year	PM10 E	PM2.5 E
2019	-	-
2020	-	-
2021	-	-
2022	-	-
2023	-	-
2024	-	-
2025	-	-
2026	-	-
Total	-	-

Phase 6
Off-Road

	Tons per year	
Year	PM10 E	PM2.5 E
2019	-	-
2020	-	-
2021	-	-
2022	-	-
2023	-	-
2024	0.00640	0.00592
2025	-	-
2026	-	-
Total	0.00640	0.00592

Phase 6
On-Road - Employee

	Tons per year	
Year	PM10 E	PM2.5 E
2019	-	-
2020	-	-
2021	-	-
2022	-	-
2023	-	-
2024	0.00005	0.00005
2025	-	-
2026	-	-
Total	0.00005	0.00005

Phase 6
On-Road - Trucks

	Tons per year	
Year	PM10 E	PM2.5 E
2019	-	-
2020	-	-
2021	-	-
2022	-	-
2023	-	-
2024	0.00001	0.00001
2025	-	-
2026	-	-
Total	0.00001	0.00001

Phase 6
Grade-Pave

	Tons per year	
Year	PM10 E	PM2.5 E
2019	-	-
2020	-	-
2021	-	-
2022	-	-
2023	-	-
2024	-	-
2025	-	-
2026	-	-
Total	-	-

On-Road Vehicle Emission Factors Used in Analysis

Source: EMFAC2017.

				3	4	5	6	7	8	9	10	11	12	13	3	4	5	6	7	8	9	10	11	12	13	3	4	5	6	7	8	9	10	11	12	13
				RUNEX, PMBW, and PMTW (grams/mile)											STREX, HTSK, and RUNLOSS (grams/start or trip)											IDLEX, RESTLOSS, and DIURN (grams/veh/day)										
Year	County	VehType	Lookup	ROG	NOx	CO	PM10 Ex	PM10 D	PM2.5 Ex	PM2.5 D	SO2	CO2	CH4	N2O	ROG	NOx	CO	PM10 Ex	PM10 D	PM2.5 Ex	PM2.5 D	SO2	CO2	CH4	N2O	ROG	NOx	CO	PM10 Ex	PM10 D	PM2.5 Ex	PM2.5 D	SO2	CO2	CH4	N2O
2019	Merced	T6InstateOnsite	2019MercedT6InstateOnsite	3.1	15.3	4.3	0.6	12.7	0.6	1.3	0.0	2449	0.1	0.4	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	8.4	2.2	0.1	0.0	0.1	0.0	0.0	684	0.0	0.1
2020	Merced	T6InstateOnsite	2020MercedT6InstateOnsite	2.4	13.0	3.6	0.4	12.7	0.4	1.3	0.0	2455	0.1	0.4	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	7.6	2.1	0.0	0.0	0.0	0.0	0.0	684	0.0	0.1
2021	Merced	T6InstateOnsite	2021MercedT6InstateOnsite	1.9	11.2	3.1	0.3	12.7	0.3	1.3	0.0	2441	0.1	0.4	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	6.7	2.1	0.0	0.0	0.0	0.0	0.0	675	0.0	0.1
2022	Merced	T6InstateOnsite	2022MercedT6InstateOnsite	0.5	7.8	1.4	0.1	12.7	0.1	1.3	0.0	2409	0.0	0.4	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	3.8	2.0	0.0	0.0	0.0	0.0	0.0	639	0.0	0.1
2023	Merced	T6InstateOnsite	2023MercedT6InstateOnsite	0.1	6.8	0.8	0.0	12.7	0.0	1.3	0.0	2386	0.0	0.4	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	2.1	0.0	0.0	0.0	0.0	0.0	616	0.0	0.1
2024	Merced	T6InstateOnsite	2024MercedT6InstateOnsite	0.1	7.0	0.8	0.0	12.7	0.0	1.3	0.0	2367	0.0	0.4	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	2.1	0.0	0.0	0.0	0.0	0.0	614	0.0	0.1
2025	Merced	T6InstateOnsite	2025MercedT6InstateOnsite	0.1	7.2	0.9	0.0	12.7	0.0	1.3	0.0	2347	0.0	0.4	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	2.1	0.0	0.0	0.0	0.0	0.0	612	0.0	0.1
2026	Merced	T6InstateOnsite	2026MercedT6InstateOnsite	0.1	7.4	0.9	0.0	12.7	0.0	1.3	0.0	2325	0.0	0.4	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	2.1	0.0	0.0	0.0	0.0	0.0	610	0.0	0.1
2019	Merced	T6UtilityOnsite	2019MercedT6UtilityOnsite	0.2	6.2	0.8	0.0	12.7	0.0	1.3	0.0	2464	0.0	0.4	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	12.9	4.7	0.0	0.0	0.0	0.0	0.0	1810	0.0	0.3
2020	Merced	T6UtilityOnsite	2020MercedT6UtilityOnsite	0.1	5.8	0.8	0.0	12.7	0.0	1.3	0.0	2445	0.0	0.4	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	11.9	4.9	0.0	0.0	0.0	0.0	0.0	1783	0.0	0.3
2021	Merced	T6UtilityOnsite	2021MercedT6UtilityOnsite	0.0	4.3	0.6	0.0	12.7	0.0	1.3	0.0	2459	0.0	0.4	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	7.8	5.7	0.0	0.0	0.0	0.0	0.0	1690	0.0	0.3
2022	Merced	T6UtilityOnsite	2022MercedT6UtilityOnsite	0.0	4.3	0.6	0.0	12.7	0.0	1.3	0.0	2422	0.0	0.4	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	7.8	5.7	0.0	0.0	0.0	0.0	0.0	1671	0.0	0.3
2023	Merced	T6UtilityOnsite	2023MercedT6UtilityOnsite	0.0	4.4	0.6	0.0	12.7	0.0	1.3	0.0	2379	0.0	0.4	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	7.8	5.7	0.0	0.0	0.0	0.0	0.0	1648	0.0	0.3
2024	Merced	T6UtilityOnsite	2024MercedT6UtilityOnsite	0.0	4.4	0.6	0.0	12.7	0.0	1.3	0.0	2324	0.0	0.4	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	7.8	5.7	0.0	0.0	0.0	0.0	0.0	1617	0.0	0.3
2025	Merced	T6UtilityOnsite	2025MercedT6UtilityOnsite	0.0	4.4	0.6	0.0	12.7	0.0	1.3	0.0	2271	0.0	0.4	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	7.8	5.7	0.0	0.0	0.0	0.0	0.0	1586	0.0	0.2
2026	Merced	T6UtilityOnsite	2026MercedT6UtilityOnsite	0.0	4.5	0.6	0.0	12.7	0.0	1.3	0.0	2221	0.0	0.3	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	7.8	5.7	0.0	0.0	0.0	0.0	0.0	1556	0.0	0.2
2019	Merced	T7SingleOnsite	2019MercedT7SingleOnsite	3.1	20.5	5.4	0.5	12.7	0.5	1.3	0.0	3666	0.1	0.6	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	26.0	16.1	0.2	0.0	0.1	0.0	0.0	3224	0.1	0.5
2020	Merced	T7SingleOnsite	2020MercedT7SingleOnsite	2.1	17.6	4.1	0.3	12.7	0.3	1.3	0.0	3669	0.1	0.6	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	23.3	19.3	0.0	0.0	0.0	0.0	0.0	3866	0.1	0.6
2021	Merced	T7SingleOnsite	2021MercedT7SingleOnsite	1.7	15.7	3.7	0.2	12.7	0.2	1.3	0.0	3632	0.1	0.6	0.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	22.7	20.0	0.0	0.0	0.0	0.0	0.0	3918	0.1	0.6
2022	Merced	T7SingleOnsite	2022MercedT7SingleOnsite	0.7	12.4	2.5	0.1	12.7	0.1	1.3	0.0	3568	0.0	0.6	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	21.4	21.6	0.0	0.0	0.0	0.0	0.0	4085	0.1	0.6
2023	Merced	T7SingleOnsite	2023MercedT7SingleOnsite	0.2	10.7	1.8	0.0	12.7	0.0	1.3	0.0	3499	0.0	0.6	0.0	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	19.0	23.2	0.0	0.0	0.0	0.0	0.0	3991	0.1	0.6
2024	Merced	T7SingleOnsite	2024MercedT7SingleOnsite	0.2	10.7	1.8	0.0	12.7	0.0	1.3	0.0	3455	0.0	0.5	0.0	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	19.0	23.3	0.0	0.0	0.0	0.0	0.0	3954	0.1	0.6
2025	Merced	T7SingleOnsite	2025MercedT7SingleOnsite	0.1	10.7	1.8	0.0	12.7	0.0	1.3	0.0	3413	0.0	0.5	0.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	19.0	23.3	0.0	0.0	0.0	0.0	0.0	3914	0.1	0.6
2026	Merced	T7SingleOnsite	2026MercedT7SingleOnsite	0.1	10.7	1.8	0.0	12.7	0.0	1.3	0.0	3370	0.0	0.5	0.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	18.9	23.3	0.0	0.0	0.0	0.0	0.0	3873	0.1	0.6
2019	Merced	T7TractorOnsite	2019MercedT7TractorOnsite	3.1	20.0	6.0	0.4	12.7	0.4	1.3	0.0	3708	0.1	0.6	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	25.7	16.9	0.1	0.0	0.1	0.0	0.0	3703	0.1	0.6
2020	Merced	T7TractorOnsite	2020MercedT7TractorOnsite	2.2	18.2	4.9	0.2	12.7	0.2	1.3	0.0	3699	0.1	0.6	0.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	23.3	19.5	0.0	0.0	0.0	0.0	0.0	4078	0.1	0.6
2021	Merced	T7TractorOnsite	2021MercedT7TractorOnsite	1.7	17.0	4.4	0.2	12.7	0.2	1.3	0.0	3666	0.1	0.6	0.0	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	22.7	20.1	0.0	0.0	0.0	0.0	0.0	4105	0.1	0.6
2022	Merced	T7TractorOnsite	2022MercedT7TractorOnsite	0.8	15.2	3.3	0.1	12.7	0.1	1.3	0.0	3617	0.0	0.6	0.0	3.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	21.8	21.2	0.0	0.0	0.0	0.0	0.0	4185	0.1	0.7
2023	Merced	T7TractorOnsite	2023MercedT7TractorOnsite	0.2	14.0	2.2	0.0	12.7	0.0	1.3	0.0	3524	0.0	0.6	0.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	18.9	23.4	0.0	0.0	0.0	0.0	0.0	4011	0.1	0.6
2024	Merced	T7TractorOnsite	2024MercedT7TractorOnsite	0.2	14.3	2.3	0.0	12.7	0.0	1.3	0.0	3484	0.0	0.5	0.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	18.9	23.4	0.0	0.0	0.0	0.0	0.0	3973	0.1	0.6
2025	Merced	T7TractorOnsite	2025MercedT7TractorOnsite	0.2	14.4	2.3	0.0	12.7	0.0	1.3	0.0	3447	0.0	0.5	0.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	18.9	23.5	0.0	0.0	0.0	0.0	0.0	3934	0.1	0.6
2026	Merced	T7TractorOnsite	2026MercedT7TractorOnsite	0.1	14.5	2.3	0.0	12.7	0.0	1.3	0.0	3406	0.0	0.5	0.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	18.9	23.5	0.0	0.0	0.0	0.0	0.0	3892	0.1	0.6
2019	Merced	LDA-LDT	2019MercedLDA-LDT	0.0	0.1	1.3	0.0	0.9	0.0	0.2	0.0	320	0.0	0.0	1.1	0.3	2.8	0.0	0.0	0.0	0.0	0.0	66.1	0.1	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.5	0.0
2020	Merced	LDA-LDT	2020MercedLDA-LDT	0.0	0.1	1.1	0.0	0.9	0.0	0.2	0.0	311	0.0	0.0	1.0	0.3	2.6	0.0	0.0	0.0	0.0	0.0	64.1	0.1	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.4	0.0
2021	Merced	LDA-LDT	2021MercedLDA-LDT	0.0	0.1	1.0	0.0	0.9	0.0	0.2	0.0	302	0.0	0.0	0.9	0.3	2.5	0.0	0.0	0.0	0.0	0.0	62.1	0.1	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.4	0.0
2022	Merced	LDA-LDT	2022MercedLDA-LDT	0.0	0.1	0.9	0.0	0.9	0.0	0.2	0.0	292	0.0	0.0	0.9	0.3	2.5	0.0	0.0	0.0	0.0	0.0	60.1	0.1	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.4	0.0
2023	Merced	LDA-LDT	2023MercedLDA-LDT	0.0	0.1	0.8	0.0	0.9	0.0	0.2	0.0	283	0.0	0.0	0.8	0.2	2.4	0.0	0.0	0.0	0.0	0.0	58.1	0.1	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.4	0.0
2024	Merced	LDA-LDT	2024MercedLDA-LDT	0.0	0.1	0.7	0.0	0.9	0.0	0.2	0.0	274	0.0	0.0	0.7	0.2	2.3	0.0	0.0	0.0	0.0	0.0	56.1	0.1	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.4	0.0
2025	Merced	LDA-LDT	2025MercedLDA-LDT	0.0	0.0	0.7	0.0	0.9	0.0	0.2	0.0	265	0.0	0.0	0.7	0.2	2.2	0.0	0.0	0.0	0.0	0.0	54.2	0.1	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.4	0.0
2026	Merced	LDA-LDT	2026MercedLDA-LDT	0.0	0.0	0.6	0.0	0.9	0.0	0.2	0.0	257	0.0	0.0	0.6	0.2	2.1	0.0	0.0	0.0	0.0	0.0	52.4	0.1	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.3	0.0
2019	Merced	LDT	2019MercedLDT	0.0	0.2	2.0	0.0	0.9	0.0	0.2	0.0	385	0.0	0.0	1.8	0.5	3.3	0.0	0.0	0.0	0.0	0.0	79.9	0.2	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.8	0.0
2020	Merced	LDT	2020MercedLDT	0.0	0.2	1.7	0.0	0.9	0.0	0.2	0.0	374	0.0	0.0	1.7	0.4	3.2	0.0	0.0	0.0	0.0	0.0	77.4	0.2	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.8	0.0
2021	Merced	LDT	2021MercedLDT	0.0	0.2	1.6	0.0	0.9	0.0	0.2	0.0	362	0.0	0.0	1.6	0.4	3.0	0.0	0.0	0.0	0.0	0.0	74.9	0.2	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.7	0.0
2022	Merced	LDT	2022MercedLDT	0.0	0.1	1.4	0.0	0.9	0.0	0.2	0.0	350	0.0	0.0	1.5	0.4	2.9	0.0	0.0	0.0	0.0	0.0	72.3	0.2	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.7	0.0
2023	Merced	LDT	2023MercedLDT	0.0	0.1	1.2	0.0	0.9	0.0	0.2	0.0	338	0.0	0.0	1.3	0.3	2.8	0.0	0.0	0.0	0.0	0.0	69.8	0.1	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.7	0.0
2024	Merced	LDT	2024MercedLDT	0.0	0.1	1.1	0.0	0.9	0.0	0.2	0.0	326	0.0	0.0	1.3	0.3	2.7	0.0	0.0	0.0	0.0	0.0	67.3	0.1	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.7	0.0
2025	Merced	LDT	2025MercedLDT	0.0	0.1	1.0	0.0	0.9	0.0	0.2	0.0	314	0.0	0.0	1.2	0.3	2.6	0.0	0.0	0.0	0.0	0.0	64.8	0.1	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.6	0.0
2026	Merced	LDT	2026MercedLDT	0.0	0.1	0.9	0.0	0.9	0.0	0.2	0.0	304	0.0	0.0	1.1	0.3	2.5	0.0	0.0	0.0	0.0	0.0	62.5	0.1	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.6	0.0
2019	Merced	T6Instate	2019MercedT6Instate	0.4	5.9	1.1	0.2	1.0	0.2	0.3	0.0	1117	0.0	0.2	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	8.4	2.2	0.1	0.0	0.1	0.0	0.0	684	0.0	0.1
2020	Merced	T6Instate	2020MercedT6Instate	0.3	4.8	0.9	0.1	1.0	0.1	0.3	0.0	1101	0.0	0.2	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	7.6	2.1	0.0	0.0	0.0	0.0	0.0	684	0.0	0.1
2021	Merced	T6Instate	2021MercedT6Instate	0.3	3.9	0.7	0.1	1.0	0.1	0.3	0.0	1079	0.0	0.2	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	6.7	2.1	0.0	0.0	0.0	0.0	0.0	675	0.0	0.1
2022	Merced	T6Instate	2022MercedT6Instate	0.1	2.2	0.3	0.0	1.0	0.0	0.3	0.0	1024	0.0	0.2	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	3.8	2.0	0.0	0.0	0.0	0.0	0.0	639	0.0	0.1
2023	Merced	T6Instate	2023MercedT6Instate	0.0	1.6	0.1	0.0	1.0	0.0	0.3	0.0	995	0.0	0.2	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	2.1	0.0	0.0	0.0	0.0	0.0	616	0.0	0.1
2024	Merced	T6Instate	2024MercedT6Instate	0.0	1.6	0.1	0.0	1.0	0.0	0.3	0.0	987	0.0	0.2	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	2.1	0.0	0.0	0.0	0.0	0.0	614	0.0	0.1
2025	Merced	T6Instate	2025MercedT6Instate	0.0	1.7	0.1	0.0	1.0	0.0	0.3	0.0	979	0.0	0.2	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	2.1	0.0	0.0	0.0	0.0	0.0	612	0.0	0.1
2026	Merced	T6Instate	2026MercedT6Instate	0.0	1.7	0.1	0.0	1.0	0.0	0.3	0.0	970	0.0	0.2	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	2.1	0.0	0.0	0.0	0.0	0.0	610	0.0	0.1
2019	Merced	T6Utility	2019MercedT6Utility	0.0	2.0	0.1	0.0	1.0	0.0	0.3	0.0	1089	0.0	0.2	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	12.9	4.7	0.0	0.0	0.0	0.0	0.0	1810	0.0	0.3
2020	Merced	T6Utility	2020MercedT6Utility	0.0	1.8	0.1	0.0	1.0	0.0	0.3	0.0	1071	0.0	0.2	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	11.9	4.9	0.0	0.0	0.0	0.0	0.0	1783	0.0	0.3
2021	Merced	T6Utility	2021MercedT6Utility	0.0	1.0	0.1	0.0	1.0	0.0	0.3	0.0	1030	0.0	0.2	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	7.8	5.7	0.0	0.0	0.0	0.0	0.0	1690	0.0	0.3
2022	Merced	T6Utility	2022MercedT6Utility	0.0	1.0	0.1	0.0	1.0	0.0	0.3	0.0	1014	0.0	0.2	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	7.8	5.7	0.0	0.0	0.0	0.0	0.0	1671	0.0	0.3
2023	Merced	T6Utility	2023MercedT6Utility	0.0	1.0	0.1	0.0	1.0	0.0	0.3	0.0	997	0.0	0.2	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	7.8	5.7	0.0	0.0	0.0	0.0	0.0	1648	0.0	0.3
2024	Merced	T6Utility	2024MercedT6Utility	0.0	1.0	0.1	0.0	1.0	0.0	0.3	0.0	973	0.0	0.2	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	7.8	5.7	0.0	0.0	0.0	0.0	0.0	1617	0.0	0.3
2025	Merced	T6Utility	2025MercedT6Utility	0.0	1.0	0.1	0.0	1.0	0.0	0.3	0.0	951	0.0	0.1	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	7.8	5.7	0.0	0.0	0.0	0.0	0.0	1586	0.0	0.2
2026	Merced	T6Utility	2026MercedT6Utility	0.0	1.0	0.1	0.0	1.0	0.0	0.3	0.0	931	0.0	0.1	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	7.8	5.7	0.0	0.0	0.0	0.0	0.0	1556	0.0	0.2
2019	Merced	T7Single	2019MercedT7Single	0.8	9.1	1.8	0.2	0.9	0.2	0.2	0.0	1910	0.0	0.3	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	26.0	16.1	0.2	0.0	0.1	0.0	0.0	3224	0.1	0.5
2020	Merced	T7Single	2020MercedT7Single	0.5	7.6	1.3	0.1	0.9	0.1	0.2	0.0	1892	0.0	0.3	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	23.3	19.3	0.0	0.0	0.0	0.0	0.0	3866	0.1	0.6
2021	Merced	T7Single	2021MercedT7Single	0.4	6.5	1.1	0.1	0.9	0.1	0.2	0.0	1860	0.0	0.3	0.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	22.7	20.0	0.0	0.0	0.0	0.0	0.0	3918	0.1	0.6
2022	Merced	T7Single	2022MercedT7Single	0.2	4.7	0.7	0.0	0.9	0.0	0.2	0.0	1794	0.0	0.3	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	21.4	21.6	0.0	0.0	0.0	0.0	0.0	4085	0.1	0.6
2023	Merced	T7Single	2023MercedT7Single	0.0	3.6	0.4	0.0	0.9	0.0	0.2	0.0	1727	0.0	0.3	0.0	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	19.0	23.2	0.0	0.0	0.0	0.0	0.0	3991	0.1	0.6
2024	Merced	T7Single	2024MercedT7Single	0.0	3.5	0.4	0.0	0.9	0.0	0.2	0.0	1704	0.0	0.3	0.0	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	19.0	23.3	0.0	0.0	0.0	0.0	0.0	3954	0.1	0.6
2025	Merced	T7Single	2025MercedT7Single	0.0	3.5	0.4	0.0	0.9	0.0	0.2	0.0	1682	0.0	0.3	0.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	19.0	23.3	0.0	0.0	0.0	0.0	0.0	3914	0.1	0.6
2026	Merced	T7Single	2026MercedT7Single	0.0	3.4	0.4	0.0	0.9	0.0	0.2	0.0	1661	0.0	0.3	0.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	18.9	23.3	0.0	0.0	0.0	0.0	0.0	3873	0.1	0.6
2019	Merced	T7Tractor	2019MercedT7Tractor	0.8	8.6	1.9	0.2	0.9	0.2	0.2	0.0	1918	0.0	0.3	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	25.7	16.9	0.1	0.0	0.1	0.0	0.0	3703	0.1	0.6
2020	Merced	T7Tractor	2020MercedT7Tractor	0.6	7.6	1.5	0.1	0.9	0.1	0.2	0.0	1898	0.0	0.3	0.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	23.3	19.5	0.0	0.0	0.0	0.0	0.0	4078	0.1	0.6
2021	Merced	T7Tractor	2021MercedT7Tractor	0.4	6.8	1.3	0.1	0.9	0.1	0.2	0.0	1870	0.0	0.3	0.0	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	22.7	20.1	0.0	0.0	0.0	0.0	0.0	4105	0.1	0.6
2022	Merced	T7Tractor	2022MercedT7Tractor	0.2	5.7	0.8	0.0	0.9	0.0	0.2	0.0	1825	0.0	0.3	0.0	3.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	21.8	21.2	0.0	0.0	0.0	0.0	0.0	4185	0.1	0.7
2023	Merced	T7Tractor	2023MercedT7Tractor	0.0	4.5	0.5	0.0	0.9	0.0	0.2	0.0	1734	0.0	0.3	0.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	18.9	23.4	0.0	0.0	0.0	0.0	0.0	4011	0.1	0.6
2024	Merced	T7Tractor	2024MercedT7Tractor	0.0	4.5	0.5	0.0	0.9	0.0	0.2	0.0	1715	0.0	0.3	0.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	18.9	23.4	0.0	0.0	0.0	0.0	0.0	3973	0.1	0.6
2025	Merced	T7Tractor	2025MercedT7Tractor	0.0	4.5	0.5	0.0	0.9	0.0	0.2	0.0	1696	0.0	0.3	0.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	18.9	23.5	0.0	0.0	0.0	0.0	0.0	3934	0.1	0.6
2026	Merced	T7Tractor	2026MercedT7Tractor	0.0	4.5	0.5	0.0	0.9	0.0	0.2	0.0	1675	0.0	0.3	0.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	18.9	23.5	0.0	0.0	0.0	0.0	0.0	3892	0.1	0.6

									RUNEX (grams/mile)						
Year	County	VehType	Name	TOG	ROG	NOx	CO	PM10 Ex	PM10 D	PM2.5 Ex	PM2.5 D	SO2	CO2	CH4	N2O
2019	Merced	T6InstateOnsite	2019MercedT6InstateOnsite	3.54	3.11	15.28	4.28	0.58	0.00	0.55	0.00	0.02	2449	0.14	0.38
2020	Merced	T6InstateOnsite	2020MercedT6InstateOnsite	2.73	2.40	13.03	3.61	0.40	0.00	0.38	0.00	0.02	2455	0.11	0.39
2021	Merced	T6InstateOnsite	2021MercedT6InstateOnsite	2.12	1.86	11.16	3.06	0.28	0.00	0.27	0.00	0.02	2441	0.09	0.38
2022	Merced	T6InstateOnsite	2022MercedT6InstateOnsite	0.61	0.54	7.80	1.38	0.10	0.00	0.09	0.00	0.02	2409	0.02	0.38
2023	Merced	T6InstateOnsite	2023MercedT6InstateOnsite	0.06	0.05	6.81	0.83	0.01	0.00	0.00	0.00	0.02	2386	0.00	0.38
2024	Merced	T6InstateOnsite	2024MercedT6InstateOnsite	0.06	0.06	7.03	0.84	0.01	0.00	0.01	0.00	0.02	2367	0.00	0.37
2025	Merced	T6InstateOnsite	2025MercedT6InstateOnsite	0.06	0.06	7.22	0.86	0.01	0.00	0.01	0.00	0.02	2347	0.00	0.37
2026	Merced	T6InstateOnsite	2026MercedT6InstateOnsite	0.06	0.06	7.39	0.87	0.01	0.00	0.01	0.00	0.02	2325	0.00	0.37
2019	Merced	T6UtilityOnsite	2019MercedT6UtilityOnsite	0.19	0.17	6.20	0.77	0.01	0.00	0.01	0.00	0.02	2464	0.01	0.39
2020	Merced	T6UtilityOnsite	2020MercedT6UtilityOnsite	0.17	0.15	5.83	0.75	0.01	0.00	0.01	0.00	0.02	2445	0.01	0.38
2021	Merced	T6UtilityOnsite	2021MercedT6UtilityOnsite	0.05	0.04	4.25	0.64	0.00	0.00	0.00	0.00	0.02	2459	0.00	0.39
2022	Merced	T6UtilityOnsite	2022MercedT6UtilityOnsite	0.05	0.04	4.32	0.64	0.00	0.00	0.00	0.00	0.02	2422	0.00	0.38
2023	Merced	T6UtilityOnsite	2023MercedT6UtilityOnsite	0.05	0.04	4.37	0.64	0.00	0.00	0.00	0.00	0.02	2379	0.00	0.37
2024	Merced	T6UtilityOnsite	2024MercedT6UtilityOnsite	0.05	0.04	4.41	0.64	0.00	0.00	0.00	0.00	0.02	2324	0.00	0.37
2025	Merced	T6UtilityOnsite	2025MercedT6UtilityOnsite	0.05	0.04	4.45	0.64	0.00	0.00	0.00	0.00	0.02	2271	0.00	0.36
2026	Merced	T6UtilityOnsite	2026MercedT6UtilityOnsite	0.05	0.04	4.48	0.64	0.00	0.00	0.00	0.00	0.02	2221	0.00	0.35
2019	Merced	T7SingleOnsite	2019MercedT7SingleOnsite	3.58	3.14	20.53	5.39	0.51	0.00	0.49	0.00	0.03	3666	0.15	0.58
2020	Merced	T7SingleOnsite	2020MercedT7SingleOnsite	2.41	2.11	17.62	4.14	0.29	0.00	0.27	0.00	0.03	3669	0.10	0.58
2021	Merced	T7SingleOnsite	2021MercedT7SingleOnsite	1.93	1.70	15.68	3.72	0.21	0.00	0.20	0.00	0.03	3632	0.08	0.57
2022	Merced	T7SingleOnsite	2022MercedT7SingleOnsite	0.80	0.70	12.41	2.51	0.09	0.00	0.09	0.00	0.03	3568	0.03	0.56
2023	Merced	T7SingleOnsite	2023MercedT7SingleOnsite	0.18	0.16	10.70	1.78	0.02	0.00	0.02	0.00	0.03	3499	0.01	0.55
2024	Merced	T7SingleOnsite	2024MercedT7SingleOnsite	0.18	0.15	10.71	1.79	0.02	0.00	0.02	0.00	0.03	3455	0.01	0.54
2025	Merced	T7SingleOnsite	2025MercedT7SingleOnsite	0.17	0.15	10.72	1.80	0.02	0.00	0.02	0.00	0.03	3413	0.01	0.54
2026	Merced	T7SingleOnsite	2026MercedT7SingleOnsite	0.16	0.14	10.75	1.81	0.01	0.00	0.01	0.00	0.03	3370	0.01	0.53
2019	Merced	T7TractorOnsite	2019MercedT7TractorOnsite	3.52	3.09	20.03	5.96	0.40	0.00	0.38	0.00	0.04	3708	0.14	0.58
2020	Merced	T7TractorOnsite	2020MercedT7TractorOnsite	2.49	2.19	18.17	4.93	0.25	0.00	0.24	0.00	0.03	3699	0.10	0.58
2021	Merced	T7TractorOnsite	2021MercedT7TractorOnsite	1.93	1.70	16.98	4.41	0.17	0.00	0.16	0.00	0.03	3666	0.08	0.58
2022	Merced	T7TractorOnsite	2022MercedT7TractorOnsite	0.93	0.82	15.22	3.32	0.08	0.00	0.07	0.00	0.03	3617	0.04	0.57
2023	Merced	T7TractorOnsite	2023MercedT7TractorOnsite	0.18	0.16	14.03	2.25	0.02	0.00	0.02	0.00	0.03	3524	0.01	0.55
2024	Merced	T7TractorOnsite	2024MercedT7TractorOnsite	0.18	0.15	14.25	2.27	0.02	0.00	0.02	0.00	0.03	3484	0.01	0.55
2025	Merced	T7TractorOnsite	2025MercedT7TractorOnsite	0.17	0.15	14.42	2.28	0.02	0.00	0.01	0.00	0.03	3447	0.01	0.54
2026	Merced	T7TractorOnsite	2026MercedT7TractorOnsite	0.17	0.15	14.53	2.29	0.01	0.00	0.01	0.00	0.03	3406	0.01	0.54
				3	2	5	4	9		10		6	7	8	11

All emissions are grams per mile
All emissions are for aggregated speeds
CH4 emission factors for light-duty vehicles are calculated in a separate spreadsheet

STREX, HOTSOAK, and RUNLOSS (grams/start or trip)

Year	County	VehType	Name	TOG	ROG	NOx	CO	PM10 Ex	PM10 D	PM2.5 Ex	PM2.5 D	SO2	CO2	CH4	N2O
2019	Merced	T6InstateOnsite	2019MercedT6InstateOnsite	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2020	Merced	T6InstateOnsite	2020MercedT6InstateOnsite	0.00	0.00	1.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2021	Merced	T6InstateOnsite	2021MercedT6InstateOnsite	0.00	0.00	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2022	Merced	T6InstateOnsite	2022MercedT6InstateOnsite	0.00	0.00	1.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2023	Merced	T6InstateOnsite	2023MercedT6InstateOnsite	0.00	0.00	2.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2024	Merced	T6InstateOnsite	2024MercedT6InstateOnsite	0.00	0.00	2.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2025	Merced	T6InstateOnsite	2025MercedT6InstateOnsite	0.00	0.00	2.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	Merced	T6InstateOnsite	2026MercedT6InstateOnsite	0.00	0.00	2.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2019	Merced	T6UtilityOnsite	2019MercedT6UtilityOnsite	0.00	0.00	1.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2020	Merced	T6UtilityOnsite	2020MercedT6UtilityOnsite	0.00	0.00	1.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2021	Merced	T6UtilityOnsite	2021MercedT6UtilityOnsite	0.00	0.00	1.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2022	Merced	T6UtilityOnsite	2022MercedT6UtilityOnsite	0.00	0.00	1.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2023	Merced	T6UtilityOnsite	2023MercedT6UtilityOnsite	0.00	0.00	1.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2024	Merced	T6UtilityOnsite	2024MercedT6UtilityOnsite	0.00	0.00	1.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2025	Merced	T6UtilityOnsite	2025MercedT6UtilityOnsite	0.00	0.00	1.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	Merced	T6UtilityOnsite	2026MercedT6UtilityOnsite	0.00	0.00	1.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2019	Merced	T7SingleOnsite	2019MercedT7SingleOnsite	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2020	Merced	T7SingleOnsite	2020MercedT7SingleOnsite	0.00	0.00	3.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2021	Merced	T7SingleOnsite	2021MercedT7SingleOnsite	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2022	Merced	T7SingleOnsite	2022MercedT7SingleOnsite	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2023	Merced	T7SingleOnsite	2023MercedT7SingleOnsite	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2024	Merced	T7SingleOnsite	2024MercedT7SingleOnsite	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2025	Merced	T7SingleOnsite	2025MercedT7SingleOnsite	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	Merced	T7SingleOnsite	2026MercedT7SingleOnsite	0.00	0.00	4.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2019	Merced	T7TractorOnsite	2019MercedT7TractorOnsite	0.00	0.00	2.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2020	Merced	T7TractorOnsite	2020MercedT7TractorOnsite	0.00	0.00	3.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2021	Merced	T7TractorOnsite	2021MercedT7TractorOnsite	0.00	0.00	3.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2022	Merced	T7TractorOnsite	2022MercedT7TractorOnsite	0.00	0.00	3.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2023	Merced	T7TractorOnsite	2023MercedT7TractorOnsite	0.00	0.00	4.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2024	Merced	T7TractorOnsite	2024MercedT7TractorOnsite	0.00	0.00	4.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2025	Merced	T7TractorOnsite	2025MercedT7TractorOnsite	0.00	0.00	4.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	Merced	T7TractorOnsite	2026MercedT7TractorOnsite	0.00	0.00	4.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				11	4	21	18	30		35		40	24	27	43
				12	5										
				13	6										

All emissions are grams per mile

All emissions are for aggregated speeds

CH4 emission factors for light-duty vehicles are calculated in a separate spreadsheet

IDLEX, RESTLOSS, and DIURN (grams/vehicle/day)

Year	County	VehType	Name	TOG	ROG	NOx	CO	PM10 Ex	PM10 D	PM2.5 Ex	PM2.5 D	SO2	CO2	CH4	N2O
2019	Merced	T6InstateOnsite	2019MercedT6InstateOnsite	0.21	0.19	8.36	2.23	0.06	0.00	0.06	0.00	0.01	683.63	0.01	0.11
2020	Merced	T6InstateOnsite	2020MercedT6InstateOnsite	0.15	0.13	7.62	2.07	0.04	0.00	0.03	0.00	0.01	683.97	0.01	0.11
2021	Merced	T6InstateOnsite	2021MercedT6InstateOnsite	0.13	0.11	6.70	2.07	0.03	0.00	0.03	0.00	0.01	675.12	0.01	0.11
2022	Merced	T6InstateOnsite	2022MercedT6InstateOnsite	0.08	0.07	3.84	2.03	0.01	0.00	0.01	0.00	0.01	638.91	0.00	0.10
2023	Merced	T6InstateOnsite	2023MercedT6InstateOnsite	0.06	0.05	2.86	2.09	0.00	0.00	0.00	0.00	0.01	616.02	0.00	0.10
2024	Merced	T6InstateOnsite	2024MercedT6InstateOnsite	0.06	0.05	2.86	2.09	0.00	0.00	0.00	0.00	0.01	613.95	0.00	0.10
2025	Merced	T6InstateOnsite	2025MercedT6InstateOnsite	0.06	0.05	2.86	2.09	0.00	0.00	0.00	0.00	0.01	611.76	0.00	0.10
2026	Merced	T6InstateOnsite	2026MercedT6InstateOnsite	0.06	0.05	2.86	2.09	0.00	0.00	0.00	0.00	0.01	609.52	0.00	0.10
2019	Merced	T6UtilityOnsite	2019MercedT6UtilityOnsite	0.16	0.14	12.85	4.68	0.01	0.00	0.01	0.00	0.02	1809.94	0.01	0.28
2020	Merced	T6UtilityOnsite	2020MercedT6UtilityOnsite	0.16	0.14	11.91	4.87	0.01	0.00	0.01	0.00	0.02	1782.88	0.01	0.28
2021	Merced	T6UtilityOnsite	2021MercedT6UtilityOnsite	0.15	0.14	7.85	5.74	0.00	0.00	0.00	0.00	0.02	1690.38	0.01	0.27
2022	Merced	T6UtilityOnsite	2022MercedT6UtilityOnsite	0.15	0.14	7.85	5.74	0.00	0.00	0.00	0.00	0.02	1671.30	0.01	0.26
2023	Merced	T6UtilityOnsite	2023MercedT6UtilityOnsite	0.15	0.14	7.85	5.74	0.00	0.00	0.00	0.00	0.02	1647.89	0.01	0.26
2024	Merced	T6UtilityOnsite	2024MercedT6UtilityOnsite	0.15	0.14	7.85	5.74	0.00	0.00	0.00	0.00	0.02	1616.66	0.01	0.25
2025	Merced	T6UtilityOnsite	2025MercedT6UtilityOnsite	0.15	0.14	7.85	5.74	0.00	0.00	0.00	0.00	0.01	1585.97	0.01	0.25
2026	Merced	T6UtilityOnsite	2026MercedT6UtilityOnsite	0.15	0.14	7.85	5.74	0.00	0.00	0.00	0.00	0.01	1556.49	0.01	0.24
2019	Merced	T7SingleOnsite	2019MercedT7SingleOnsite	2.19	1.92	25.97	16.10	0.16	0.00	0.15	0.00	0.03	3224.42	0.09	0.51
2020	Merced	T7SingleOnsite	2020MercedT7SingleOnsite	1.79	1.57	23.26	19.31	0.04	0.00	0.04	0.00	0.04	3866.10	0.07	0.61
2021	Merced	T7SingleOnsite	2021MercedT7SingleOnsite	1.80	1.58	22.67	20.04	0.03	0.00	0.03	0.00	0.04	3917.79	0.07	0.62
2022	Merced	T7SingleOnsite	2022MercedT7SingleOnsite	1.80	1.58	21.41	21.63	0.01	0.00	0.01	0.00	0.04	4085.25	0.07	0.64
2023	Merced	T7SingleOnsite	2023MercedT7SingleOnsite	1.79	1.58	18.99	23.21	0.01	0.00	0.01	0.00	0.04	3991.32	0.07	0.63
2024	Merced	T7SingleOnsite	2024MercedT7SingleOnsite	1.80	1.58	18.98	23.26	0.01	0.00	0.01	0.00	0.04	3953.55	0.07	0.62
2025	Merced	T7SingleOnsite	2025MercedT7SingleOnsite	1.80	1.58	18.96	23.30	0.01	0.00	0.01	0.00	0.04	3913.50	0.07	0.62
2026	Merced	T7SingleOnsite	2026MercedT7SingleOnsite	1.80	1.58	18.94	23.34	0.01	0.00	0.01	0.00	0.04	3873.13	0.07	0.61
2019	Merced	T7TractorOnsite	2019MercedT7TractorOnsite	1.98	1.74	25.69	16.91	0.09	0.00	0.08	0.00	0.03	3702.94	0.08	0.58
2020	Merced	T7TractorOnsite	2020MercedT7TractorOnsite	1.80	1.58	23.28	19.50	0.03	0.00	0.03	0.00	0.04	4078.09	0.07	0.64
2021	Merced	T7TractorOnsite	2021MercedT7TractorOnsite	1.81	1.59	22.71	20.15	0.02	0.00	0.02	0.00	0.04	4104.59	0.07	0.65
2022	Merced	T7TractorOnsite	2022MercedT7TractorOnsite	1.81	1.59	21.80	21.21	0.01	0.00	0.01	0.00	0.04	4185.39	0.07	0.66
2023	Merced	T7TractorOnsite	2023MercedT7TractorOnsite	1.81	1.59	18.92	23.42	0.01	0.00	0.01	0.00	0.04	4010.85	0.07	0.63
2024	Merced	T7TractorOnsite	2024MercedT7TractorOnsite	1.81	1.59	18.91	23.44	0.01	0.00	0.01	0.00	0.04	3973.40	0.07	0.62
2025	Merced	T7TractorOnsite	2025MercedT7TractorOnsite	1.81	1.59	18.90	23.46	0.01	0.00	0.01	0.00	0.04	3934.48	0.07	0.62
2026	Merced	T7TractorOnsite	2026MercedT7TractorOnsite	1.81	1.59	18.89	23.48	0.01	0.00	0.01	0.00	0.04	3892.07	0.07	0.61
				10	3	20	17	29		34		39	23	26	42
				14	7										
				15	8										

All emissions are grams per mile

All emissions are for aggregated speeds

CH4 emission factors for light-duty vehicles are calculated in a separate spreadsheet

EMFAC2017 (v1.0.2) Emission Rates
Region Type: County
Region: MERCED
Calendar Year: 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

									2	3	4	5	6	7	8	9	10	11
Region	CalYr	VehClass		MdlYr	Speed	Fuel	VMT	Lookup	ROG_RUNEX	TOG_RUNEX	CO_RUNEX	NOx_RUNEX	SOx_RUNEX	CO2_RUNEX	CH4_RUNEX	PM10_RUNEX	PM2_5_RU	N2O_RUNE
MERCED	2019	T6 instate heavy	T6InstateOnsite	Aggregated	5	DSL	797.4620382	2019MERCEDT6I	3.111636463	3.542361251	4.279115404	15.27993385	0.023132838	2448.566031	0.144527454	0.579012432	0.553965	0.3848805
MERCED	2019	T6 utility	T6UtilityOnsite	Aggregated	5	DSL	9.443230238	2019MERCEDT6U	0.167413144	0.19058712	0.771201214	6.195854051	0.023277807	2463.910721	0.007775907	0.013754556	0.01316	0.3872925
MERCED	2019	T7 single construction	T7SingleOnsite	Aggregated	5	DSL	4502.735556	2019MERCEDT7S	3.143028274	3.578098439	5.392007519	20.53140213	0.034636238	3666.178625	0.145985523	0.509491257	0.487451	0.5762722
MERCED	2019	T7 tractor construction	T7TractorOnsite	Aggregated	5	DSL	3714.360409	2019MERCEDT7T	3.094392209	3.522729981	5.962447941	20.02745868	0.035030328	3707.892331	0.143726504	0.401567496	0.384196	0.582829
MERCED	2020	T6 instate heavy	T6InstateOnsite	Aggregated	5	DSL	762.8982934	2020MERCEDT6I	2.398987448	2.731064596	3.611534909	13.03301131	0.023193611	2454.998808	0.111426754	0.398145959	0.380922	0.3858916
MERCED	2020	T6 utility	T6UtilityOnsite	Aggregated	5	DSL	9.52270399	2020MERCEDT6U	0.146213497	0.166452936	0.752698451	5.832739812	0.023100754	2445.170012	0.006791238	0.011471576	0.010975	0.3843467
MERCED	2020	T7 single construction	T7SingleOnsite	Aggregated	5	DSL	4903.951908	2020MERCEDT7S	2.11303799	2.405532904	4.137488866	17.6164425	0.034661791	3668.883339	0.098145142	0.287154265	0.274732	0.5766974
MERCED	2020	T7 tractor construction	T7TractorOnsite	Aggregated	5	DSL	4045.328576	2020MERCEDT7T	2.187764774	2.49060366	4.927622698	18.17313044	0.034950183	3699.409093	0.101616007	0.246774539	0.236099	0.5814956
MERCED	2021	T6 instate heavy	T6InstateOnsite	Aggregated	5	DSL	733.8861131	2021MERCEDT6I	1.859257566	2.11662321	3.059921731	11.15762081	0.023062266	2441.096114	0.086357698	0.281526393	0.269348	0.3837063
MERCED	2021	T6 utility	T6UtilityOnsite	Aggregated	5	DSL	9.602955574	2021MERCEDT6U	0.041950185	0.047757092	0.638308182	4.250800566	0.02322945	2458.792213	0.001948477	0.002622742	0.002509	0.3864879
MERCED	2021	T7 single construction	T7SingleOnsite	Aggregated	5	DSL	5094.527602	2021MERCEDT7S	1.696793683	1.931670446	3.719776898	15.68142684	0.034313212	3631.98701	0.078811672	0.21112743	0.201994	0.5708978
MERCED	2021	T7 tractor construction	T7TractorOnsite	Aggregated	5	DSL	4202.536745	2021MERCEDT7T	1.698847844	1.934008952	4.414890891	16.97538877	0.034638345	3666.401635	0.078907082	0.172033958	0.164592	0.5763073
MERCED	2022	T6 instate heavy	T6InstateOnsite	Aggregated	5	DSL	708.5485694	2022MERCEDT6I	0.536495569	0.610759367	1.380436712	7.804518781	0.022756451	2408.726217	0.02491883	0.097530271	0.093311	0.3786182
MERCED	2022	T6 utility	T6UtilityOnsite	Aggregated	5	DSL	9.68412813	2022MERCEDT6U	0.042093793	0.04792058	0.640493314	4.320451485	0.022877916	2421.583103	0.001955148	0.002653555	0.002539	0.3806391
MERCED	2022	T7 single construction	T7SingleOnsite	Aggregated	5	DSL	5286.545025	2022MERCEDT7S	0.700959552	0.797989092	2.50683085	12.4102724	0.033706275	3567.743848	0.032557756	0.09072459	0.0868	0.5607996
MERCED	2022	T7 tractor construction	T7TractorOnsite	Aggregated	5	DSL	4360.934214	2022MERCEDT7T	0.81757822	0.930750569	3.323966975	15.22130406	0.034175549	3617.415569	0.037974391	0.075931327	0.072647	0.5686074
MERCED	2023	T6 instate heavy	T6InstateOnsite	Aggregated	5	DSL	685.1814352	2023MERCEDT6I	0.05422477	0.061730773	0.8250765	6.806072962	0.022542887	2386.120865	0.0025186	0.005214299	0.004989	0.375065
MERCED	2023	T6 utility	T6UtilityOnsite	Aggregated	5	DSL	9.765807804	2023MERCEDT6U	0.042125987	0.04795723	0.640983177	4.371794064	0.022473716	2378.799296	0.001956643	0.00266095	0.002546	0.3739141
MERCED	2023	T7 single construction	T7SingleOnsite	Aggregated	5	DSL	5480.004176	2023MERCEDT7S	0.162183059	0.184633067	1.782787407	10.70182687	0.033058289	3499.155857	0.007532983	0.019430708	0.01859	0.5500186
MERCED	2023	T7 tractor construction	T7TractorOnsite	Aggregated	5	DSL	4520.520981	2023MERCEDT7T	0.157225767	0.178989568	2.24589994	14.02979293	0.033292435	3523.939713	0.00730273	0.016200457	0.0155	0.5539142
MERCED	2024	T6 instate heavy	T6InstateOnsite	Aggregated	5	DSL	665.8179931	2024MERCEDT6I	0.055303311	0.06295861	0.841487424	7.0254992	0.022365051	2367.297338	0.002568696	0.005441979	0.005207	0.3721062
MERCED	2024	T6 utility	T6UtilityOnsite	Aggregated	5	DSL	9.848021744	2024MERCEDT6U	0.042121285	0.047951877	0.64091163	4.413968158	0.021952762	2323.657348	0.001956425	0.002660587	0.002545	0.3652466
MERCED	2024	T7 single construction	T7SingleOnsite	Aggregated	5	DSL	5674.905056	2024MERCEDT7S	0.154728655	0.176146795	1.792502004	10.70520739	0.03264301	3455.199349	0.007186745	0.017648315	0.016885	0.5431092
MERCED	2024	T7 tractor construction	T7TractorOnsite	Aggregated	5	DSL	4681.297048	2024MERCEDT7T	0.153912767	0.175217969	2.266763572	14.25118474	0.032918451	3484.354253	0.007148849	0.015689306	0.015011	0.547692
MERCED	2025	T6 instate heavy	T6InstateOnsite	Aggregated	5	DSL	646.8588644	2025MERCEDT6I	0.056264247	0.064052562	0.856108885	7.220451233	0.022172774	2346.945108	0.002613329	0.005644809	0.005401	0.3689071
MERCED	2025	T6 utility	T6UtilityOnsite	Aggregated	5	DSL	9.929959568	2025MERCEDT6U	0.042089494	0.047915685	0.640427901	4.448113025	0.021452176	2270.671223	0.001954948	0.00265451	0.00254	0.3569179
MERCED	2025	T7 single construction	T7SingleOnsite	Aggregated	5	DSL	5765.766475	2025MERCEDT7S	0.147995339	0.168481428	1.802924489	10.71999275	0.032240572	3412.602005	0.006874	0.016093915	0.015398	0.5364135
MERCED	2025	T7 tractor construction	T7TractorOnsite	Aggregated	5	DSL	4756.249719	2025MERCEDT7T	0.151031587	0.171937965	2.28261209	14.42195382	0.032562054	3446.630343	0.007015026	0.015264596	0.014604	0.5417623
MERCED	2026	T6 instate heavy	T6InstateOnsite	Aggregated	5	DSL	627.6526513	2026MERCEDT6I	0.057022644	0.064915939	0.867648544	7.389136787	0.021966723	2325.135074	0.002648554	0.005805283	0.005554	0.3654789
MERCED	2026	T6 utility	T6UtilityOnsite	Aggregated	5	DSL	10.01135608	2026MERCEDT6U	0.042038389	0.047857506	0.639650304	4.475232528	0.020985431	2221.267218	0.001952574	0.00264434	0.00253	0.3491523
MERCED	2026	T7 single construction	T7SingleOnsite	Aggregated	5	DSL	5830.778493	2026MERCEDT7S	0.141985184	0.161639324	1.81180618	10.74619392	0.03184199	3370.412905	0.006594844	0.014743553	0.014106	0.529782
MERCED	2026	T7 tractor construction	T7TractorOnsite	Aggregated	5	DSL	4809.87891	2026MERCEDT7T	0.148263622	0.168786847	2.288807247	14.53415259	0.032181049	3406.301628	0.006886461	0.014855594	0.014213	0.5354232

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Sub-Area
Region: Mendocino
Calendar Year: 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN

Region	CalYr	VehClass		MdlYr	Speed	Fuel	Population	VMT	Trips	Lookup
MERCED	2019	T6 instate heavy	T6InstateOnsite	Aggregated	Aggregated	DSL	451.114256	51850.14635	5205.795969	2019MERCEDT6InstateOnsite
MERCED	2019	T6 utility	T6UtilityOnsite	Aggregated	Aggregated	DSL	39.64788023	662.5595323	455.9506226	2019MERCEDT6UtilityOnsite
MERCED	2019	T7 single construction	T7SingleOnsite	Aggregated	Aggregated	DSL	533.3878649	37090.37316	2411.425799	2019MERCEDT7SingleOnsite
MERCED	2019	T7 tractor construction	T7TractorOnsite	Aggregated	Aggregated	DSL	436.5207418	30596.29239	1973.493302	2019MERCEDT7TractorOnsite
MERCED	2020	T6 instate heavy	T6InstateOnsite	Aggregated	Aggregated	DSL	437.0290006	49602.84786	5043.254075	2020MERCEDT6InstateOnsite
MERCED	2020	T6 utility	T6UtilityOnsite	Aggregated	Aggregated	DSL	40.03093587	668.1356001	460.3557625	2020MERCEDT6UtilityOnsite
MERCED	2020	T7 single construction	T7SingleOnsite	Aggregated	Aggregated	DSL	572.7528692	40395.31168	2589.393453	2020MERCEDT7SingleOnsite
MERCED	2020	T7 tractor construction	T7TractorOnsite	Aggregated	Aggregated	DSL	474.1712267	33322.5757	2143.70968	2020MERCEDT7TractorOnsite
MERCED	2021	T6 instate heavy	T6InstateOnsite	Aggregated	Aggregated	DSL	424.6205786	47716.5063	4900.062606	2021MERCEDT6InstateOnsite
MERCED	2021	T6 utility	T6UtilityOnsite	Aggregated	Aggregated	DSL	40.03676373	673.7662425	460.4227829	2021MERCEDT6UtilityOnsite
MERCED	2021	T7 single construction	T7SingleOnsite	Aggregated	Aggregated	DSL	596.8316732	41965.14041	2698.25279	2021MERCEDT7SingleOnsite
MERCED	2021	T7 tractor construction	T7TractorOnsite	Aggregated	Aggregated	DSL	498.3898123	34617.54619	2253.200964	2021MERCEDT7TractorOnsite
MERCED	2022	T6 instate heavy	T6InstateOnsite	Aggregated	Aggregated	DSL	393.5231271	46069.08574	4541.202327	2022MERCEDT6InstateOnsite
MERCED	2022	T6 utility	T6UtilityOnsite	Aggregated	Aggregated	DSL	40.29653988	679.4615024	463.4102086	2022MERCEDT6UtilityOnsite
MERCED	2022	T7 single construction	T7SingleOnsite	Aggregated	Aggregated	DSL	623.3755401	43546.84508	2818.25658	2022MERCEDT7SingleOnsite
MERCED	2022	T7 tractor construction	T7TractorOnsite	Aggregated	Aggregated	DSL	520.7451241	35922.31329	2354.268459	2022MERCEDT7TractorOnsite
MERCED	2023	T6 instate heavy	T6InstateOnsite	Aggregated	Aggregated	DSL	385.0919023	44549.77916	4443.907162	2023MERCEDT6InstateOnsite
MERCED	2023	T6 utility	T6UtilityOnsite	Aggregated	Aggregated	DSL	40.88273523	685.192343	470.1514552	2023MERCEDT6UtilityOnsite
MERCED	2023	T7 single construction	T7SingleOnsite	Aggregated	Aggregated	DSL	650.489453	45140.4257	2940.837526	2023MERCEDT7SingleOnsite
MERCED	2023	T7 tractor construction	T7TractorOnsite	Aggregated	Aggregated	DSL	546.6340203	37236.877	2471.311153	2023MERCEDT7TractorOnsite
MERCED	2024	T6 instate heavy	T6InstateOnsite	Aggregated	Aggregated	DSL	393.3627062	43290.78844	4539.351092	2024MERCEDT6InstateOnsite
MERCED	2024	T6 utility	T6UtilityOnsite	Aggregated	Aggregated	DSL	41.38916816	690.9606688	475.9754338	2024MERCEDT6UtilityOnsite
MERCED	2024	T7 single construction	T7SingleOnsite	Aggregated	Aggregated	DSL	668.7699056	46745.88227	3023.482742	2024MERCEDT7SingleOnsite
MERCED	2024	T7 tractor construction	T7TractorOnsite	Aggregated	Aggregated	DSL	566.3127858	38561.23732	2560.278086	2024MERCEDT7TractorOnsite
MERCED	2025	T6 instate heavy	T6InstateOnsite	Aggregated	Aggregated	DSL	404.5155183	42058.08575	4668.052997	2025MERCEDT6InstateOnsite
MERCED	2025	T6 utility	T6UtilityOnsite	Aggregated	Aggregated	DSL	41.85269544	696.7096218	481.3059976	2025MERCEDT6UtilityOnsite
MERCED	2025	T7 single construction	T7SingleOnsite	Aggregated	Aggregated	DSL	678.7587714	47494.33482	3068.642016	2025MERCEDT7SingleOnsite
MERCED	2025	T7 tractor construction	T7TractorOnsite	Aggregated	Aggregated	DSL	577.299755	39178.64479	2609.949747	2025MERCEDT7TractorOnsite
MERCED	2026	T6 instate heavy	T6InstateOnsite	Aggregated	Aggregated	DSL	413.8793994	40809.31789	4776.110887	2026MERCEDT6InstateOnsite
MERCED	2026	T6 utility	T6UtilityOnsite	Aggregated	Aggregated	DSL	42.27952186	702.4205947	486.2145014	2026MERCEDT6UtilityOnsite
MERCED	2026	T7 single construction	T7SingleOnsite	Aggregated	Aggregated	DSL	685.3832993	48029.85817	3098.591249	2026MERCEDT7SingleOnsite
MERCED	2026	T7 tractor construction	T7TractorOnsite	Aggregated	Aggregated	DSL	582.7339647	39620.4044	2634.517598	2026MERCEDT7TractorOnsite

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Lookup	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSOAK	ROG_RUNLOSS	ROG_RESTLOSS	ROG_DIURN	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTSOAK	TOG_RUNLOSS	TOG_RESTLOSS	TOG_DIURN	CO_RUNEX	CO_IDLEX	CO_STREX
2019MERCEDT6InstateOnsite	0.435458407	0.187800665	0	0	0	0	0	0.495736249	0.213796761	0	0	0	0	0	1.131171064	2.2260061	0
2019MERCEDT6UtilityOnsite	0.02969683	0.141470928	0	0	0	0	0	0.03380758	0.161053882	0	0	0	0	0	0.124700591	4.67640168	0
2019MERCEDT7SingleOnsite	0.786315827	1.923502653	0	0	0	0	0	0.895160713	2.189761351	0	0	0	0	0	1.798457286	16.10310252	0
2019MERCEDT7TractorOnsite	0.772918233	1.742559911	0	0	0	0	0	0.879908573	1.983771813	0	0	0	0	0	1.854989461	16.90959054	0
2020MERCEDT6InstateOnsite	0.327992477	0.127560373	0	0	0	0	0	0.373394467	0.145217774	0	0	0	0	0	0.894315591	2.069109472	0
2020MERCEDT6UtilityOnsite	0.025999201	0.140742661	0	0	0	0	0	0.029598111	0.160224806	0	0	0	0	0	0.118511704	4.865845925	0
2020MERCEDT7SingleOnsite	0.527049061	1.571257355	0	0	0	0	0	0.600005237	1.788756892	0	0	0	0	0	1.2975974	19.31049448	0
2020MERCEDT7TractorOnsite	0.550075814	1.584838589	0	0	0	0	0	0.626219442	1.804218093	0	0	0	0	0	1.460365182	19.49614351	0
2021MERCEDT6InstateOnsite	0.258315563	0.111422631	0	0	0	0	0	0.294072606	0.126846183	0	0	0	0	0	0.734414107	2.069379237	0
2021MERCEDT6UtilityOnsite	0.007331856	0.13558037	0	0	0	0	0	0.00834676	0.154347931	0	0	0	0	0	0.085809808	5.741129953	0
2021MERCEDT7SingleOnsite	0.426036513	1.57802503	0	0	0	0	0	0.48501014	1.796461376	0	0	0	0	0	1.137284463	20.04249044	0
2021MERCEDT7TractorOnsite	0.431012579	1.588449648	0	0	0	0	0	0.490675012	1.808329009	0	0	0	0	0	1.266172057	20.14861855	0
2022MERCEDT6InstateOnsite	0.075182715	0.067630733	0	0	0	0	0	0.085589798	0.076992442	0	0	0	0	0	0.257554735	2.032587525	0
2022MERCEDT6UtilityOnsite	0.007356955	0.13558037	0	0	0	0	0	0.008375334	0.154347931	0	0	0	0	0	0.086103562	5.741129953	0
2022MERCEDT7SingleOnsite	0.178470739	1.584215532	0	0	0	0	0	0.203175351	1.803508791	0	0	0	0	0	0.664434564	21.62709474	0
2022MERCEDT7TractorOnsite	0.211988886	1.591893451	0	0	0	0	0	0.24133321	1.812249517	0	0	0	0	0	0.84703857	21.21152301	0
2023MERCEDT6InstateOnsite	0.009464422	0.049331958	0	0	0	0	0	0.010774524	0.056160679	0	0	0	0	0	0.107702619	2.088954181	0
2023MERCEDT6UtilityOnsite	0.007362582	0.13558037	0	0	0	0	0	0.008381739	0.154347931	0	0	0	0	0	0.086169416	5.741129953	0
2023MERCEDT7SingleOnsite	0.044122269	1.57627884	0	0	0	0	0	0.050229844	1.794473471	0	0	0	0	0	0.426234994	23.20726366	0
2023MERCEDT7TractorOnsite	0.04365423	1.587470025	0	0	0	0	0	0.049697018	1.807213784	0	0	0	0	0	0.525240716	23.41712014	0
2024MERCEDT6InstateOnsite	0.009652648	0.049331958	0	0	0	0	0	0.010988805	0.056160679	0	0	0	0	0	0.10984465	2.088954181	0
2024MERCEDT6UtilityOnsite	0.00736176	0.13558037	0	0	0	0	0	0.008380804	0.154347931	0	0	0	0	0	0.086159798	5.741129953	0
2024MERCEDT7SingleOnsite	0.042253085	1.578710464	0	0	0	0	0	0.048101921	1.79724169	0	0	0	0	0	0.42659832	23.25551614	0
2024MERCEDT7TractorOnsite	0.042894722	1.588700493	0	0	0	0	0	0.048832376	1.808614577	0	0	0	0	0	0.529316656	23.44133905	0
2025MERCEDT6InstateOnsite	0.00982035	0.049331958	0	0	0	0	0	0.011179721	0.056160679	0	0	0	0	0	0.111753117	2.088954181	0
2025MERCEDT6UtilityOnsite	0.007356204	0.13558037	0	0	0	0	0	0.008374478	0.154347931	0	0	0	0	0	0.086094769	5.741129953	0
2025MERCEDT7SingleOnsite	0.040573345	1.580880965	0	0	0	0	0	0.046189664	1.79971264	0	0	0	0	0	0.427310127	23.29829352	0
2025MERCEDT7TractorOnsite	0.042226903	1.589694758	0	0	0	0	0	0.048072115	1.809746473	0	0	0	0	0	0.532342491	23.46126017	0
2026MERCEDT6InstateOnsite	0.009952757	0.049331958	0	0	0	0	0	0.011330456	0.056160679	0	0	0	0	0	0.113259765	2.088954181	0
2026MERCEDT6UtilityOnsite	0.007347272	0.13558037	0	0	0	0	0	0.00836431	0.154347931	0	0	0	0	0	0.085990234	5.741129953	0
2026MERCEDT7SingleOnsite	0.039073948	1.582785215	0	0	0	0	0	0.044482715	1.801880483	0	0	0	0	0	0.427860137	23.33603581	0
2026MERCEDT7TractorOnsite	0.041566636	1.590513686	0	0	0	0	0	0.047320451	1.81067876	0	0	0	0	0	0.533262087	23.4777672	0

	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Lookup	NOx_RUNEX	NOx_IDLEX	NOx_STREX	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	CH4_IDLEX	CH4_STREX	PM10_RUNEX	PM10_IDLEX	PM10_STREX	PM10_PMTW	PM10_PMBW
2019MERCEDT6InstateOnsite	5.911659227	8.362455403	0.800557788	1116.927712	683.6293934	0	0.020225915	0.008722854	0	0.191813018	0.05781933	0	0.012000003	0.130340037
2019MERCEDT6UtilityOnsite	2.044103892	12.85133507	1.467104228	1089.082675	1809.943633	0	0.001379341	0.006570958	0	0.009212872	0.006114828	0	0.012000003	0.130340037
2019MERCEDT7SingleOnsite	9.095975386	25.96759055	2.127844962	1910.496432	3224.422917	0	0.036522334	0.089341716	0	0.225745472	0.155591226	0	0.03600001	0.061740018
2019MERCEDT7TractorOnsite	8.642248647	25.69093297	2.505485848	1917.992461	3702.935739	0	0.03590005	0.080937395	0	0.184737187	0.088041582	0	0.03600001	0.061740018
2020MERCEDT6InstateOnsite	4.824129662	7.619974172	1.016259742	1100.517149	683.9741686	0	0.015234401	0.005924849	0	0.140678609	0.036488535	0	0.012000003	0.130340037
2020MERCEDT6UtilityOnsite	1.82625384	11.91127671	1.555070831	1070.671497	1782.876034	0	0.001207596	0.006537132	0	0.00815056	0.005235326	0	0.012000003	0.130340037
2020MERCEDT7SingleOnsite	7.582768674	23.26477742	3.313673264	1892.045773	3866.101195	0	0.024480064	0.072980835	0	0.141891411	0.039487867	0	0.03600001	0.061740018
2020MERCEDT7TractorOnsite	7.581100051	23.28172897	3.375487701	1897.639274	4078.094288	0	0.025549597	0.073611648	0	0.128766567	0.027509301	0	0.03600001	0.061740018
2021MERCEDT6InstateOnsite	3.900622552	6.702239713	1.221600334	1078.583458	675.1151336	0	0.011998089	0.005175293	0	0.11330617	0.028928734	0	0.012000003	0.130340037
2021MERCEDT6UtilityOnsite	0.994950071	7.8478412	1.946302958	1030.016006	1690.38047	0	0.000340546	0.006297357	0	0.003484552	0.001958878	0	0.012000003	0.130340037
2021MERCEDT7SingleOnsite	6.516499512	22.67282546	3.516604753	1859.782655	3917.791879	0	0.019788293	0.073295176	0	0.115258911	0.032354446	0	0.03600001	0.061740018
2021MERCEDT7TractorOnsite	6.828613256	22.71467434	3.557950001	1870.277629	4104.585987	0	0.020019418	0.073779372	0	0.102008802	0.022016293	0	0.03600001	0.061740018
2022MERCEDT6InstateOnsite	2.234352928	3.837175587	1.811969686	1024.452852	638.9091798	0	0.003492042	0.003141272	0	0.030280045	0.007840935	0	0.012000003	0.130340037
2022MERCEDT6UtilityOnsite	0.996353763	7.8478412	1.949382935	1014.428686	1671.297376	0	0.000341712	0.006297357	0	0.003525491	0.001958878	0	0.012000003	0.130340037
2022MERCEDT7SingleOnsite	4.727930654	21.41237312	3.986891072	1793.762646	4085.245936	0	0.008289504	0.073582708	0	0.044225082	0.013174374	0	0.03600001	0.061740018
2022MERCEDT7TractorOnsite	5.747211175	21.80301479	3.87150825	1824.97875	4185.390728	0	0.009846335	0.073939328	0	0.04756277	0.010519421	0	0.03600001	0.061740018
2023MERCEDT6InstateOnsite	1.586007071	2.855497231	2.116825945	994.9399243	616.0193297	0	0.000439598	0.002291342	0	0.007652381	0.000712753	0	0.012000003	0.130340037
2023MERCEDT6UtilityOnsite	0.992395474	7.8478412	1.952706188	996.5060631	1647.889566	0	0.000341973	0.006297357	0	0.003535316	0.001958878	0	0.012000003	0.130340037
2023MERCEDT7SingleOnsite	3.550675051	18.99420187	4.429731006	1726.738313	3991.319169	0	0.002049365	0.07321407	0	0.018044295	0.007743168	0	0.03600001	0.061740018
2023MERCEDT7TractorOnsite	4.483930217	18.92151657	4.477959211	1734.409176	4010.851011	0	0.002027626	0.073733871	0	0.024297695	0.007040875	0	0.03600001	0.061740018
2024MERCEDT6InstateOnsite	1.63781238	2.855497231	2.116506042	987.439252	613.9529557	0	0.000448341	0.002291342	0	0.00798652	0.000712753	0	0.012000003	0.130340037
2024MERCEDT6UtilityOnsite	0.987426562	7.8478412	1.955740458	973.4064746	1616.66454	0	0.000341935	0.006297357	0	0.003534833	0.001958878	0	0.012000003	0.130340037
2024MERCEDT7SingleOnsite	3.507530268	18.97546312	4.444040348	1704.129946	3953.553029	0	0.001962546	0.073327012	0	0.017628639	0.007589267	0	0.03600001	0.061740018
2024MERCEDT7TractorOnsite	4.515461637	18.90857573	4.487457461	1714.503135	3973.395829	0	0.001992349	0.073791023	0	0.024512134	0.006991524	0	0.03600001	0.061740018
2025MERCEDT6InstateOnsite	1.683859279	2.855497231	2.116225056	979.2508258	611.7567789	0	0.00045613	0.002291342	0	0.008284188	0.000712753	0	0.012000003	0.130340037
2025MERCEDT6UtilityOnsite	0.981881691	7.8478412	1.95849122	951.2099844	1585.973945	0	0.000341677	0.006297357	0	0.003526759	0.001958878	0	0.012000003	0.130340037
2025MERCEDT7SingleOnsite	3.473109429	18.95850639	4.456662902	1682.269485	3913.501859	0	0.001884527	0.073427826	0	0.017290645	0.007456915	0	0.03600001	0.061740018
2025MERCEDT7TractorOnsite	4.538150458	18.89769737	4.495003785	1695.578401	3934.479402	0	0.00196133	0.073837204	0	0.024659463	0.006952338	0	0.03600001	0.061740018
2026MERCEDT6InstateOnsite	1.72013107	2.855497231	2.11635852	970.4822801	609.5222922	0	0.00046228	0.002291342	0	0.008519696	0.000712753	0	0.012000003	0.130340037
2026MERCEDT6UtilityOnsite	0.97607285	7.8478412	1.960954238	930.5140852	1556.494468	0	0.000341262	0.006297357	0	0.003513249	0.001958878	0	0.012000003	0.130340037
2026MERCEDT7SingleOnsite	3.442068961	18.94342142	4.467736363	1660.702329	3873.132981	0	0.001814884	0.073516274	0	0.016987111	0.007338984	0	0.03600001	0.061740018
2026MERCEDT7TractorOnsite	4.53787951	18.88876218	4.501873154	1675.431076	3892.073059	0	0.001930663	0.073875241	0	0.024647017	0.006920393	0	0.03600001	0.061740018

	33	34	35	36	37	38	39	40	41	42	43
Lookup	PM2_5_RUNEX	PM2_5_IDLEX	PM2_5_STREX	PM2_5_PMTW	PM2_5_PMBW	SOx_RUNEX	SOx_IDLEX	SOx_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX
2019MERCEDT6InstateOnsite	0.183515272	0.055318092	0	0.003000001	0.055860016	0.010552	0.006459	0	0.175565	0.107457	0
2019MERCEDT6UtilityOnsite	0.008814327	0.005850303	0	0.003000001	0.055860016	0.010289	0.017099	0	0.171189	0.284498	0
2019MERCEDT7SingleOnsite	0.215979823	0.148860418	0	0.009000003	0.026460008	0.018049	0.030463	0	0.300303	0.506834	0
2019MERCEDT7TractorOnsite	0.176745538	0.084232942	0	0.009000003	0.026460008	0.01812	0.034984	0	0.301482	0.58205	0
2020MERCEDT6InstateOnsite	0.134592915	0.034910057	0	0.003000001	0.055860016	0.010397	0.006462	0	0.172986	0.107511	0
2020MERCEDT6UtilityOnsite	0.007797971	0.005008848	0	0.003000001	0.055860016	0.010115	0.016844	0	0.168295	0.280243	0
2020MERCEDT7SingleOnsite	0.135753252	0.03777964	0	0.009000003	0.026460008	0.017875	0.036525	0	0.297403	0.607697	0
2020MERCEDT7TractorOnsite	0.123196182	0.026319261	0	0.009000003	0.026460008	0.017928	0.038528	0	0.298282	0.64102	0
2021MERCEDT6InstateOnsite	0.108404595	0.02767729	0	0.003000001	0.055860016	0.01019	0.006378	0	0.169538	0.106119	0
2021MERCEDT6UtilityOnsite	0.003333812	0.001874138	0	0.003000001	0.055860016	0.009731	0.01597	0	0.161904	0.265704	0
2021MERCEDT7SingleOnsite	0.110272862	0.030954807	0	0.009000003	0.026460008	0.01757	0.037013	0	0.292332	0.615822	0
2021MERCEDT7TractorOnsite	0.097595947	0.021063878	0	0.009000003	0.026460008	0.017669	0.038778	0	0.293982	0.645184	0
2022MERCEDT6InstateOnsite	0.028970144	0.00750174	0	0.003000001	0.055860016	0.009679	0.006036	0	0.16103	0.100428	0
2022MERCEDT6UtilityOnsite	0.00337298	0.001874138	0	0.003000001	0.055860016	0.009584	0.01579	0	0.159454	0.262705	0
2022MERCEDT7SingleOnsite	0.042311924	0.012604456	0	0.009000003	0.026460008	0.016947	0.038595	0	0.281955	0.642144	0
2022MERCEDT7TractorOnsite	0.045505225	0.010064356	0	0.009000003	0.026460008	0.017241	0.039541	0	0.286861	0.657885	0
2023MERCEDT6InstateOnsite	0.007321343	0.00068192	0	0.003000001	0.055860016	0.0094	0.00582	0	0.156391	0.09683	0
2023MERCEDT6UtilityOnsite	0.00338238	0.001874138	0	0.003000001	0.055860016	0.009414	0.015568	0	0.156637	0.259025	0
2023MERCEDT7SingleOnsite	0.017263706	0.007408202	0	0.009000003	0.026460008	0.016313	0.037708	0	0.271419	0.62738	0
2023MERCEDT7TractorOnsite	0.023246588	0.00673629	0	0.009000003	0.026460008	0.016386	0.037893	0	0.272625	0.63045	0
2024MERCEDT6InstateOnsite	0.007641026	0.00068192	0	0.003000001	0.055860016	0.009329	0.0058	0	0.155212	0.096505	0
2024MERCEDT6UtilityOnsite	0.003381918	0.001874138	0	0.003000001	0.055860016	0.009196	0.015273	0	0.153006	0.254117	0
2024MERCEDT7SingleOnsite	0.016866031	0.007260959	0	0.009000003	0.026460008	0.0161	0.037351	0	0.267865	0.621443	0
2024MERCEDT7TractorOnsite	0.02345175	0.006689074	0	0.009000003	0.026460008	0.016198	0.037539	0	0.269496	0.624562	0
2025MERCEDT6InstateOnsite	0.007925817	0.00068192	0	0.003000001	0.055860016	0.009251	0.00578	0	0.153925	0.09616	0
2025MERCEDT6UtilityOnsite	0.003374193	0.001874138	0	0.003000001	0.055860016	0.008987	0.014983	0	0.149517	0.249293	0
2025MERCEDT7SingleOnsite	0.016542659	0.007134332	0	0.009000003	0.026460008	0.015893	0.036973	0	0.264429	0.615148	0
2025MERCEDT7TractorOnsite	0.023592706	0.006651582	0	0.009000003	0.026460008	0.016019	0.037171	0	0.266521	0.618445	0
2026MERCEDT6InstateOnsite	0.008151138	0.00068192	0	0.003000001	0.055860016	0.009169	0.005758	0	0.152546	0.095808	0
2026MERCEDT6UtilityOnsite	0.003361267	0.001874138	0	0.003000001	0.055860016	0.008791	0.014705	0	0.146264	0.244659	0
2026MERCEDT7SingleOnsite	0.016252256	0.007021502	0	0.009000003	0.026460008	0.015689	0.036591	0	0.261039	0.608803	0
2026MERCEDT7TractorOnsite	0.023580798	0.00662102	0	0.009000003	0.026460008	0.015829	0.03677	0	0.263354	0.61178	0

									RUNEX, PMBW, and PMTW (grams/mile)						
Year	County	VehType	Name	TOG	ROG	NOx	CO	PM10 Ex	PM10 D	PM2.5 Ex	PM2.5 D	SO2	CO2	CH4	N2O
2019	Merced	LDA-LDT	2019MercedLDA-LDT	0.04	0.03	0.12	1.26	0.00	0.04	0.00	0.02	0.00	320	0	0.01
2020	Merced	LDA-LDT	2020MercedLDA-LDT	0.03	0.02	0.10	1.10	0.00	0.04	0.00	0.02	0.00	311	0	0.01
2021	Merced	LDA-LDT	2021MercedLDA-LDT	0.03	0.02	0.08	0.98	0.00	0.04	0.00	0.02	0.00	302	0	0.01
2022	Merced	LDA-LDT	2022MercedLDA-LDT	0.02	0.02	0.07	0.88	0.00	0.04	0.00	0.02	0.00	292	0	0.01
2023	Merced	LDA-LDT	2023MercedLDA-LDT	0.02	0.01	0.06	0.79	0.00	0.04	0.00	0.02	0.00	283	0	0.01
2024	Merced	LDA-LDT	2024MercedLDA-LDT	0.02	0.01	0.05	0.73	0.00	0.04	0.00	0.02	0.00	274	0	0.01
2025	Merced	LDA-LDT	2025MercedLDA-LDT	0.01	0.01	0.05	0.67	0.00	0.04	0.00	0.02	0.00	265	0	0.00
2026	Merced	LDA-LDT	2026MercedLDA-LDT	0.01	0.01	0.04	0.63	0.00	0.04	0.00	0.02	0.00	257	0	0.00
2019	Merced	LDT	2019MercedLDT	0.07	0.05	0.22	1.97	0.00	0.04	0.00	0.02	0.00	385	0	0.01
2020	Merced	LDT	2020MercedLDT	0.06	0.04	0.19	1.74	0.00	0.04	0.00	0.02	0.00	374	0	0.01
2021	Merced	LDT	2021MercedLDT	0.05	0.04	0.16	1.55	0.00	0.04	0.00	0.02	0.00	362	0	0.01
2022	Merced	LDT	2022MercedLDT	0.05	0.03	0.14	1.38	0.00	0.04	0.00	0.02	0.00	350	0	0.01
2023	Merced	LDT	2023MercedLDT	0.04	0.03	0.12	1.23	0.00	0.04	0.00	0.02	0.00	338	0	0.01
2024	Merced	LDT	2024MercedLDT	0.03	0.02	0.10	1.11	0.00	0.04	0.00	0.02	0.00	326	0	0.01
2025	Merced	LDT	2025MercedLDT	0.03	0.02	0.09	1.00	0.00	0.04	0.00	0.02	0.00	314	0	0.01
2026	Merced	LDT	2026MercedLDT	0.03	0.02	0.08	0.92	0.00	0.04	0.00	0.02	0.00	304	0	0.01
2019	Merced	T6Instate	2019MercedT6Instate	0.50	0.44	5.91	1.13	0.19	0.14	0.18	0.06	0.01	1117	0.02	0.18
2020	Merced	T6Instate	2020MercedT6Instate	0.37	0.33	4.82	0.89	0.14	0.14	0.13	0.06	0.01	1101	0.02	0.17
2021	Merced	T6Instate	2021MercedT6Instate	0.29	0.26	3.90	0.73	0.11	0.14	0.11	0.06	0.01	1079	0.01	0.17
2022	Merced	T6Instate	2022MercedT6Instate	0.09	0.08	2.23	0.26	0.03	0.14	0.03	0.06	0.01	1024	0.00	0.16
2023	Merced	T6Instate	2023MercedT6Instate	0.01	0.01	1.59	0.11	0.01	0.14	0.01	0.06	0.01	995	0.00	0.16
2024	Merced	T6Instate	2024MercedT6Instate	0.01	0.01	1.64	0.11	0.01	0.14	0.01	0.06	0.01	987	0.00	0.16
2025	Merced	T6Instate	2025MercedT6Instate	0.01	0.01	1.68	0.11	0.01	0.14	0.01	0.06	0.01	979	0.00	0.15
2026	Merced	T6Instate	2026MercedT6Instate	0.01	0.01	1.72	0.11	0.01	0.14	0.01	0.06	0.01	970	0.00	0.15
2019	Merced	T6Utility	2019MercedT6Utility	0.03	0.03	2.04	0.12	0.01	0.14	0.01	0.06	0.01	1089	0.00	0.17
2020	Merced	T6Utility	2020MercedT6Utility	0.03	0.03	1.83	0.12	0.01	0.14	0.01	0.06	0.01	1071	0.00	0.17
2021	Merced	T6Utility	2021MercedT6Utility	0.01	0.01	0.99	0.09	0.00	0.14	0.00	0.06	0.01	1030	0.00	0.16
2022	Merced	T6Utility	2022MercedT6Utility	0.01	0.01	1.00	0.09	0.00	0.14	0.00	0.06	0.01	1014	0.00	0.16
2023	Merced	T6Utility	2023MercedT6Utility	0.01	0.01	0.99	0.09	0.00	0.14	0.00	0.06	0.01	997	0.00	0.16
2024	Merced	T6Utility	2024MercedT6Utility	0.01	0.01	0.99	0.09	0.00	0.14	0.00	0.06	0.01	973	0.00	0.15
2025	Merced	T6Utility	2025MercedT6Utility	0.01	0.01	0.98	0.09	0.00	0.14	0.00	0.06	0.01	951	0.00	0.15
2026	Merced	T6Utility	2026MercedT6Utility	0.01	0.01	0.98	0.09	0.00	0.14	0.00	0.06	0.01	931	0.00	0.15
2019	Merced	T7Single	2019MercedT7Single	0.90	0.79	9.10	1.80	0.23	0.10	0.22	0.04	0.02	1910	0.04	0.30
2020	Merced	T7Single	2020MercedT7Single	0.60	0.53	7.58	1.30	0.14	0.10	0.14	0.04	0.02	1892	0.02	0.30
2021	Merced	T7Single	2021MercedT7Single	0.49	0.43	6.52	1.14	0.12	0.10	0.11	0.04	0.02	1860	0.02	0.29
2022	Merced	T7Single	2022MercedT7Single	0.20	0.18	4.73	0.66	0.04	0.10	0.04	0.04	0.02	1794	0.01	0.28
2023	Merced	T7Single	2023MercedT7Single	0.05	0.04	3.55	0.43	0.02	0.10	0.02	0.04	0.02	1727	0.00	0.27
2024	Merced	T7Single	2024MercedT7Single	0.05	0.04	3.51	0.43	0.02	0.10	0.02	0.04	0.02	1704	0.00	0.27
2025	Merced	T7Single	2025MercedT7Single	0.05	0.04	3.47	0.43	0.02	0.10	0.02	0.04	0.02	1682	0.00	0.26
2026	Merced	T7Single	2026MercedT7Single	0.04	0.04	3.44	0.43	0.02	0.10	0.02	0.04	0.02	1661	0.00	0.26
2019	Merced	T7Tractor	2019MercedT7Tractor	0.88	0.77	8.64	1.85	0.18	0.10	0.18	0.04	0.02	1918	0.04	0.30
2020	Merced	T7Tractor	2020MercedT7Tractor	0.63	0.55	7.58	1.46	0.13	0.10	0.12	0.04	0.02	1898	0.03	0.30
2021	Merced	T7Tractor	2021MercedT7Tractor	0.49	0.43	6.83	1.27	0.10	0.10	0.10	0.04	0.02	1870	0.02	0.29
2022	Merced	T7Tractor	2022MercedT7Tractor	0.24	0.21	5.75	0.85	0.05	0.10	0.05	0.04	0.02	1825	0.01	0.29
2023	Merced	T7Tractor	2023MercedT7Tractor	0.05	0.04	4.48	0.53	0.02	0.10	0.02	0.04	0.02	1734	0.00	0.27
2024	Merced	T7Tractor	2024MercedT7Tractor	0.05	0.04	4.52	0.53	0.02	0.10	0.02	0.04	0.02	1715	0.00	0.27
2025	Merced	T7Tractor	2025MercedT7Tractor	0.05	0.04	4.54	0.53	0.02	0.10	0.02	0.04	0.02	1696	0.00	0.27
2026	Merced	T7Tractor	2026MercedT7Tractor	0.05	0.04	4.54	0.53	0.02	0.10	0.02	0.04	0.02	1675	0.00	0.26

	9	2	19	16	28	31 32	33	36 37	38	22	25	41
All emissions are grams per mile												
All emissions are for aggregated speeds												
CH4 emission factors for light-duty vehicles are calculated in a separate spreads	TOG_runex	ROG_runex	NOx_runex	CO_runex	PM10_rune:	PM10_PMT\ PM10_PMBW	pm2_5_run	PM2_5_PM' PM2_5_PMBW	sox_runex	CO2_runex	CH4_runex	N2O_runex
	9	2	19	16	28	31 32	33	36 37	38	22	25	41

STREX, HOTSOAK, and RUNLOSS (grams/start or trip)

Year	County	VehType	Name	TOG	ROG	NOx	CO	PM10 Ex	PM10 D	PM2.5 Ex	PM2.5 D	SO2	CO2	CH4	N2O
2019	Merced	LDA-LDT	2019MercedLDA-LDT	1.16	1.12	0.33	2.76	0.00	0.00	0.00	0.00	0.00	66.12		0.03
2020	Merced	LDA-LDT	2020MercedLDA-LDT	1.06	1.02	0.30	2.64	0.00	0.00	0.00	0.00	0.00	64.09		0.03
2021	Merced	LDA-LDT	2021MercedLDA-LDT	0.97	0.94	0.27	2.54	0.00	0.00	0.00	0.00	0.00	62.07		0.03
2022	Merced	LDA-LDT	2022MercedLDA-LDT	0.89	0.86	0.25	2.45	0.00	0.00	0.00	0.00	0.00	60.07		0.03
2023	Merced	LDA-LDT	2023MercedLDA-LDT	0.82	0.79	0.23	2.36	0.00	0.00	0.00	0.00	0.00	58.07		0.03
2024	Merced	LDA-LDT	2024MercedLDA-LDT	0.76	0.74	0.21	2.27	0.00	0.00	0.00	0.00	0.00	56.11		0.03
2025	Merced	LDA-LDT	2025MercedLDA-LDT	0.71	0.69	0.20	2.18	0.00	0.00	0.00	0.00	0.00	54.17		0.03
2026	Merced	LDA-LDT	2026MercedLDA-LDT	0.66	0.64	0.18	2.09	0.00	0.00	0.00	0.00	0.00	52.36		0.02
2019	Merced	LDT	2019MercedLDT	1.88	1.82	0.49	3.32	0.00	0.00	0.00	0.00	0.00	79.85		0.04
2020	Merced	LDT	2020MercedLDT	1.74	1.69	0.45	3.16	0.00	0.00	0.00	0.00	0.00	77.37		0.04
2021	Merced	LDT	2021MercedLDT	1.61	1.56	0.41	3.03	0.00	0.00	0.00	0.00	0.00	74.85		0.04
2022	Merced	LDT	2022MercedLDT	1.50	1.45	0.37	2.92	0.00	0.00	0.00	0.00	0.00	72.33		0.04
2023	Merced	LDT	2023MercedLDT	1.39	1.35	0.34	2.80	0.00	0.00	0.00	0.00	0.00	69.80		0.03
2024	Merced	LDT	2024MercedLDT	1.29	1.25	0.31	2.69	0.00	0.00	0.00	0.00	0.00	67.30		0.03
2025	Merced	LDT	2025MercedLDT	1.19	1.16	0.28	2.58	0.00	0.00	0.00	0.00	0.00	64.82		0.03
2026	Merced	LDT	2026MercedLDT	1.11	1.08	0.26	2.47	0.00	0.00	0.00	0.00	0.00	62.49		0.03
2019	Merced	T6Instate	2019MercedT6Instate	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2020	Merced	T6Instate	2020MercedT6Instate	0.00	0.00	1.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2021	Merced	T6Instate	2021MercedT6Instate	0.00	0.00	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2022	Merced	T6Instate	2022MercedT6Instate	0.00	0.00	1.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2023	Merced	T6Instate	2023MercedT6Instate	0.00	0.00	2.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2024	Merced	T6Instate	2024MercedT6Instate	0.00	0.00	2.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2025	Merced	T6Instate	2025MercedT6Instate	0.00	0.00	2.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	Merced	T6Instate	2026MercedT6Instate	0.00	0.00	2.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2019	Merced	T6Utility	2019MercedT6Utility	0.00	0.00	1.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2020	Merced	T6Utility	2020MercedT6Utility	0.00	0.00	1.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2021	Merced	T6Utility	2021MercedT6Utility	0.00	0.00	1.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2022	Merced	T6Utility	2022MercedT6Utility	0.00	0.00	1.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2023	Merced	T6Utility	2023MercedT6Utility	0.00	0.00	1.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2024	Merced	T6Utility	2024MercedT6Utility	0.00	0.00	1.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2025	Merced	T6Utility	2025MercedT6Utility	0.00	0.00	1.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	Merced	T6Utility	2026MercedT6Utility	0.00	0.00	1.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2019	Merced	T7Single	2019MercedT7Single	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2020	Merced	T7Single	2020MercedT7Single	0.00	0.00	3.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2021	Merced	T7Single	2021MercedT7Single	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2022	Merced	T7Single	2022MercedT7Single	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2023	Merced	T7Single	2023MercedT7Single	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2024	Merced	T7Single	2024MercedT7Single	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2025	Merced	T7Single	2025MercedT7Single	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	Merced	T7Single	2026MercedT7Single	0.00	0.00	4.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2019	Merced	T7Tractor	2019MercedT7Tractor	0.00	0.00	2.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2020	Merced	T7Tractor	2020MercedT7Tractor	0.00	0.00	3.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2021	Merced	T7Tractor	2021MercedT7Tractor	0.00	0.00	3.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2022	Merced	T7Tractor	2022MercedT7Tractor	0.00	0.00	3.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2023	Merced	T7Tractor	2023MercedT7Tractor	0.00	0.00	4.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2024	Merced	T7Tractor	2024MercedT7Tractor	0.00	0.00	4.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2025	Merced	T7Tractor	2025MercedT7Tractor	0.00	0.00	4.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	Merced	T7Tractor	2026MercedT7Tractor	0.00	0.00	4.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	11	4	21	18	30	35	40	24	27	43
	12	5								
	13	6								
All emissions are grams per mile	TOG_strex	ROG_strex	NOx_strex	CO_strex	PM10_strex	pm2_5_strex	sox_strex	CO2_strex	CH4_strex	N2O_strex
All emissions are for aggregated speeds	TOG_hotsoa	ROG_hotsoak								
CH4 emission factors for light-duty vehicles are calculated in a separate spreadsheet	TOG_runlos	ROG_runloss								

IDLEX, RESTLOSS, and DIURN (grams/vehicle/day)

Year	County	VehType	Name	TOG	ROG	NOx	CO	PM10 Ex	PM10 D	PM2.5 Ex	PM2.5 D	SO2	CO2	CH4	N2O
2019	Merced	LDA-LDT	2019MercedLDA-LDT	0.99	0.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
2020	Merced	LDA-LDT	2020MercedLDA-LDT	0.91	0.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
2021	Merced	LDA-LDT	2021MercedLDA-LDT	0.84	0.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
2022	Merced	LDA-LDT	2022MercedLDA-LDT	0.78	0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
2023	Merced	LDA-LDT	2023MercedLDA-LDT	0.72	0.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
2024	Merced	LDA-LDT	2024MercedLDA-LDT	0.66	0.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
2025	Merced	LDA-LDT	2025MercedLDA-LDT	0.62	0.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
2026	Merced	LDA-LDT	2026MercedLDA-LDT	0.58	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
2019	Merced	LDT	2019MercedLDT	1.48	1.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
2020	Merced	LDT	2020MercedLDT	1.40	1.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
2021	Merced	LDT	2021MercedLDT	1.32	1.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
2022	Merced	LDT	2022MercedLDT	1.25	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
2023	Merced	LDT	2023MercedLDT	1.18	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
2024	Merced	LDT	2024MercedLDT	1.11	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
2025	Merced	LDT	2025MercedLDT	1.04	1.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
2026	Merced	LDT	2026MercedLDT	0.98	0.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
2019	Merced	T6Instate	2019MercedT6Instate	0.21	0.19	8.36	2.23	0.06	0.00	0.06	0.00	0.01	683.63	0.01	0.11
2020	Merced	T6Instate	2020MercedT6Instate	0.15	0.13	7.62	2.07	0.04	0.00	0.03	0.00	0.01	683.97	0.01	0.11
2021	Merced	T6Instate	2021MercedT6Instate	0.13	0.11	6.70	2.07	0.03	0.00	0.03	0.00	0.01	675.12	0.01	0.11
2022	Merced	T6Instate	2022MercedT6Instate	0.08	0.07	3.84	2.03	0.01	0.00	0.01	0.00	0.01	638.91	0.00	0.10
2023	Merced	T6Instate	2023MercedT6Instate	0.06	0.05	2.86	2.09	0.00	0.00	0.00	0.00	0.01	616.02	0.00	0.10
2024	Merced	T6Instate	2024MercedT6Instate	0.06	0.05	2.86	2.09	0.00	0.00	0.00	0.00	0.01	613.95	0.00	0.10
2025	Merced	T6Instate	2025MercedT6Instate	0.06	0.05	2.86	2.09	0.00	0.00	0.00	0.00	0.01	611.76	0.00	0.10
2026	Merced	T6Instate	2026MercedT6Instate	0.06	0.05	2.86	2.09	0.00	0.00	0.00	0.00	0.01	609.52	0.00	0.10
2019	Merced	T6Utility	2019MercedT6Utility	0.16	0.14	12.85	4.68	0.01	0.00	0.01	0.00	0.02	1809.94	0.01	0.28
2020	Merced	T6Utility	2020MercedT6Utility	0.16	0.14	11.91	4.87	0.01	0.00	0.01	0.00	0.02	1782.88	0.01	0.28
2021	Merced	T6Utility	2021MercedT6Utility	0.15	0.14	7.85	5.74	0.00	0.00	0.00	0.00	0.02	1690.38	0.01	0.27
2022	Merced	T6Utility	2022MercedT6Utility	0.15	0.14	7.85	5.74	0.00	0.00	0.00	0.00	0.02	1671.30	0.01	0.26
2023	Merced	T6Utility	2023MercedT6Utility	0.15	0.14	7.85	5.74	0.00	0.00	0.00	0.00	0.02	1647.89	0.01	0.26
2024	Merced	T6Utility	2024MercedT6Utility	0.15	0.14	7.85	5.74	0.00	0.00	0.00	0.00	0.02	1616.66	0.01	0.25
2025	Merced	T6Utility	2025MercedT6Utility	0.15	0.14	7.85	5.74	0.00	0.00	0.00	0.00	0.01	1585.97	0.01	0.25
2026	Merced	T6Utility	2026MercedT6Utility	0.15	0.14	7.85	5.74	0.00	0.00	0.00	0.00	0.01	1556.49	0.01	0.24
2019	Merced	T7Single	2019MercedT7Single	2.19	1.92	25.97	16.10	0.16	0.00	0.15	0.00	0.03	3224.42	0.09	0.51
2020	Merced	T7Single	2020MercedT7Single	1.79	1.57	23.26	19.31	0.04	0.00	0.04	0.00	0.04	3866.10	0.07	0.61
2021	Merced	T7Single	2021MercedT7Single	1.80	1.58	22.67	20.04	0.03	0.00	0.03	0.00	0.04	3917.79	0.07	0.62
2022	Merced	T7Single	2022MercedT7Single	1.80	1.58	21.41	21.63	0.01	0.00	0.01	0.00	0.04	4085.25	0.07	0.64
2023	Merced	T7Single	2023MercedT7Single	1.79	1.58	18.99	23.21	0.01	0.00	0.01	0.00	0.04	3991.32	0.07	0.63
2024	Merced	T7Single	2024MercedT7Single	1.80	1.58	18.98	23.26	0.01	0.00	0.01	0.00	0.04	3953.55	0.07	0.62
2025	Merced	T7Single	2025MercedT7Single	1.80	1.58	18.96	23.30	0.01	0.00	0.01	0.00	0.04	3913.50	0.07	0.62
2026	Merced	T7Single	2026MercedT7Single	1.80	1.58	18.94	23.34	0.01	0.00	0.01	0.00	0.04	3873.13	0.07	0.61
2019	Merced	T7Tractor	2019MercedT7Tractor	1.98	1.74	25.69	16.91	0.09	0.00	0.08	0.00	0.03	3702.94	0.08	0.58
2020	Merced	T7Tractor	2020MercedT7Tractor	1.80	1.58	23.28	19.50	0.03	0.00	0.03	0.00	0.04	4078.09	0.07	0.64
2021	Merced	T7Tractor	2021MercedT7Tractor	1.81	1.59	22.71	20.15	0.02	0.00	0.02	0.00	0.04	4104.59	0.07	0.65
2022	Merced	T7Tractor	2022MercedT7Tractor	1.81	1.59	21.80	21.21	0.01	0.00	0.01	0.00	0.04	4185.39	0.07	0.66
2023	Merced	T7Tractor	2023MercedT7Tractor	1.81	1.59	18.92	23.42	0.01	0.00	0.01	0.00	0.04	4010.85	0.07	0.63
2024	Merced	T7Tractor	2024MercedT7Tractor	1.81	1.59	18.91	23.44	0.01	0.00	0.01	0.00	0.04	3973.40	0.07	0.62
2025	Merced	T7Tractor	2025MercedT7Tractor	1.81	1.59	18.90	23.46	0.01	0.00	0.01	0.00	0.04	3934.48	0.07	0.62
2026	Merced	T7Tractor	2026MercedT7Tractor	1.81	1.59	18.89	23.48	0.01	0.00	0.01	0.00	0.04	3892.07	0.07	0.61

	10	3	20	17	29	34	39	23	26	42
	14	7								
	15	8								
All emissions are grams per mile	TOG_idlex	ROG_idlex	NOx_idlex	CO_idlex	PM10_idlex	PM2_5_idlex	sox_idlex	CO2_idlex	CH4_idlex	N2O_idlex
All emissions are for aggregated speeds	TOG_restlos	ROG_restloss								
CH4 emission factors for light-duty vehicles are calculated in a separate spreadsheet	TOG_diurn	ROG_diurn								

EMFAC2017 (v1.0.2) Emission Rates
Region Type: County
Region: MERCED
Calendar Year: 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN

										2	3	4	5	6	7	8	9
Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	Percent	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSOAK	ROG_RUNLOSS	ROG_RESTLOSS	ROG_DIURN	TOG_RUNEX
MERCED	2019	LDA	Aggregated	Aggregated	GAS	95357.67499	4052303.699	442577.5476	71%	0.020156168	0	0.369387007	0.162238224	0.292827649	0.319670363	0.473838811	0.029381891
MERCED	2019	LDA	Aggregated	Aggregated	DSL	663.3523694	29943.31963	3113.559403	1%	0.024441734	0	0	0	0	0	0	0.02782529
MERCED	2019	LDA	Aggregated	Aggregated	ELEC	678.8642507	27012.25596	3433.075787	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2019	LDT1	Aggregated	Aggregated	GAS	10189.12769	345290.532	44452.87182	6%	0.075140084	0	0.757151959	0.442975316	1.525123348	0.867055095	1.465638645	0.108952652
MERCED	2019	LDT1	Aggregated	Aggregated	DSL	13.72845613	298.8475637	49.27656607	0%	0.173755622	0	0	0	0	0	0	0.197809224
MERCED	2019	LDT1	Aggregated	Aggregated	ELEC	6.359139417	268.2377647	32.75525172	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2019	LDT2	Aggregated	Aggregated	GAS	32968.21192	1210417.829	149772.2959	21%	0.041352107	0	0.567957172	0.234631808	0.759508505	0.502299695	0.732290569	0.060021789
MERCED	2019	LDT2	Aggregated	Aggregated	DSL	94.69507869	3919.633712	451.1329906	0%	0.035531648	0	0	0	0	0	0	0.040450419
MERCED	2019	LDT2	Aggregated	Aggregated	ELEC	84.59751613	3019.896271	432.7304144	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2020	LDA	Aggregated	Aggregated	GAS	98127.97459	4185056.674	456185.7146	72%	0.016507342	0	0.328989919	0.148258027	0.274645184	0.29312987	0.425934853	0.024068779
MERCED	2020	LDA	Aggregated	Aggregated	DSL	733.5991077	33466.85707	3460.384192	1%	0.021498554	0	0	0	0	0	0	0.024474675
MERCED	2020	LDA	Aggregated	Aggregated	ELEC	899.6423809	36837.90398	4535.224688	1%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2020	LDT1	Aggregated	Aggregated	GAS	10176.67403	348156.1294	44627.71306	6%	0.062176935	0	0.67629706	0.408517432	1.399922346	0.808898385	1.348001062	0.090649435
MERCED	2020	LDT1	Aggregated	Aggregated	DSL	12.50376922	267.402342	44.56458743	0%	0.164881905	0	0	0	0	0	0	0.187707086
MERCED	2020	LDT1	Aggregated	Aggregated	ELEC	14.31835546	625.0220765	73.65149402	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2020	LDT2	Aggregated	Aggregated	GAS	33014.59856	1212743.1	150150.5718	21%	0.035053889	0	0.518328504	0.22226611	0.722388591	0.485272788	0.695423422	0.051120877
MERCED	2020	LDT2	Aggregated	Aggregated	DSL	112.7749093	4720.790638	541.5760558	0%	0.030005795	0	0	0	0	0	0	0.034159602
MERCED	2020	LDT2	Aggregated	Aggregated	ELEC	116.9811969	4101.602158	595.5347728	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2021	LDA	Aggregated	Aggregated	GAS	101037.8706	4318248.019	470360.8203	72%	0.013854671	0	0.294152235	0.13587059	0.259890042	0.269458548	0.38508288	0.020205222
MERCED	2021	LDA	Aggregated	Aggregated	DSL	806.9084222	36953.71055	3816.614391	1%	0.019431304	0	0	0	0	0	0	0.022121247
MERCED	2021	LDA	Aggregated	Aggregated	ELEC	1157.825523	48685.61166	5818.173368	1%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2021	LDT1	Aggregated	Aggregated	GAS	10199.94974	351875.5023	44950.20218	6%	0.053525778	0	0.604528881	0.376236425	1.282382343	0.752770468	1.23726656	0.078059715
MERCED	2021	LDT1	Aggregated	Aggregated	DSL	11.43148786	240.2162529	40.46384444	0%	0.157382418	0	0	0	0	0	0	0.17916942
MERCED	2021	LDT1	Aggregated	Aggregated	ELEC	27.74208858	1247.813597	142.3985578	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2021	LDT2	Aggregated	Aggregated	GAS	33139.85956	1217235.698	150876.0989	20%	0.031036969	0	0.474541455	0.210990044	0.688522722	0.470552209	0.66420951	0.045268406
MERCED	2021	LDT2	Aggregated	Aggregated	DSL	131.4967432	5519.990961	633.9247939	0%	0.027247995	0	0	0	0	0	0	0.031020031
MERCED	2021	LDT2	Aggregated	Aggregated	ELEC	167.3684966	5800.54827	849.8038238	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2022	LDA	Aggregated	Aggregated	GAS	104011.2722	4437295.025	484714.1979	72%	0.011568174	0	0.264470363	0.125689876	0.247653453	0.248829507	0.350239975	0.016873493
MERCED	2022	LDA	Aggregated	Aggregated	DSL	880.9036863	40243.36609	4174.113449	1%	0.017088818	0	0	0	0	0	0	0.019454484
MERCED	2022	LDA	Aggregated	Aggregated	ELEC	1469.373932	63200.77687	7362.702633	1%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2022	LDT1	Aggregated	Aggregated	GAS	10257.21462	355560.7114	45407.98812	6%	0.045351444	0	0.53988983	0.345244048	1.174767182	0.699887165	1.135357753	0.066147724
MERCED	2022	LDT1	Aggregated	Aggregated	DSL	10.44737855	215.7441345	36.74880738	0%	0.148444035	0	0	0	0	0	0	0.168993665
MERCED	2022	LDT1	Aggregated	Aggregated	ELEC	44.69132526	2050.835403	228.5949455	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2022	LDT2	Aggregated	Aggregated	GAS	33329.71176	1220998.932	151895.2201	20%	0.027054358	0	0.434033059	0.19989772	0.657469271	0.455979329	0.634952453	0.03946209
MERCED	2022	LDT2	Aggregated	Aggregated	DSL	150.4819828	6285.165271	726.5669334	0%	0.02478089	0	0	0	0	0	0	0.028211396
MERCED	2022	LDT2	Aggregated	Aggregated	ELEC	230.5094532	7883.56427	1167.123679	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2023	LDA	Aggregated	Aggregated	GAS	106992.0755	4554381.284	498982.1244	72%	0.009737683	0	0.238809019	0.116794398	0.236846501	0.230300584	0.319913508	0.014205356
MERCED	2023	LDA	Aggregated	Aggregated	DSL	952.6353222	43363.10183	4519.263199	1%	0.015076737	0	0	0	0	0	0	0.017163863
MERCED	2023	LDA	Aggregated	Aggregated	ELEC	1834.297184	80767.22985	9166.409782	1%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2023	LDT1	Aggregated	Aggregated	GAS	10338.40334	360093.3629	45967.05627	6%	0.038160113	0	0.480710044	0.315485607	1.075662167	0.647257521	1.037525353	0.055672294
MERCED	2023	LDT1	Aggregated	Aggregated	DSL	9.589346041	194.6893454	33.52741808	0%	0.139474892	0	0	0	0	0	0	0.158782892
MERCED	2023	LDT1	Aggregated	Aggregated	ELEC	64.607494	3022.250599	329.1501463	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2023	LDT2	Aggregated	Aggregated	GAS	33570.11175	1227377.431	153161.3368	20%	0.023458389	0	0.3964569	0.188808637	0.628313763	0.439565975	0.604273764	0.034224998
MERCED	2023	LDT2	Aggregated	Aggregated	DSL	169.4943923	7034.211261	818.3629473	0%	0.022974531	0	0	0	0	0	0	0.026154976
MERCED	2023	LDT2	Aggregated	Aggregated	ELEC	303.9736004	10241.95047	1534.257748	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2024	LDA	Aggregated	Aggregated	GAS	109981.0647	4664867.481	513135.2095	72%	0.008382303	0	0.216584906	0.109201976	0.227794671	0.214170826	0.294205156	0.012231437
MERCED	2024	LDA	Aggregated	Aggregated	DSL	1023.687771	46346.92441	4859.961248	1%	0.013753074	0	0	0	0	0	0	0.015656961
MERCED	2024	LDA	Aggregated	Aggregated	ELEC	2255.033433	101495.9332	11238.32404	2%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2024	LDT1	Aggregated	Aggregated	GAS	10440.05919	364962.7783	46604.30436	6%	0.032492774	0	0.427683704	0.287657995	0.98561351	0.597037645	0.946445812	0.047407853
MERCED	2024	LDT1	Aggregated	Aggregated	DSL	8.770377111	175.5777645	30.51380079	0%	0.131288397	0	0	0	0	0	0	0.149463112
MERCED	2024	LDT1	Aggregated	Aggregated	ELEC	87.28985229	4154.418836	442.8646591	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2024	LDT2	Aggregated	Aggregated	GAS	33863.15102	1235069.461	154652.5575	19%	0.020641931	0	0.362463418	0.178316196	0.601518596	0.4234979	0.575537094	0.030118314
MERCED	2024	LDT2	Aggregated	Aggregated	DSL	186.6043242	7740.046851	904.0948162	0%	0.020897593	0	0	0	0	0	0	0.023790521
MERCED	2024	LDT2	Aggregated	Aggregated	ELEC	387.1176276	12839.35777	1947.357161	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2025	LDA	Aggregated	Aggregated	GAS	112989.3696	4766624.015	527164.7704	72%	0.007244027	0	0.197413883	0.102799725	0.22144275	0.201350518	0.274558607	0.010570468
MERCED	2025	LDA	Aggregated	Aggregated	DSL	1091.893551	49080.50925	5185.523354	1%	0.012445599	0	0	0	0	0	0	0.014168487
MERCED	2025	LDA	Aggregated	Aggregated	ELEC	2729.261448	125357.0093	13564.84771	2%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2025	LDT1	Aggregated	Aggregated	GAS	10561.67338	370076.211	47321.35835	6%	0.027243281	0	0.379632081	0.261898976	0.904139936	0.549197723	0.861101178	0.039753331
MERCED	2025	LDT1	Aggregated	Aggregated	DSL	8.07698037	159.3856492	27.96428225	0%	0.122363202	0	0	0	0	0	0	0.13930237
MERCED	2025	LDT1	Aggregated	Aggregated	ELEC	112.6078684	5443.659661	568.9336084	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2025	LDT2	Aggregated	Aggregated	GAS	34205.33976	1243445.728	156350.3035	19%	0.017967523	0	0.331529419	0.168391004	0.575592618	0.407849284	0.548338982	0.026218167
MERCED	2025	LDT2	Aggregated	Aggregated	DSL	204.374441	8419.219983	990.3735812	0%	0.019876682	0	0	0	0	0	0	0.022628281
MERCED	2025	LDT2	Aggregated	Aggregated	ELEC	479.8645066	15652.16555	2405.516965	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2026	LDA	Aggregated	Aggregated	GAS	116022.3333	4854833.19	541195.7335	72%	0.0064828	0	0.180898368	0.09721017	0.215918154	0.189969886	0.257347095	0.009459686
MERCED	2026	LDA	Aggregated	Aggregated	DSL	1157.029176	51537.08494	5498.714833	1%	0.01190935	0	0	0	0	0	0	0.013558003
MERCED	2026	LDA	Aggregated	Aggregated	ELEC	3225.342331	145484.8253	15978.64213	2%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2026	LDT1	Aggregated	Aggregated	GAS	10703.78779	374907.0765	48119.8066	6%	0.023379822	0	0.33726745	0.238291682	0.831136042	0.503948031	0.78219665	0.034115781
MERCED	2026	LDT1	Aggregated	Aggregated	DSL	7.457137122	145.3839054	25.71943675	0%	0.115024948	0	0	0	0	0	0	0.130948256
MERCED	2026	LDT1	Aggregated	Aggregated	ELEC	138.6231696	6551.073351	697.1911228	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2026	LDT2	Aggregated	Aggregated	GAS	34605.3102	1251209.296	158300.495	19%	0.016042119	0	0.30369674	0.158943922	0.550760902	0.392079524	0.522221115	0.023408623
MERCED	2026	LDT2	Aggregated	Aggregated	DSL	222.5500167	9048.324908	1076.359276	0%	0.020398979	0	0	0	0	0	0	0.023222881
MERCED	2026	LDT2	Aggregated	Aggregated	ELEC	575.3527286	18433.77122	2872.75849	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0

			10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Calendar Year	Vehicle Category	Fuel	TOG_IDLEX	TOG_STREX	TOG_HOTSOAK	TOG_RUNLOSS	TOG_RESTLOSS	TOG_DIURN	CO_RUNEX	CO_IDLEX	CO_STREX	NOx_RUNEX	NOx_IDLEX	NOx_STREX	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX
2019	LDA	GAS	0	0.404426362	0.162238224	0.292827649	0.319670363	0.473838811	0.998478325	0	2.550947323	0.073773223	0	0.263794147	298.066298	0	61.04132511	0.004835985
2019	LDA	DSL	0	0	0	0	0	0	0.306098112	0	0	0.182477938	0	0	222.3951712	0	0	0.001135272
2019	LDA	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0
2019	LDT1	GAS	0	0.828939773	0.442975316	1.525123348	0.867055095	1.465638645	2.820721943	0	3.045142283	0.282349208	0	0.458895516	356.5996643	0	74.16520554	0.016118976
2019	LDT1	DSL	0	0	0	0	0	0	1.16297925	0	0	1.178202038	0	0	455.1853078	0	0	0.008070617
2019	LDT1	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0
2019	LDT2	GAS	0	0.621820186	0.234631808	0.759508505	0.502299695	0.732290569	1.743926269	0	3.418283771	0.207958599	0	0.503565742	394.9012599	0	82.05867895	0.009254801
2019	LDT2	DSL	0	0	0	0	0	0	0.235238833	0	0	0.160286279	0	0	303.990982	0	0	0.001650377
2019	LDT2	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0
2020	LDA	GAS	0	0.360198371	0.148258027	0.274645184	0.29312987	0.425934853	0.879739389	0	2.468316304	0.06162187	0	0.243010857	290.6954859	0	59.50503647	0.004052362
2020	LDA	DSL	0	0	0	0	0	0	0.286205275	0	0	0.145091569	0	0	216.476586	0	0	0.000998567
2020	LDA	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0
2020	LDT1	GAS	0	0.740451271	0.408517432	1.399922346	0.808898385	1.348001062	2.434968965	0	2.886372624	0.240001338	0	0.419964876	347.572615	0	72.13053315	0.013597684
2020	LDT1	DSL	0	0	0	0	0	0	1.113740158	0	0	1.122296901	0	0	453.3685143	0	0	0.007658449
2020	LDT1	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0
2020	LDT2	GAS	0	0.56750107	0.22226611	0.722388591	0.485272788	0.695423422	1.54821583	0	3.27297949	0.178723764	0	0.45857623	382.7649579	0	79.57266365	0.008014785
2020	LDT2	DSL	0	0	0	0	0	0	0.208114963	0	0	0.125191428	0	0	293.4950344	0	0	0.001393712
2020	LDT2	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0
2021	LDA	GAS	0	0.322056995	0.13587059	0.259890042	0.269458548	0.38508288	0.793251911	0	2.392295704	0.052231967	0	0.224747019	284.0571234	0	57.97138879	0.003481501
2021	LDA	DSL	0	0	0	0	0	0	0.277113525	0	0	0.115339231	0	0	211.5881977	0	0	0.000902547
2021	LDA	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0
2021	LDT1	GAS	0	0.661877928	0.376236425	1.282382343	0.752770468	1.23726656	2.128872959	0	2.745546944	0.204466544	0	0.384201036	339.3783375	0	70.14512783	0.011774489
2021	LDT1	DSL	0	0	0	0	0	0	1.060787355	0	0	1.059493336	0	0	452.4577389	0	0	0.007310113
2021	LDT1	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0
2021	LDT2	GAS	0	0.519560725	0.210990044	0.688522722	0.470552209	0.66420951	1.400885588	0	3.150678433	0.154489351	0	0.417521724	371.3253209	0	77.0813707	0.007156792
2021	LDT2	DSL	0	0	0	0	0	0	0.197741794	0	0	0.101689251	0	0	284.9657395	0	0	0.001265617
2021	LDT2	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0
2022	LDA	GAS	0	0.289560147	0.125689876	0.247653453	0.248829507	0.350239975	0.717747615	0	2.320497096	0.044796427	0	0.208861124	276.6560214	0	56.44656235	0.00298003
2022	LDA	DSL	0	0	0	0	0	0	0.261058153	0	0	0.092244349	0	0	206.2892877	0	0	0.000793743
2022	LDA	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0
2022	LDT1	GAS	0	0.591107945	0.345244048	1.174767182	0.699887165	1.135357753	1.854185861	0	2.638298502	0.174163516	0	0.351313853	330.2058144	0	68.20445831	0.010043116
2022	LDT1	DSL	0	0	0	0	0	0	1.009199347	0	0	0.998856268	0	0	449.2227882	0	0	0.006894942
2022	LDT1	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0
2022	LDT2	GAS	0	0.475209627	0.19989772	0.657469271	0.455979329	0.634952453	1.261300127	0	3.041084195	0.13337404	0	0.379705387	358.9097296	0	74.59571761	0.006298746
2022	LDT2	DSL	0	0	0	0	0	0	0.187961885	0	0	0.085094407	0	0	276.5005882	0	0	0.001151025
2022	LDT2	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0
2023	LDA	GAS	0	0.261464882	0.116794398	0.236846501	0.230300584	0.319913508	0.657347622	0	2.249643631	0.038893255	0	0.194947308	269.2317416	0	54.92557708	0.00257482
2023	LDA	DSL	0	0	0	0	0	0	0.247721792	0	0	0.074019741	0	0	201.0974487	0	0	0.000700286
2023	LDA	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0
2023	LDT1	GAS	0	0.5263156	0.315485607	1.075662167	0.647257521	1.037525353	1.612834194	0	2.525429664	0.147760966	0	0.32105601	320.9354097	0	66.23318349	0.00852095
2023	LDT1	DSL	0	0	0	0	0	0	0.955747721	0	0	0.936909152	0	0	445.263976	0	0	0.006478342
2023	LDT1	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0
2023	LDT2	GAS	0	0.434069679	0.188808637	0.628313763	0.439565975	0.604273764	1.136058406	0	2.927415028	0.115005845	0	0.345943694	346.5421524	0	72.10296849	0.005526453
2023	LDT2	DSL	0	0	0	0	0	0	0.181875365	0	0	0.072788314	0	0	268.6762474	0	0	0.001067123
2023	LDT2	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0
2024	LDA	GAS	0	0.23713321	0.109201976	0.227794671	0.214170826	0.294205156	0.612799796	0	2.176203369	0.034340798	0	0.182742345	262.5127171	0	53.40781811	0.002274064
2024	LDA	DSL	0	0	0	0	0	0	0.244989481	0	0	0.059801953	0	0	196.5362696	0	0	0.000638804
2024	LDA	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0
2024	LDT1	GAS	0	0.468259087	0.287657995	0.98561351	0.597037645	0.946445812	1.42059601	0	2.423487927	0.125697577	0	0.293530453	312.5050964	0	64.27951949	0.00731186
2024	LDT1	DSL	0	0	0	0	0	0	0.903027482	0	0	0.867244144	0	0	441.4206506	0	0	0.006098095
2024	LDT1	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0
2024	LDT2	GAS	0	0.396851499	0.178316196	0.601518596	0.4234979	0.575537094	1.039129371	0	2.826662629	0.099770695	0	0.316216801	335.2459593	0	69.65554415	0.004918631
2024	LDT2	DSL	0	0	0	0	0	0	0.180528646	0	0	0.059965826	0	0	261.5312573	0	0	0.000970653
2024	LDT2	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0
2025	LDA	GAS	0	0.216143353	0.102799725	0.22144275	0.201350518	0.274558607	0.573966552	0	2.10100018	0.030803135	0	0.171897831	255.122453	0	51.90568641	0.002009693
2025	LDA	DSL	0	0	0	0	0	0	0.236205201	0	0	0.048568999	0	0	191.4365484	0	0	0.000578074
2025	LDA	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0
2025	LDT1	GAS	0	0.415649343	0.261898976	0.904139936	0.549197723	0.861101178	1.246294738	0	2.311058892	0.106796052	0	0.268520795	303.2647085	0	62.30487131	0.006190044
2025	LDT1	DSL	0	0	0	0	0	0	0.848892379	0	0	0.799972944	0	0	435.3526009	0	0	0.005683537
2025	LDT1	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0
2025	LDT2	GAS	0	0.362982984	0.168391004	0.575592618	0.407849284	0.548338982	0.949697898	0	2.725736259	0.086762111	0	0.289892016	323.2670378	0	67.23761597	0.004336185
2025	LDT2	DSL	0	0	0	0	0	0	0.178173835	0	0	0.051715485	0	0	254.1762172	0	0	0.000923234
2025	LDT2	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0
2026	LDA	GAS	0	0.198060943	0.09721017	0.215918154	0.189969886	0.257347095	0.550850455	0	2.028812418	0.028224461	0	0.162741306	249.2296398	0	50.48721004	0.001834452
2026	LDA	DSL	0	0	0	0	0	0	0.242301981	0	0	0.039770776	0	0	187.6422397	0	0	0.000553167
2026	LDA	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0
2026	LDT1	GAS	0	0.369265405	0.238291682	0.831136042	0.503948031	0.78219665	1.115981448	0	2.200383026	0.091474501	0	0.246665166	295.9297357	0	60.44948008	0.005362584
2026	LDT1	DSL	0	0	0	0	0	0	0.798187401	0	0	0.729890393	0	0	430.9028168	0	0	0.005342689
2026	LDT1	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0
2026	LDT2	GAS	0	0.332509703	0.158943922	0.550760902	0.392079524	0.522221115	0.886701182	0	2.63086008	0.076155225	0	0.266677603	313.4017098	0	64.95409074	0.00391881
2026	LDT2	DSL	0	0	0	0	0	0	0.188029365	0	0	0.047093131	0	0	249.1503051	0	0	0.000947494
2026	LDT2	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0

			26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
Calendar Year	Vehicle Category	Fuel	CH4_IDLEX	CH4_STREX	PM10_RUNEX	PM10_IDLEX	PM10_STREX	PM10_PMTW	PM10_PMBW	PM2_5_RUNEX	PM2_5_IDLEX	PM2_5_STREX	PM2_5_PMTW	PM2_5_PMBW	SOx_RUNEX	SOx_IDLEX	SOx_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX
2019	LDA	GAS	0	0.076262879	0.001676783	0	0.002194839	0.008000002	0.036750011	0.001541814	0	0.002018389	0.002000001	0.015750005	0.00295	0	0.000604	0.006895	0	0.0311419
2019	LDA	DSL	0	0	0.012702992	0	0	0.008000002	0.036750011	0.012153466	0	0	0.002000001	0.015750005	0.002102	0	0	0.034957	0	0
2019	LDA	ELEC	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2019	LDT1	GAS	0	0.136711478	0.003416695	0	0.004077356	0.008000002	0.036750011	0.003142388	0	0.003750899	0.002000001	0.015750005	0.003529	0	0.000734	0.018112	0	0.0386028
2019	LDT1	DSL	0	0	0.123788066	0	0	0.008000002	0.036750011	0.118433049	0	0	0.002000001	0.015750005	0.004303	0	0	0.071549	0	0
2019	LDT1	ELEC	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2019	LDT2	GAS	0	0.110466987	0.001979894	0	0.002435266	0.008000002	0.036750011	0.001820805	0	0.00223998	0.002000001	0.015750005	0.003908	0	0.000812	0.013712	0	0.0441409
2019	LDT2	DSL	0	0	0.018749656	0	0	0.008000002	0.036750011	0.017938554	0	0	0.002000001	0.015750005	0.002874	0	0	0.047783	0	0
2019	LDT2	ELEC	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2020	LDA	GAS	0	0.069440905	0.001650428	0	0.002135735	0.008000002	0.036750011	0.001517559	0	0.001963955	0.002000001	0.015750005	0.002877	0	0.000589	0.006116	0	0.0299563
2020	LDA	DSL	0	0	0.010543687	0	0	0.008000002	0.036750011	0.010087571	0	0	0.002000001	0.015750005	0.002046	0	0	0.034027	0	0
2020	LDA	ELEC	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2020	LDT1	GAS	0	0.123826827	0.003107646	0	0.003757331	0.008000002	0.036750011	0.002857652	0	0.003455353	0.002000001	0.015750005	0.00344	0	0.000714	0.015791	0	0.0368174
2020	LDT1	DSL	0	0	0.116889995	0	0	0.008000002	0.036750011	0.111833385	0	0	0.002000001	0.015750005	0.004286	0	0	0.071263	0	0
2020	LDT1	ELEC	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2020	LDT2	GAS	0	0.102315659	0.001896896	0	0.002334388	0.008000002	0.036750011	0.001744228	0	0.002146612	0.002000001	0.015750005	0.003788	0	0.000787	0.012126	0	0.041808
2020	LDT2	DSL	0	0	0.01458895	0	0	0.008000002	0.036750011	0.013957838	0	0	0.002000001	0.015750005	0.002775	0	0	0.046133	0	0
2020	LDT2	ELEC	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2021	LDA	GAS	0	0.06340414	0.001614085	0	0.002046771	0.008000002	0.036750011	0.001484124	0	0.001882074	0.002000001	0.015750005	0.002811	0	0.000574	0.005502	0	0.0288124
2021	LDA	DSL	0	0	0.008882204	0	0	0.008000002	0.036750011	0.008497964	0	0	0.002000001	0.015750005	0.002	0	0	0.033259	0	0
2021	LDA	ELEC	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2021	LDT1	GAS	0	0.112000905	0.002853155	0	0.003444472	0.008000002	0.036750011	0.002623553	0	0.003167466	0.002000001	0.015750005	0.003358	0	0.000694	0.0138	0	0.0350664
2021	LDT1	DSL	0	0	0.110833798	0	0	0.008000002	0.036750011	0.106039177	0	0	0.002000001	0.015750005	0.004277	0	0	0.07112	0	0
2021	LDT1	ELEC	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2021	LDT2	GAS	0	0.094824638	0.001826533	0	0.002224689	0.008000002	0.036750011	0.001679505	0	0.002045691	0.002000001	0.015750005	0.003675	0	0.000763	0.010781	0	0.0395366
2021	LDT2	DSL	0	0	0.011970813	0	0	0.008000002	0.036750011	0.01145296	0	0	0.002000001	0.015750005	0.002694	0	0	0.044793	0	0
2021	LDT2	ELEC	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2022	LDA	GAS	0	0.058190414	0.001547218	0	0.001958806	0.008000002	0.036750011	0.001422629	0	0.001801137	0.002000001	0.015750005	0.002738	0	0.000559	0.004999	0	0.0277513
2022	LDA	DSL	0	0	0.007441549	0	0	0.008000002	0.036750011	0.007119631	0	0	0.002000001	0.015750005	0.00195	0	0	0.032426	0	0
2022	LDA	ELEC	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2022	LDT1	GAS	0	0.101330992	0.00258813	0	0.003175094	0.008000002	0.036750011	0.002379819	0	0.002919677	0.002000001	0.015750005	0.003268	0	0.000675	0.012077	0	0.0333925
2022	LDT1	DSL	0	0	0.103969617	0	0	0.008000002	0.036750011	0.099471937	0	0	0.002000001	0.015750005	0.004247	0	0	0.070612	0	0
2022	LDT1	ELEC	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2022	LDT2	GAS	0	0.087838734	0.00173319	0	0.002125968	0.008000002	0.036750011	0.001593663	0	0.001954891	0.002000001	0.015750005	0.003552	0	0.000738	0.009589	0	0.0373396
2022	LDT2	DSL	0	0	0.010098065	0	0	0.008000002	0.036750011	0.009661227	0	0	0.002000001	0.015750005	0.002614	0	0	0.043462	0	0
2022	LDT2	ELEC	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2023	LDA	GAS	0	0.053584396	0.001483913	0	0.001875037	0.008000002	0.036750011	0.001364414	0	0.001724078	0.002000001	0.015750005	0.002664	0	0.000544	0.004591	0	0.026741
2023	LDA	DSL	0	0	0.00621955	0	0	0.008000002	0.036750011	0.005950495	0	0	0.002000001	0.015750005	0.001901	0	0	0.03161	0	0
2023	LDA	ELEC	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2023	LDT1	GAS	0	0.091492501	0.002353317	0	0.002924267	0.008000002	0.036750011	0.002163859	0	0.002688923	0.002000001	0.015750005	0.003176	0	0.000655	0.01057	0	0.0317782
2023	LDT1	DSL	0	0	0.097172486	0	0	0.008000002	0.036750011	0.092968847	0	0	0.002000001	0.015750005	0.004209	0	0	0.069989	0	0
2023	LDT1	ELEC	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2023	LDT2	GAS	0	0.081286228	0.001649119	0	0.002031826	0.008000002	0.036750011	0.001516333	0	0.001868261	0.002000001	0.015750005	0.003429	0	0.000714	0.008546	0	0.0352804
2023	LDT2	DSL	0	0	0.008720753	0	0	0.008000002	0.036750011	0.008343497	0	0	0.002000001	0.015750005	0.00254	0	0	0.042232	0	0
2023	LDT2	ELEC	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2024	LDA	GAS	0	0.049455971	0.001444897	0	0.001801017	0.008000002	0.036750011	0.00132853	0	0.001655968	0.002000001	0.015750005	0.002598	0	0.000529	0.004272	0	0.0257558
2024	LDA	DSL	0	0	0.005198798	0	0	0.008000002	0.036750011	0.0049739	0	0	0.002000001	0.015750005	0.001858	0	0	0.030893	0	0
2024	LDA	ELEC	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2024	LDT1	GAS	0	0.082505156	0.002178126	0	0.002702751	0.008000002	0.036750011	0.002002743	0	0.002485169	0.002000001	0.015750005	0.003092	0	0.000636	0.009301	0	0.0302128
2024	LDT1	DSL	0	0	0.090614637	0	0	0.008000002	0.036750011	0.086694688	0	0	0.002000001	0.015750005	0.004173	0	0	0.069385	0	0
2024	LDT1	ELEC	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2024	LDT2	GAS	0	0.07520943	0.001597542	0	0.001953484	0.008000002	0.036750011	0.001468894	0	0.001796188	0.002000001	0.015750005	0.003318	0	0.000689	0.007676	0	0.0333514
2024	LDT2	DSL	0	0	0.006695824	0	0	0.008000002	0.036750011	0.006406166	0	0	0.002000001	0.015750005	0.002472	0	0	0.041109	0	0
2024	LDT2	ELEC	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2025	LDA	GAS	0	0.045759333	0.001395921	0	0.001744616	0.008000002	0.036750011	0.001283497	0	0.00160411	0.002000001	0.015750005	0.002525	0	0.000514	0.004013	0	0.0247877
2025	LDA	DSL	0	0	0.00442583	0	0	0.008000002	0.036750011	0.004234371	0	0	0.002000001	0.015750005	0.00181	0	0	0.030091	0	0
2025	LDA	ELEC	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2025	LDT1	GAS	0	0.074300577	0.002000636	0	0.002499948	0.008000002	0.036750011	0.001839511	0	0.00229861	0.002000001	0.015750005	0.003001	0	0.000617	0.008209	0	0.0287098
2025	LDT1	DSL	0	0	0.083813241	0	0	0.008000002	0.036750011	0.080187517	0	0	0.002000001	0.015750005	0.004116	0	0	0.068431	0	0
2025	LDT1	ELEC	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2025	LDT2	GAS	0	0.069631605	0.001535087	0	0.001885515	0.008000002	0.036750011	0.001411455	0	0.001733662	0.002000001	0.015750005	0.003199	0	0.000665	0.006927	0	0.0315756
2025	LDT2	DSL	0	0	0.005861816	0	0	0.008000002	0.036750011	0.005608237	0	0	0.002000001	0.015750005	0.002403	0	0	0.039953	0	0
2025	LDT2	ELEC	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2026	LDA	GAS	0	0.042461232	0.001374011	0	0.00169076	0.008000002	0.036750011	0.001263353	0	0.001554591	0.002000001	0.015750005	0.002466	0	0.0005	0.003827	0	0.0239095
2026	LDA	DSL	0	0	0.003775928	0	0	0.008000002	0.036750011	0.003612583	0	0	0.002000001	0.015750005	0.001774	0	0	0.029495	0	0
2026	LDA	ELEC	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2026	LDT1	GAS	0	0.066940986	0.001886202	0	0.002324412	0.008000002	0.036750011	0.001734293	0	0.002137211	0.002000001	0.015750005	0.002928	0	0.000598	0.007325	0	0.0273556
2026	LDT1	DSL	0	0	0.077683416	0	0	0.008000002	0.036750011	0.074322866	0	0	0.002000001	0.015750005	0.004074	0	0	0.067732	0	0
2026	LDT1	ELEC	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2026	LDT2	GAS	0	0.06450247	0.001504609	0	0.001819531	0.008000002	0.036750011	0.001383432	0	0.001672992	0.002000001	0.015750005	0.003101	0	0.000643	0.006319	0	0.0299505
2026	LDT2	DSL	0	0	0.005461859	0	0	0.008000002	0.036750011	0.005225581	0	0	0.002000001	0.015750005	0.002355	0	0	0.039163	0	0
2026	LDT2	ELEC	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0

EMFAC2017 (v1.0.2) Emission Rates
Region Type: County
Region: MERCED
Calendar Year: 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN

Region	Calendar	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	Percent	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSOAK	ROG_RUNLOSS	ROG_RESTLOSS	ROG_DIURN	TOG_RUNEX
										2	3	4	5	6	7	8	9
MERCED	2019	LDA	Aggregated	Aggregated	GAS	95357.67499	4052303.699	442577.5476	69%	0.020156168	0	0.369387007	0.162238224	0.292827649	0.319670363	0.473838811	0.029381891
MERCED	2019	LDA	Aggregated	Aggregated	DSL	663.3523694	29943.31963	3113.559403	0%	0.024441734	0	0	0	0	0	0	0.02782529
MERCED	2019	LDA	Aggregated	Aggregated	ELEC	678.8642507	27012.25596	3433.075787	1%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2019	LDT1	Aggregated	Aggregated	GAS	10189.12769	345290.532	44452.87182	7%	0.075140084	0	0.757151959	0.442975316	1.525123348	0.867055095	1.465638645	0.108952652
MERCED	2019	LDT1	Aggregated	Aggregated	DSL	13.72845613	298.8475637	49.27656607	0%	0.173755622	0	0	0	0	0	0	0.197809224
MERCED	2019	LDT1	Aggregated	Aggregated	ELEC	6.359139417	268.2377647	32.75525172	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2019	LDT2	Aggregated	Aggregated	GAS	32968.21192	1210417.829	149772.2959	23%	0.041352107	0	0.567957172	0.234631808	0.759508505	0.502299695	0.732290569	0.060021789
MERCED	2019	LDT2	Aggregated	Aggregated	DSL	94.69507869	3919.633712	451.1329906	0%	0.035531648	0	0	0	0	0	0	0.040450419
MERCED	2019	LDT2	Aggregated	Aggregated	ELEC	84.59751613	3019.896271	432.7304144	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2020	LDA	Aggregated	Aggregated	GAS	98127.97459	4185056.674	456185.7146	69%	0.016507342	0	0.328989919	0.148258027	0.274645184	0.29312987	0.425934853	0.024068779
MERCED	2020	LDA	Aggregated	Aggregated	DSL	733.5991077	33466.85707	3460.384192	1%	0.021498554	0	0	0	0	0	0	0.024474675
MERCED	2020	LDA	Aggregated	Aggregated	ELEC	899.6423809	36837.90398	4535.224688	1%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2020	LDT1	Aggregated	Aggregated	GAS	10176.67403	348156.1294	44627.71306	7%	0.062176935	0	0.67629706	0.408517432	1.399922346	0.808898385	1.348001062	0.090649435
MERCED	2020	LDT1	Aggregated	Aggregated	DSL	12.50376922	267.402342	44.56458743	0%	0.164881905	0	0	0	0	0	0	0.187707086
MERCED	2020	LDT1	Aggregated	Aggregated	ELEC	14.31835546	625.0220765	73.65149402	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2020	LDT2	Aggregated	Aggregated	GAS	33014.59856	1212743.1	150150.5718	23%	0.035053889	0	0.518328504	0.22226611	0.722388591	0.485272788	0.695423422	0.051120877
MERCED	2020	LDT2	Aggregated	Aggregated	DSL	112.7749093	4720.790638	541.5760558	0%	0.030005795	0	0	0	0	0	0	0.034159602
MERCED	2020	LDT2	Aggregated	Aggregated	ELEC	116.9811969	4101.602158	595.5347728	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2021	LDA	Aggregated	Aggregated	GAS	101037.8706	4318248.019	470360.8203	69%	0.013854671	0	0.294152235	0.13587059	0.259890042	0.269458548	0.38508288	0.020205222
MERCED	2021	LDA	Aggregated	Aggregated	DSL	806.9084222	36953.71055	3816.614391	1%	0.019431304	0	0	0	0	0	0	0.022121247
MERCED	2021	LDA	Aggregated	Aggregated	ELEC	1157.825523	48685.61166	5818.173368	1%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2021	LDT1	Aggregated	Aggregated	GAS	10199.94974	351875.5023	44950.20218	7%	0.053525778	0	0.604528881	0.376236425	1.282382343	0.752770468	1.23726656	0.078059715
MERCED	2021	LDT1	Aggregated	Aggregated	DSL	11.43148786	240.2162529	40.46384444	0%	0.157382418	0	0	0	0	0	0	0.17916942
MERCED	2021	LDT1	Aggregated	Aggregated	ELEC	27.74208858	1247.813597	142.3985578	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2021	LDT2	Aggregated	Aggregated	GAS	33139.85956	1217235.698	150876.0989	22%	0.031036969	0	0.474541455	0.210990044	0.688522722	0.470552209	0.66420951	0.045268406
MERCED	2021	LDT2	Aggregated	Aggregated	DSL	131.4967432	5519.990961	633.9247939	0%	0.027247995	0	0	0	0	0	0	0.031020031
MERCED	2021	LDT2	Aggregated	Aggregated	ELEC	167.3684966	5800.54827	849.8038238	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2022	LDA	Aggregated	Aggregated	GAS	104011.2722	4437295.025	484714.1979	70%	0.011568174	0	0.264470363	0.125689876	0.247653453	0.248829507	0.350239975	0.016873493
MERCED	2022	LDA	Aggregated	Aggregated	DSL	880.9036863	40243.36609	4174.113449	1%	0.017088818	0	0	0	0	0	0	0.019454484
MERCED	2022	LDA	Aggregated	Aggregated	ELEC	1469.373932	63200.77687	7362.702633	1%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2022	LDT1	Aggregated	Aggregated	GAS	10257.21462	355560.7114	45407.98812	7%	0.045351444	0	0.53988983	0.345244048	1.174767182	0.699887165	1.135357753	0.066147724
MERCED	2022	LDT1	Aggregated	Aggregated	DSL	10.44737855	215.7441345	36.74880738	0%	0.148444035	0	0	0	0	0	0	0.168993665
MERCED	2022	LDT1	Aggregated	Aggregated	ELEC	44.69132526	2050.835403	228.5949455	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2022	LDT2	Aggregated	Aggregated	GAS	33329.71176	1220998.932	151895.2201	22%	0.027054358	0	0.434033059	0.19989772	0.657469271	0.455979329	0.634952453	0.03946209
MERCED	2022	LDT2	Aggregated	Aggregated	DSL	150.4819828	6285.165271	726.5669334	0%	0.02478089	0	0	0	0	0	0	0.028211396
MERCED	2022	LDT2	Aggregated	Aggregated	ELEC	230.5094532	7883.56427	1167.123679	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2023	LDA	Aggregated	Aggregated	GAS	106992.0755	4554381.284	498982.1244	70%	0.009737683	0	0.238809019	0.116794398	0.236846501	0.230300584	0.319913508	0.014205356
MERCED	2023	LDA	Aggregated	Aggregated	DSL	952.6353222	43363.10183	4519.263199	1%	0.015076737	0	0	0	0	0	0	0.017163863
MERCED	2023	LDA	Aggregated	Aggregated	ELEC	1834.297184	80767.22985	9166.409782	1%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2023	LDT1	Aggregated	Aggregated	GAS	10338.40334	360093.3629	45967.05627	6%	0.038160113	0	0.480710044	0.315485607	1.075662167	0.647257521	1.037525353	0.055672294
MERCED	2023	LDT1	Aggregated	Aggregated	DSL	9.589346041	194.6893454	33.52741808	0%	0.139474892	0	0	0	0	0	0	0.158782892
MERCED	2023	LDT1	Aggregated	Aggregated	ELEC	64.607494	3022.250599	329.1501463	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2023	LDT2	Aggregated	Aggregated	GAS	33570.11175	1227377.431	153161.3368	21%	0.023458389	0	0.3964569	0.188808637	0.628313763	0.439565975	0.604273764	0.034224998
MERCED	2023	LDT2	Aggregated	Aggregated	DSL	169.4943923	7034.211261	818.3629473	0%	0.022974531	0	0	0	0	0	0	0.026154976
MERCED	2023	LDT2	Aggregated	Aggregated	ELEC	303.9736004	10241.95047	1534.257748	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2024	LDA	Aggregated	Aggregated	GAS	109981.0647	4664867.481	513135.2095	70%	0.008382303	0	0.216584906	0.109201976	0.227794671	0.214170826	0.294205156	0.012231437
MERCED	2024	LDA	Aggregated	Aggregated	DSL	1023.687771	46346.92441	4859.961248	1%	0.013753074	0	0	0	0	0	0	0.015656961
MERCED	2024	LDA	Aggregated	Aggregated	ELEC	2255.033433	101495.9332	11238.32404	2%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2024	LDT1	Aggregated	Aggregated	GAS	10440.05919	364962.7783	46604.30436	6%	0.032492774	0	0.427683704	0.287657995	0.98561351	0.597037645	0.946445812	0.047407853
MERCED	2024	LDT1	Aggregated	Aggregated	DSL	8.770377111	175.5777645	30.51380079	0%	0.131288397	0	0	0	0	0	0	0.149463112
MERCED	2024	LDT1	Aggregated	Aggregated	ELEC	87.28985229	4154.418836	442.8646591	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2024	LDT2	Aggregated	Aggregated	GAS	33863.15102	1235069.461	154652.5575	21%	0.020641931	0	0.362463418	0.178316196	0.601518596	0.4234979	0.575537094	0.030118314
MERCED	2024	LDT2	Aggregated	Aggregated	DSL	186.6043242	7740.046851	904.0948162	0%	0.020897593	0	0	0	0	0	0	0.023790521
MERCED	2024	LDT2	Aggregated	Aggregated	ELEC	387.1176276	12839.35777	1947.357161	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2025	LDA	Aggregated	Aggregated	GAS	112989.3696	4766624.015	527164.7704	70%	0.007244027	0	0.197413883	0.102799725	0.22144275	0.201350518	0.274558607	0.010570468
MERCED	2025	LDA	Aggregated	Aggregated	DSL	1091.893551	49080.50925	5185.523354	1%	0.012445599	0	0	0	0	0	0	0.014168487
MERCED	2025	LDA	Aggregated	Aggregated	ELEC	2729.261448	125357.0093	13564.84771	2%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2025	LDT1	Aggregated	Aggregated	GAS	10561.67338	370076.211	47321.35835	6%	0.027243281	0	0.379632081	0.261898976	0.904139936	0.549197723	0.861101178	0.039753331
MERCED	2025	LDT1	Aggregated	Aggregated	DSL	8.07698037	159.3856492	27.96428225	0%	0.122363202	0	0	0	0	0	0	0.13930237
MERCED	2025	LDT1	Aggregated	Aggregated	ELEC	112.6078684	5443.659661	568.9336084	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2025	LDT2	Aggregated	Aggregated	GAS	34205.33976	1243445.728	156350.3035	21%	0.017967523	0	0.331529419	0.168391004	0.575592618	0.407849284	0.548338982	0.026218167
MERCED	2025	LDT2	Aggregated	Aggregated	DSL	204.374441	8419.219983	990.3735812	0%	0.019876682	0	0	0	0	0	0	0.022628281
MERCED	2025	LDT2	Aggregated	Aggregated	ELEC	479.8645066	15652.16555	2405.516965	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2026	LDA	Aggregated	Aggregated	GAS	116022.3333	4854833.19	541195.7335	70%	0.0064828	0	0.180898368	0.09721017	0.215918154	0.189969886	0.257347095	0.009459686
MERCED	2026	LDA	Aggregated	Aggregated	DSL	1157.029176	51537.08494	5498.714833	1%	0.01190935	0	0	0	0	0	0	0.013558003
MERCED	2026	LDA	Aggregated	Aggregated	ELEC	3225.342331	145484.8253	15978.64213	2%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2026	LDT1	Aggregated	Aggregated	GAS	10703.78779	374907.0765	48119.8066	6%	0.023379822	0	0.33726745	0.238291682	0.831136042	0.503948031	0.78219665	0.034115781
MERCED	2026	LDT1	Aggregated	Aggregated	DSL	7.457137122	145.3839054	25.71943675	0%	0.115024948	0	0	0	0	0	0	0.130948256
MERCED	2026	LDT1	Aggregated	Aggregated	ELEC	138.6231696	6551.073351	697.1911228	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2026	LDT2	Aggregated	Aggregated	GAS	34605.3102	1251209.296	158300.495	20%	0.016042119	0	0.30369674	0.158943922	0.550760902	0.392079524	0.522221115	0.023408623
MERCED	2026	LDT2	Aggregated	Aggregated	DSL	222.5500167	9048.324908	1076.359276	0%	0.020398979	0	0	0	0	0	0	0.023222881
MERCED	2026	LDT2	Aggregated	Aggregated	ELEC	575.3527286	18433.77122	2872.75849	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0

Calendar	Vehicle Category	Fuel	TOG_IDLEX	TOG_STREX	TOG_HOTSOAK	TOG_RUNLOSS	TOG_RESTLOSS	TOG_DIURN	CO_RUNEX	CO_IDLEX	CO_STREX	NOx_RUNEX	NOx_IDLEX	NOx_STREX	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	CH4_IDLEX
			10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
2019	LDA	GAS	0	0.404426362	0.162238224	0.292827649	0.319670363	0.473838811	0.998478325	0	2.550947323	0.073773223	0	0.263794147	298.066298	0	61.04132511	0.004835985	0
2019	LDA	DSL	0	0	0	0	0	0	0.306098112	0	0	0.182477938	0	0	222.3951712	0	0	0.001135272	0
2019	LDA	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0
2019	LDT1	GAS	0	0.828939773	0.442975316	1.525123348	0.867055095	1.465638645	2.820721943	0	3.045142283	0.282349208	0	0.458895516	356.5996643	0	74.16520554	0.016118976	0
2019	LDT1	DSL	0	0	0	0	0	0	1.16297925	0	0	1.178202038	0	0	455.1853078	0	0	0.008070617	0
2019	LDT1	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0
2019	LDT2	GAS	0	0.621820186	0.234631808	0.759508505	0.502299695	0.732290569	1.743926269	0	3.418283771	0.207958599	0	0.503565742	394.9012599	0	82.05867895	0.009254801	0
2019	LDT2	DSL	0	0	0	0	0	0	0.235238833	0	0	0.160286279	0	0	303.990982	0	0	0.001650377	0
2019	LDT2	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0
2020	LDA	GAS	0	0.360198371	0.148258027	0.274645184	0.29312987	0.425934853	0.879739389	0	2.468316304	0.06162187	0	0.243010857	290.6954859	0	59.50503647	0.004052362	0
2020	LDA	DSL	0	0	0	0	0	0	0.286205275	0	0	0.145091569	0	0	216.476586	0	0	0.000998567	0
2020	LDA	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0
2020	LDT1	GAS	0	0.740451271	0.408517432	1.399922346	0.808898385	1.348001062	2.434968965	0	2.886372624	0.240001338	0	0.419964876	347.572615	0	72.13053315	0.013597684	0
2020	LDT1	DSL	0	0	0	0	0	0	1.113740158	0	0	1.122296901	0	0	453.3685143	0	0	0.007658449	0
2020	LDT1	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0
2020	LDT2	GAS	0	0.56750107	0.22226611	0.722388591	0.485272788	0.695423422	1.54821583	0	3.27297949	0.178723764	0	0.45857623	382.7649579	0	79.57266365	0.008014785	0
2020	LDT2	DSL	0	0	0	0	0	0	0.208114963	0	0	0.125191428	0	0	293.4950344	0	0	0.001393712	0
2020	LDT2	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0
2021	LDA	GAS	0	0.322056995	0.13587059	0.259890042	0.269458548	0.38508288	0.793251911	0	2.392295704	0.052231967	0	0.224747019	284.0571234	0	57.97138879	0.003481501	0
2021	LDA	DSL	0	0	0	0	0	0	0.277113525	0	0	0.115339231	0	0	211.5881977	0	0	0.000902547	0
2021	LDA	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0
2021	LDT1	GAS	0	0.661877928	0.376236425	1.282382343	0.752770468	1.23726656	2.128872959	0	2.745546944	0.204466544	0	0.384201036	339.3783375	0	70.14512783	0.011774489	0
2021	LDT1	DSL	0	0	0	0	0	0	1.060787355	0	0	1.059493336	0	0	452.4577389	0	0	0.007310113	0
2021	LDT1	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0
2021	LDT2	GAS	0	0.519560725	0.210990044	0.688522722	0.470552209	0.66420951	1.400885588	0	3.150678433	0.154489351	0	0.417521724	371.3253209	0	77.0813707	0.007156792	0
2021	LDT2	DSL	0	0	0	0	0	0	0.197741794	0	0	0.101689251	0	0	284.9657395	0	0	0.001265617	0
2021	LDT2	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0
2022	LDA	GAS	0	0.289560147	0.125689876	0.247653453	0.248829507	0.350239975	0.717747615	0	2.320497096	0.044796427	0	0.208861124	276.6560214	0	56.44656235	0.00298003	0
2022	LDA	DSL	0	0	0	0	0	0	0.261058153	0	0	0.092244349	0	0	206.2892877	0	0	0.000793743	0
2022	LDA	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0
2022	LDT1	GAS	0	0.591107945	0.345244048	1.174767182	0.699887165	1.135357753	1.854185861	0	2.638298502	0.174163516	0	0.351313853	330.2058144	0	68.20445831	0.010043116	0
2022	LDT1	DSL	0	0	0	0	0	0	1.009199347	0	0	0.998856268	0	0	449.2227882	0	0	0.006894942	0
2022	LDT1	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0
2022	LDT2	GAS	0	0.475209627	0.19989772	0.657469271	0.455979329	0.634952453	1.261300127	0	3.041084195	0.13337404	0	0.379705387	358.9097296	0	74.59571761	0.006298746	0
2022	LDT2	DSL	0	0	0	0	0	0	0.187961885	0	0	0.085094407	0	0	276.5005882	0	0	0.001151025	0
2022	LDT2	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0
2023	LDA	GAS	0	0.261464882	0.116794398	0.236846501	0.230300584	0.319913508	0.657347622	0	2.249643631	0.038893255	0	0.194947308	269.2317416	0	54.92557708	0.00257482	0
2023	LDA	DSL	0	0	0	0	0	0	0.247721792	0	0	0.074019741	0	0	201.0974487	0	0	0.000700286	0
2023	LDA	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0
2023	LDT1	GAS	0	0.5263156	0.315485607	1.075662167	0.647257521	1.037525353	1.612834194	0	2.525429664	0.147760966	0	0.32105601	320.9354097	0	66.23318349	0.00852095	0
2023	LDT1	DSL	0	0	0	0	0	0	0.955747721	0	0	0.936909152	0	0	445.263976	0	0	0.006478342	0
2023	LDT1	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0
2023	LDT2	GAS	0	0.434069679	0.188808637	0.628313763	0.439565975	0.604273764	1.136058406	0	2.927415028	0.115005845	0	0.345943694	346.5421524	0	72.10296849	0.005526453	0
2023	LDT2	DSL	0	0	0	0	0	0	0.181875365	0	0	0.072788314	0	0	268.6762474	0	0	0.001067123	0
2023	LDT2	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0
2024	LDA	GAS	0	0.23713321	0.109201976	0.227794671	0.214170826	0.294205156	0.612799796	0	2.176203369	0.034340798	0	0.182742345	262.5127171	0	53.40781811	0.002274064	0
2024	LDA	DSL	0	0	0	0	0	0	0.244989481	0	0	0.059801953	0	0	196.5362696	0	0	0.000638804	0
2024	LDA	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0
2024	LDT1	GAS	0	0.468259087	0.287657995	0.98561351	0.597037645	0.946445812	1.42059601	0	2.423487927	0.125697577	0	0.293530453	312.5050964	0	64.27951949	0.00731186	0
2024	LDT1	DSL	0	0	0	0	0	0	0.903027482	0	0	0.867244144	0	0	441.4206506	0	0	0.006098095	0
2024	LDT1	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0
2024	LDT2	GAS	0	0.396851499	0.178316196	0.601518596	0.4234979	0.575537094	1.039129371	0	2.826662629	0.099770695	0	0.316216801	335.2459593	0	69.65554415	0.004918631	0
2024	LDT2	DSL	0	0	0	0	0	0	0.180528646	0	0	0.059965826	0	0	261.5312573	0	0	0.000970653	0
2024	LDT2	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0
2025	LDA	GAS	0	0.216143353	0.102799725	0.22144275	0.201350518	0.274558607	0.573966552	0	2.10100018	0.030803135	0	0.171897831	255.122453	0	51.90568641	0.002009693	0
2025	LDA	DSL	0	0	0	0	0	0	0.236205201	0	0	0.048568999	0	0	191.4365484	0	0	0.000578074	0
2025	LDA	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0
2025	LDT1	GAS	0	0.415649343	0.261898976	0.904139936	0.549197723	0.861101178	1.246294738	0	2.311058892	0.106796052	0	0.268520795	303.2647085	0	62.30487131	0.006190044	0
2025	LDT1	DSL	0	0	0	0	0	0	0.848892379	0	0	0.799972944	0	0	435.3526009	0	0	0.005683537	0
2025	LDT1	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0
2025	LDT2	GAS	0	0.362982984	0.168391004	0.575592618	0.407849284	0.548338982	0.949697898	0	2.725736259	0.086762111	0	0.289892016	323.2670378	0	67.23761597	0.004336185	0
2025	LDT2	DSL	0	0	0	0	0	0	0.178173835	0	0	0.051715485	0	0	254.1762172	0	0	0.000923234	0
2025	LDT2	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0
2026	LDA	GAS	0	0.198060943	0.09721017	0.215918154	0.189969886	0.257347095	0.550850455	0	2.028812418	0.028224461	0	0.162741306	249.2296398	0	50.48721004	0.001834452	0
2026	LDA	DSL	0	0	0	0	0	0	0.242301981	0	0	0.039770776	0	0	187.6422397	0	0	0.000553167	0
2026	LDA	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0
2026	LDT1	GAS	0	0.369265405	0.238291682	0.831136042	0.503948031	0.78219665	1.115981448	0	2.200383026	0.091474501	0	0.246665166	295.9297357	0	60.44948008	0.005362584	0
2026	LDT1	DSL	0	0	0	0	0	0	0.798187401	0	0	0.729890393	0	0	430.9028168	0	0	0.005342689	0
2026	LDT1	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0
2026	LDT2	GAS	0	0.332509703	0.158943922	0.550760902	0.392079524	0.522221115	0.886701182	0	2.63086008	0.076155225	0	0.266677603	313.4017098	0	64.95409074	0.00391881	0
2026	LDT2	DSL	0	0	0	0	0	0	0.188029365	0	0	0.047093131	0	0	249.1503051	0	0	0.000947494	0
2026	LDT2	ELEC	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0

Calendar	Vehicle Category	Fuel	CH4_STREX	PM10_RUNEX	PM10_IDLEX	PM10_STREX	PM10_PMTW	PM10_PMBW	PM2_5_RUNEX	PM2_5_IDLEX	PM2_5_STREX	PM2_5_PMTW	PM2_5_PMBW	SOx_RUNEX	SOx_IDLEX	SOx_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX
			27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
2019	LDA	GAS	0.076262879	0.001676783	0	0.002194839	0.008000002	0.036750011	0.001541814	0	0.002018389	0.002000001	0.015750005	0.00295	0	0.000604	0.006895	0	0.0311419
2019	LDA	DSL	0	0.012702992	0	0	0.008000002	0.036750011	0.012153466	0	0	0.002000001	0.015750005	0.002102	0	0	0.034957	0	0
2019	LDA	ELEC	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2019	LDT1	GAS	0.136711478	0.003416695	0	0.004077356	0.008000002	0.036750011	0.003142388	0	0.003750899	0.002000001	0.015750005	0.003529	0	0.000734	0.018112	0	0.0386028
2019	LDT1	DSL	0	0.123788066	0	0	0.008000002	0.036750011	0.118433049	0	0	0.002000001	0.015750005	0.004303	0	0	0.071549	0	0
2019	LDT1	ELEC	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2019	LDT2	GAS	0.110466987	0.001979894	0	0.002435266	0.008000002	0.036750011	0.001820805	0	0.00223998	0.002000001	0.015750005	0.003908	0	0.000812	0.013712	0	0.0441409
2019	LDT2	DSL	0	0.018749656	0	0	0.008000002	0.036750011	0.017938554	0	0	0.002000001	0.015750005	0.002874	0	0	0.047783	0	0
2019	LDT2	ELEC	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2020	LDA	GAS	0.069440905	0.001650428	0	0.002135735	0.008000002	0.036750011	0.001517559	0	0.001963955	0.002000001	0.015750005	0.002877	0	0.000589	0.006116	0	0.0299563
2020	LDA	DSL	0	0.010543687	0	0	0.008000002	0.036750011	0.010087571	0	0	0.002000001	0.015750005	0.002046	0	0	0.034027	0	0
2020	LDA	ELEC	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2020	LDT1	GAS	0.123826827	0.003107646	0	0.003757331	0.008000002	0.036750011	0.002857652	0	0.003455353	0.002000001	0.015750005	0.00344	0	0.000714	0.015791	0	0.0368174
2020	LDT1	DSL	0	0.116889995	0	0	0.008000002	0.036750011	0.111833385	0	0	0.002000001	0.015750005	0.004286	0	0	0.071263	0	0
2020	LDT1	ELEC	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2020	LDT2	GAS	0.102315659	0.001896896	0	0.002334388	0.008000002	0.036750011	0.001744228	0	0.002146612	0.002000001	0.015750005	0.003788	0	0.000787	0.012126	0	0.041808
2020	LDT2	DSL	0	0.01458895	0	0	0.008000002	0.036750011	0.013957838	0	0	0.002000001	0.015750005	0.002775	0	0	0.046133	0	0
2020	LDT2	ELEC	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2021	LDA	GAS	0.06340414	0.001614085	0	0.002046771	0.008000002	0.036750011	0.001484124	0	0.001882074	0.002000001	0.015750005	0.002811	0	0.000574	0.005502	0	0.0288124
2021	LDA	DSL	0	0.008882204	0	0	0.008000002	0.036750011	0.008497964	0	0	0.002000001	0.015750005	0.002	0	0	0.033259	0	0
2021	LDA	ELEC	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2021	LDT1	GAS	0.112000905	0.002853155	0	0.003444472	0.008000002	0.036750011	0.002623553	0	0.003167466	0.002000001	0.015750005	0.003358	0	0.000694	0.0138	0	0.0350664
2021	LDT1	DSL	0	0.110833798	0	0	0.008000002	0.036750011	0.106039177	0	0	0.002000001	0.015750005	0.004277	0	0	0.07112	0	0
2021	LDT1	ELEC	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2021	LDT2	GAS	0.094824638	0.001826533	0	0.002224689	0.008000002	0.036750011	0.001679505	0	0.002045691	0.002000001	0.015750005	0.003675	0	0.000763	0.010781	0	0.0395366
2021	LDT2	DSL	0	0.011970813	0	0	0.008000002	0.036750011	0.01145296	0	0	0.002000001	0.015750005	0.002694	0	0	0.044793	0	0
2021	LDT2	ELEC	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2022	LDA	GAS	0.058190414	0.001547218	0	0.001958806	0.008000002	0.036750011	0.001422629	0	0.001801137	0.002000001	0.015750005	0.002738	0	0.000559	0.004999	0	0.0277513
2022	LDA	DSL	0	0.007441549	0	0	0.008000002	0.036750011	0.007119631	0	0	0.002000001	0.015750005	0.00195	0	0	0.032426	0	0
2022	LDA	ELEC	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2022	LDT1	GAS	0.101330992	0.00258813	0	0.003175094	0.008000002	0.036750011	0.002379819	0	0.002919677	0.002000001	0.015750005	0.003268	0	0.000675	0.012077	0	0.0333925
2022	LDT1	DSL	0	0.103969617	0	0	0.008000002	0.036750011	0.099471937	0	0	0.002000001	0.015750005	0.004247	0	0	0.070612	0	0
2022	LDT1	ELEC	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2022	LDT2	GAS	0.087838734	0.00173319	0	0.002125968	0.008000002	0.036750011	0.001593663	0	0.001954891	0.002000001	0.015750005	0.003552	0	0.000738	0.009589	0	0.0373396
2022	LDT2	DSL	0	0.010098065	0	0	0.008000002	0.036750011	0.009661227	0	0	0.002000001	0.015750005	0.002614	0	0	0.043462	0	0
2022	LDT2	ELEC	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2023	LDA	GAS	0.053584396	0.001483913	0	0.001875037	0.008000002	0.036750011	0.001364414	0	0.001724078	0.002000001	0.015750005	0.002664	0	0.000544	0.004591	0	0.026741
2023	LDA	DSL	0	0.00621955	0	0	0.008000002	0.036750011	0.005950495	0	0	0.002000001	0.015750005	0.001901	0	0	0.03161	0	0
2023	LDA	ELEC	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2023	LDT1	GAS	0.091492501	0.002353317	0	0.002924267	0.008000002	0.036750011	0.002163859	0	0.002688923	0.002000001	0.015750005	0.003176	0	0.000655	0.01057	0	0.0317782
2023	LDT1	DSL	0	0.097172486	0	0	0.008000002	0.036750011	0.092968847	0	0	0.002000001	0.015750005	0.004209	0	0	0.069989	0	0
2023	LDT1	ELEC	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2023	LDT2	GAS	0.081286228	0.001649119	0	0.002031826	0.008000002	0.036750011	0.001516333	0	0.001868261	0.002000001	0.015750005	0.003429	0	0.000714	0.008546	0	0.0352804
2023	LDT2	DSL	0	0.008720753	0	0	0.008000002	0.036750011	0.008343497	0	0	0.002000001	0.015750005	0.00254	0	0	0.042232	0	0
2023	LDT2	ELEC	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2024	LDA	GAS	0.049455971	0.001444897	0	0.001801017	0.008000002	0.036750011	0.00132853	0	0.001655968	0.002000001	0.015750005	0.002598	0	0.000529	0.004272	0	0.0257558
2024	LDA	DSL	0	0.005198798	0	0	0.008000002	0.036750011	0.0049739	0	0	0.002000001	0.015750005	0.001858	0	0	0.030893	0	0
2024	LDA	ELEC	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2024	LDT1	GAS	0.082505156	0.002178126	0	0.002702751	0.008000002	0.036750011	0.002002743	0	0.002485169	0.002000001	0.015750005	0.003092	0	0.000636	0.009301	0	0.0302128
2024	LDT1	DSL	0	0.090614637	0	0	0.008000002	0.036750011	0.086694688	0	0	0.002000001	0.015750005	0.004173	0	0	0.069385	0	0
2024	LDT1	ELEC	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2024	LDT2	GAS	0.07520943	0.001597542	0	0.001953484	0.008000002	0.036750011	0.001468894	0	0.001796188	0.002000001	0.015750005	0.003318	0	0.000689	0.007676	0	0.0333514
2024	LDT2	DSL	0	0.006695824	0	0	0.008000002	0.036750011	0.006406166	0	0	0.002000001	0.015750005	0.002472	0	0	0.041109	0	0
2024	LDT2	ELEC	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2025	LDA	GAS	0.045759333	0.001395921	0	0.001744616	0.008000002	0.036750011	0.001283497	0	0.00160411	0.002000001	0.015750005	0.002525	0	0.000514	0.004013	0	0.0247877
2025	LDA	DSL	0	0.00442583	0	0	0.008000002	0.036750011	0.004234371	0	0	0.002000001	0.015750005	0.00181	0	0	0.030091	0	0
2025	LDA	ELEC	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2025	LDT1	GAS	0.074300577	0.002000636	0	0.002499948	0.008000002	0.036750011	0.001839511	0	0.00229861	0.002000001	0.015750005	0.003001	0	0.000617	0.008209	0	0.0287098
2025	LDT1	DSL	0	0.083813241	0	0	0.008000002	0.036750011	0.080187517	0	0	0.002000001	0.015750005	0.004116	0	0	0.068431	0	0
2025	LDT1	ELEC	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2025	LDT2	GAS	0.069631605	0.001535087	0	0.001885515	0.008000002	0.036750011	0.001411455	0	0.001733662	0.002000001	0.015750005	0.003199	0	0.000665	0.006927	0	0.0315756
2025	LDT2	DSL	0	0.005861816	0	0	0.008000002	0.036750011	0.005608237	0	0	0.002000001	0.015750005	0.002403	0	0	0.039953	0	0
2025	LDT2	ELEC	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2026	LDA	GAS	0.042461232	0.001374011	0	0.00169076	0.008000002	0.036750011	0.001263353	0	0.001554591	0.002000001	0.015750005	0.002466	0	0.0005	0.003827	0	0.0239095
2026	LDA	DSL	0	0.003775928	0	0	0.008000002	0.036750011	0.003612583	0	0	0.002000001	0.015750005	0.001774	0	0	0.029495	0	0
2026	LDA	ELEC	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2026	LDT1	GAS	0.066940986	0.001886202	0	0.002324412	0.008000002	0.036750011	0.001734293	0	0.002137211	0.002000001	0.015750005	0.002928	0	0.000598	0.007325	0	0.0273556
2026	LDT1	DSL	0	0.077683416	0	0	0.008000002	0.036750011	0.074322866	0	0	0.002000001	0.015750005	0.004074	0	0	0.067732	0	0
2026	LDT1	ELEC	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
2026	LDT2	GAS	0.06450247	0.001504609	0	0.001819531	0.008000002	0.036750011	0.001383432	0	0.001672992	0.002000001	0.015750005	0.003101	0	0.000643	0.006319	0	0.0299505
2026	LDT2	DSL	0	0.005461859	0	0	0.008000002	0.036750011	0.005225581	0	0	0.002000001	0.015750005	0.002355	0	0	0.039163	0	0
2026	LDT2	ELEC	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0

EMFAC2017 (v1.0.2) Emission Rates
Region Type: County
Region: MERCED
Calendar Year: 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN

Region	Calendar	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	Percent	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSOAK	ROG_RUNLOSS	ROG_RESTLOSS	ROG_DIURN	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTSOAK	TOG_RUNLOSS	TOG_RESTLOSS	TOG_DIURN	CO_RUNEX
										2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MERCED	2019	LDT1	Aggregated	Aggregated	GAS	10189.12769	345290.532	44452.87182	22%	0.075140084	0	0.757151959	0.442975316	1.525123348	0.867055095	1.465638645	0.108952652	0	0.828939773	0.442975316	1.525123348	0.867055095	1.465638645	2.820721943
MERCED	2019	LDT1	Aggregated	Aggregated	DSL	13.72845613	298.8475637	49.27656607	0%	0.173755622	0	0	0	0	0	0	0.197809224	0	0	0	0	0	0	1.16297925
MERCED	2019	LDT1	Aggregated	Aggregated	ELEC	6.359139417	268.2377647	32.75525172	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2019	LDT2	Aggregated	Aggregated	GAS	32968.21192	1210417.829	149772.2959	77%	0.041352107	0	0.567957172	0.234631808	0.759508505	0.502299695	0.732290569	0.060021789	0	0.621820186	0.234631808	0.759508505	0.502299695	0.732290569	1.743926269
MERCED	2019	LDT2	Aggregated	Aggregated	DSL	94.69507869	3919.633712	451.1329906	0%	0.035531648	0	0	0	0	0	0	0.040450419	0	0	0	0	0	0	0.235238833
MERCED	2019	LDT2	Aggregated	Aggregated	ELEC	84.59751613	3019.896271	432.7304144	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2020	LDT1	Aggregated	Aggregated	GAS	10176.67403	348156.1294	44627.71306	22%	0.062176935	0	0.67629706	0.408517432	1.399922346	0.808898385	1.348001062	0.090649435	0	0.740451271	0.408517432	1.399922346	0.808898385	1.348001062	2.434968965
MERCED	2020	LDT1	Aggregated	Aggregated	DSL	12.50376922	267.402342	44.56458743	0%	0.164881905	0	0	0	0	0	0	0.187707086	0	0	0	0	0	0	1.113740158
MERCED	2020	LDT1	Aggregated	Aggregated	ELEC	14.31835546	625.0220765	73.65149402	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2020	LDT2	Aggregated	Aggregated	GAS	33014.59856	1212743.1	150150.5718	77%	0.035053889	0	0.518328504	0.22226611	0.722388591	0.485272788	0.695423422	0.051120877	0	0.56750107	0.22226611	0.722388591	0.485272788	0.695423422	1.54821583
MERCED	2020	LDT2	Aggregated	Aggregated	DSL	112.7749093	4720.790638	541.5760558	0%	0.030005795	0	0	0	0	0	0	0.034159602	0	0	0	0	0	0	0.208114963
MERCED	2020	LDT2	Aggregated	Aggregated	ELEC	116.9811969	4101.602158	595.5347728	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2021	LDT1	Aggregated	Aggregated	GAS	10199.94974	351875.5023	44950.20218	22%	0.053525778	0	0.604528881	0.376236425	1.282382343	0.752770468	1.23726656	0.078059715	0	0.661877928	0.376236425	1.282382343	0.752770468	1.23726656	2.128872959
MERCED	2021	LDT1	Aggregated	Aggregated	DSL	11.43148786	240.2162529	40.46384444	0%	0.157382418	0	0	0	0	0	0	0.17916942	0	0	0	0	0	0	1.060787355
MERCED	2021	LDT1	Aggregated	Aggregated	ELEC	27.74208858	1247.813597	142.3985578	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2021	LDT2	Aggregated	Aggregated	GAS	33139.85956	1217235.698	150876.0989	77%	0.031036969	0	0.474541455	0.210990044	0.688522722	0.470552209	0.66420951	0.045268406	0	0.519560725	0.210990044	0.688522722	0.470552209	0.66420951	1.400885588
MERCED	2021	LDT2	Aggregated	Aggregated	DSL	131.4967432	5519.990961	633.9247939	0%	0.027247995	0	0	0	0	0	0	0.031020031	0	0	0	0	0	0	0.197741794
MERCED	2021	LDT2	Aggregated	Aggregated	ELEC	167.3684966	5800.54827	849.8038238	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2022	LDT1	Aggregated	Aggregated	GAS	10257.21462	355560.7114	45407.98812	22%	0.045351444	0	0.53988983	0.345244048	1.174767182	0.699887165	1.135357753	0.066147724	0	0.591107945	0.345244048	1.174767182	0.699887165	1.135357753	1.854185861
MERCED	2022	LDT1	Aggregated	Aggregated	DSL	10.44737855	215.7441345	36.74880738	0%	0.148444035	0	0	0	0	0	0	0.168993665	0	0	0	0	0	0	1.009199347
MERCED	2022	LDT1	Aggregated	Aggregated	ELEC	44.69132526	2050.835403	228.5949455	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2022	LDT2	Aggregated	Aggregated	GAS	33329.71176	1220998.932	151895.2201	77%	0.027054358	0	0.434033059	0.19989772	0.657469271	0.455979329	0.634952453	0.03946209	0	0.475209627	0.19989772	0.657469271	0.455979329	0.634952453	1.261300127
MERCED	2022	LDT2	Aggregated	Aggregated	DSL	150.4819828	6285.165271	726.5669334	0%	0.02478089	0	0	0	0	0	0	0.028211396	0	0	0	0	0	0	0.187961885
MERCED	2022	LDT2	Aggregated	Aggregated	ELEC	230.5094532	7883.56427	1167.123679	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2023	LDT1	Aggregated	Aggregated	GAS	10338.40334	360093.3629	45967.05627	22%	0.038160113	0	0.480710044	0.315485607	1.075662167	0.647257521	1.037525353	0.055672294	0	0.5263156	0.315485607	1.075662167	0.647257521	1.037525353	1.612834194
MERCED	2023	LDT1	Aggregated	Aggregated	DSL	9.589346041	194.6893454	33.52741808	0%	0.139474892	0	0	0	0	0	0	0.158782892	0	0	0	0	0	0	0.955747721
MERCED	2023	LDT1	Aggregated	Aggregated	ELEC	64.607494	3022.250599	329.1501463	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2023	LDT2	Aggregated	Aggregated	GAS	33570.11175	1227377.431	153161.3368	76%	0.023458389	0	0.3964569	0.188808637	0.628313763	0.439565975	0.604273764	0.034224998	0	0.434069679	0.188808637	0.628313763	0.439565975	0.604273764	1.136058406
MERCED	2023	LDT2	Aggregated	Aggregated	DSL	169.4943923	7034.211261	818.3629473	0%	0.022974531	0	0	0	0	0	0	0.026154976	0	0	0	0	0	0	0.181875365
MERCED	2023	LDT2	Aggregated	Aggregated	ELEC	303.9736004	10241.95047	1534.257748	1%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2024	LDT1	Aggregated	Aggregated	GAS	10440.05919	364962.7783	46604.30436	22%	0.032492774	0	0.427683704	0.287657995	0.98561351	0.597037645	0.946445812	0.047407853	0	0.468259087	0.287657995	0.98561351	0.597037645	0.946445812	1.42059601
MERCED	2024	LDT1	Aggregated	Aggregated	DSL	8.770377111	175.5777645	30.51380079	0%	0.131288397	0	0	0	0	0	0	0.149463112	0	0	0	0	0	0	0.903027482
MERCED	2024	LDT1	Aggregated	Aggregated	ELEC	87.28985229	4154.418836	442.8646591	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2024	LDT2	Aggregated	Aggregated	GAS	33863.15102	1235069.461	154652.5575	76%	0.020641931	0	0.362463418	0.178316196	0.601518596	0.4234979	0.575537094	0.030118314	0	0.396851499	0.178316196	0.601518596	0.4234979	0.575537094	1.039129371
MERCED	2024	LDT2	Aggregated	Aggregated	DSL	186.6043242	7740.046851	904.0948162	0%	0.020897593	0	0	0	0	0	0	0.023790521	0	0	0	0	0	0	0.180528646
MERCED	2024	LDT2	Aggregated	Aggregated	ELEC	387.1176276	12839.35777	1947.357161	1%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2025	LDT1	Aggregated	Aggregated	GAS	10561.67338	370076.211	47321.35835	23%	0.027243281	0	0.379632081	0.261898976	0.904139936	0.549197723	0.861101178	0.039753331	0	0.415649343	0.261898976	0.904139936	0.549197723	0.861101178	1.246294738
MERCED	2025	LDT1	Aggregated	Aggregated	DSL	8.07698037	159.3856492	27.96428225	0%	0.122363202	0	0	0	0	0	0	0.13930237	0	0	0	0	0	0	0.848892379
MERCED	2025	LDT1	Aggregated	Aggregated	ELEC	112.6078684	5443.659661	568.9336084	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2025	LDT2	Aggregated	Aggregated	GAS	34205.33976	1243445.728	156350.3035	76%	0.017967523	0	0.331529419	0.168391004	0.575592618	0.407849284	0.548338982	0.026218167	0	0.362982984	0.168391004	0.575592618	0.407849284	0.548338982	0.949697898
MERCED	2025	LDT2	Aggregated	Aggregated	DSL	204.374441	8419.219983	990.3735812	1%	0.019876682	0	0	0	0	0	0	0.022628281	0	0	0	0	0	0	0.178173835
MERCED	2025	LDT2	Aggregated	Aggregated	ELEC	479.8645066	15652.16555	2405.516965	1%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2026	LDT1	Aggregated	Aggregated	GAS	10703.78779	374907.0765	48119.8066	23%	0.023379822	0	0.33726745	0.238291682	0.831136042	0.503948031	0.78219665	0.034115781	0	0.369265405	0.238291682	0.831136042	0.503948031	0.78219665	1.115981448
MERCED	2026	LDT1	Aggregated	Aggregated	DSL	7.457137122	145.3839054	25.71943675	0%	0.115024948	0	0	0	0	0	0	0.130948256	0	0	0	0	0	0	0.798187401
MERCED	2026	LDT1	Aggregated	Aggregated	ELEC	138.6231696	6551.073351	697.1911228	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0
MERCED	2026	LDT2	Aggregated	Aggregated	GAS	34605.3102	1251209.296	158300.495	75%	0.016042119	0	0.30369674	0.158943922	0.550760902	0.392079524	0.522221115	0.023408623	0	0.332509703	0.158943922	0.550760902	0.392079524	0.522221115	0.886701182
MERCED	2026	LDT2	Aggregated	Aggregated	DSL	222.5500167	9048.324908	1076.359276	1%	0.020398979	0	0	0	0	0	0	0.023222881	0	0	0	0	0	0	0.188029365
MERCED	2026	LDT2	Aggregated	Aggregated	ELEC	575.3527286	18433.77122	2872.75849	1%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0

Region	Calendar	Vehicle Category	Fuel	CO_IDLEX	CO_STREX	NOx_RUNEX	NOx_IDLEX	NOx_STREX	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	CH4_IDLEX	CH4_STREX	PM10_RUNEX	PM10_IDLEX
				17	18	19	20	21	22	23	24	25	26	27	28	29
MERCED	2019	LDT1	GAS	0	3.045142283	0.282349208	0	0.458895516	356.5996643	0	74.16520554	0.016118976	0	0.136711478	0.003416695	0
MERCED	2019	LDT1	DSL	0	0	1.178202038	0	0	455.1853078	0	0	0.008070617	0	0	0.123788066	0
MERCED	2019	LDT1	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
MERCED	2019	LDT2	GAS	0	3.418283771	0.207958599	0	0.503565742	394.9012599	0	82.05867895	0.009254801	0	0.110466987	0.001979894	0
MERCED	2019	LDT2	DSL	0	0	0.160286279	0	0	303.990982	0	0	0.001650377	0	0	0.018749656	0
MERCED	2019	LDT2	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
MERCED	2020	LDT1	GAS	0	2.886372624	0.240001338	0	0.419964876	347.572615	0	72.13053315	0.013597684	0	0.123826827	0.003107646	0
MERCED	2020	LDT1	DSL	0	0	1.122296901	0	0	453.3685143	0	0	0.007658449	0	0	0.116889995	0
MERCED	2020	LDT1	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
MERCED	2020	LDT2	GAS	0	3.27297949	0.178723764	0	0.45857623	382.7649579	0	79.57266365	0.008014785	0	0.102315659	0.001896896	0
MERCED	2020	LDT2	DSL	0	0	0.125191428	0	0	293.4950344	0	0	0.001393712	0	0	0.01458895	0
MERCED	2020	LDT2	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
MERCED	2021	LDT1	GAS	0	2.745546944	0.204466544	0	0.384201036	339.3783375	0	70.14512783	0.011774489	0	0.112000905	0.002853155	0
MERCED	2021	LDT1	DSL	0	0	1.059493336	0	0	452.4577389	0	0	0.007310113	0	0	0.110833798	0
MERCED	2021	LDT1	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
MERCED	2021	LDT2	GAS	0	3.150678433	0.154489351	0	0.417521724	371.3253209	0	77.0813707	0.007156792	0	0.094824638	0.001826533	0
MERCED	2021	LDT2	DSL	0	0	0.101689251	0	0	284.9657395	0	0	0.001265617	0	0	0.011970813	0
MERCED	2021	LDT2	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
MERCED	2022	LDT1	GAS	0	2.638298502	0.174163516	0	0.351313853	330.2058144	0	68.20445831	0.010043116	0	0.101330992	0.00258813	0
MERCED	2022	LDT1	DSL	0	0	0.998856268	0	0	449.2227882	0	0	0.006894942	0	0	0.103969617	0
MERCED	2022	LDT1	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
MERCED	2022	LDT2	GAS	0	3.041084195	0.13337404	0	0.379705387	358.9097296	0	74.59571761	0.006298746	0	0.087838734	0.00173319	0
MERCED	2022	LDT2	DSL	0	0	0.085094407	0	0	276.5005882	0	0	0.001151025	0	0	0.010098065	0
MERCED	2022	LDT2	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
MERCED	2023	LDT1	GAS	0	2.525429664	0.147760966	0	0.32105601	320.9354097	0	66.23318349	0.00852095	0	0.091492501	0.002353317	0
MERCED	2023	LDT1	DSL	0	0	0.936909152	0	0	445.263976	0	0	0.006478342	0	0	0.097172486	0
MERCED	2023	LDT1	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
MERCED	2023	LDT2	GAS	0	2.927415028	0.115005845	0	0.345943694	346.5421524	0	72.10296849	0.005526453	0	0.081286228	0.001649119	0
MERCED	2023	LDT2	DSL	0	0	0.072788314	0	0	268.6762474	0	0	0.001067123	0	0	0.008720753	0
MERCED	2023	LDT2	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
MERCED	2024	LDT1	GAS	0	2.423487927	0.125697577	0	0.293530453	312.5050964	0	64.27951949	0.00731186	0	0.082505156	0.002178126	0
MERCED	2024	LDT1	DSL	0	0	0.867244144	0	0	441.4206506	0	0	0.006098095	0	0	0.090614637	0
MERCED	2024	LDT1	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
MERCED	2024	LDT2	GAS	0	2.826662629	0.099770695	0	0.316216801	335.2459593	0	69.65554415	0.004918631	0	0.07520943	0.001597542	0
MERCED	2024	LDT2	DSL	0	0	0.059965826	0	0	261.5312573	0	0	0.000970653	0	0	0.006695824	0
MERCED	2024	LDT2	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
MERCED	2025	LDT1	GAS	0	2.311058892	0.106796052	0	0.268520795	303.2647085	0	62.30487131	0.006190044	0	0.074300577	0.002000636	0
MERCED	2025	LDT1	DSL	0	0	0.799972944	0	0	435.3526009	0	0	0.005683537	0	0	0.083813241	0
MERCED	2025	LDT1	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
MERCED	2025	LDT2	GAS	0	2.725736259	0.086762111	0	0.289892016	323.2670378	0	67.23761597	0.004336185	0	0.069631605	0.001535087	0
MERCED	2025	LDT2	DSL	0	0	0.051715485	0	0	254.1762172	0	0	0.000923234	0	0	0.005861816	0
MERCED	2025	LDT2	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
MERCED	2026	LDT1	GAS	0	2.200383026	0.091474501	0	0.246665166	295.9297357	0	60.44948008	0.005362584	0	0.066940986	0.001886202	0
MERCED	2026	LDT1	DSL	0	0	0.729890393	0	0	430.9028168	0	0	0.005342689	0	0	0.077683416	0
MERCED	2026	LDT1	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
MERCED	2026	LDT2	GAS	0	2.63086008	0.076155225	0	0.266677603	313.4017098	0	64.95409074	0.00391881	0	0.06450247	0.001504609	0
MERCED	2026	LDT2	DSL	0	0	0.047093131	0	0	249.1503051	0	0	0.000947494	0	0	0.005461859	0
MERCED	2026	LDT2	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0

Region	Calendar	Vehicle Category	Fuel	PM10_STREX	PM10_PMTW	PM10_PMBW	PM2_5_RUNEX	PM2_5_IDLEX	PM2_5_STREX	PM2_5_PMTW	PM2_5_PMBW	SOx_RUNEX	SOx_IDLEX	SOx_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX
				30	31	32	33	34	35	36	37	38	39	40	41	42	43
MERCED	2019	LDT1	GAS	0.004077356	0.008000002	0.036750011	0.003142388	0	0.003750899	0.002000001	0.015750005	0.003529	0	0.000734	0.018112	0	0.038603
MERCED	2019	LDT1	DSL	0	0.008000002	0.036750011	0.118433049	0	0	0.002000001	0.015750005	0.004303	0	0	0.071549	0	0
MERCED	2019	LDT1	ELEC	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2019	LDT2	GAS	0.002435266	0.008000002	0.036750011	0.001820805	0	0.00223998	0.002000001	0.015750005	0.003908	0	0.000812	0.013712	0	0.044141
MERCED	2019	LDT2	DSL	0	0.008000002	0.036750011	0.017938554	0	0	0.002000001	0.015750005	0.002874	0	0	0.047783	0	0
MERCED	2019	LDT2	ELEC	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2020	LDT1	GAS	0.003757331	0.008000002	0.036750011	0.002857652	0	0.003455353	0.002000001	0.015750005	0.00344	0	0.000714	0.015791	0	0.036817
MERCED	2020	LDT1	DSL	0	0.008000002	0.036750011	0.111833385	0	0	0.002000001	0.015750005	0.004286	0	0	0.071263	0	0
MERCED	2020	LDT1	ELEC	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2020	LDT2	GAS	0.002334388	0.008000002	0.036750011	0.001744228	0	0.002146612	0.002000001	0.015750005	0.003788	0	0.000787	0.012126	0	0.041808
MERCED	2020	LDT2	DSL	0	0.008000002	0.036750011	0.013957838	0	0	0.002000001	0.015750005	0.002775	0	0	0.046133	0	0
MERCED	2020	LDT2	ELEC	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2021	LDT1	GAS	0.003444472	0.008000002	0.036750011	0.002623553	0	0.003167466	0.002000001	0.015750005	0.003358	0	0.000694	0.0138	0	0.035066
MERCED	2021	LDT1	DSL	0	0.008000002	0.036750011	0.106039177	0	0	0.002000001	0.015750005	0.004277	0	0	0.07112	0	0
MERCED	2021	LDT1	ELEC	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2021	LDT2	GAS	0.002224689	0.008000002	0.036750011	0.001679505	0	0.002045691	0.002000001	0.015750005	0.003675	0	0.000763	0.010781	0	0.039537
MERCED	2021	LDT2	DSL	0	0.008000002	0.036750011	0.01145296	0	0	0.002000001	0.015750005	0.002694	0	0	0.044793	0	0
MERCED	2021	LDT2	ELEC	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2022	LDT1	GAS	0.003175094	0.008000002	0.036750011	0.002379819	0	0.002919677	0.002000001	0.015750005	0.003268	0	0.000675	0.012077	0	0.033392
MERCED	2022	LDT1	DSL	0	0.008000002	0.036750011	0.099471937	0	0	0.002000001	0.015750005	0.004247	0	0	0.070612	0	0
MERCED	2022	LDT1	ELEC	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2022	LDT2	GAS	0.002125968	0.008000002	0.036750011	0.001593663	0	0.001954891	0.002000001	0.015750005	0.003552	0	0.000738	0.009589	0	0.03734
MERCED	2022	LDT2	DSL	0	0.008000002	0.036750011	0.009661227	0	0	0.002000001	0.015750005	0.002614	0	0	0.043462	0	0
MERCED	2022	LDT2	ELEC	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2023	LDT1	GAS	0.002924267	0.008000002	0.036750011	0.002163859	0	0.002688923	0.002000001	0.015750005	0.003176	0	0.000655	0.01057	0	0.031778
MERCED	2023	LDT1	DSL	0	0.008000002	0.036750011	0.092968847	0	0	0.002000001	0.015750005	0.004209	0	0	0.069989	0	0
MERCED	2023	LDT1	ELEC	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2023	LDT2	GAS	0.002031826	0.008000002	0.036750011	0.001516333	0	0.001868261	0.002000001	0.015750005	0.003429	0	0.000714	0.008546	0	0.03528
MERCED	2023	LDT2	DSL	0	0.008000002	0.036750011	0.008343497	0	0	0.002000001	0.015750005	0.00254	0	0	0.042232	0	0
MERCED	2023	LDT2	ELEC	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2024	LDT1	GAS	0.002702751	0.008000002	0.036750011	0.002002743	0	0.002485169	0.002000001	0.015750005	0.003092	0	0.000636	0.009301	0	0.030213
MERCED	2024	LDT1	DSL	0	0.008000002	0.036750011	0.086694688	0	0	0.002000001	0.015750005	0.004173	0	0	0.069385	0	0
MERCED	2024	LDT1	ELEC	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2024	LDT2	GAS	0.001953484	0.008000002	0.036750011	0.001468894	0	0.001796188	0.002000001	0.015750005	0.003318	0	0.000689	0.007676	0	0.033351
MERCED	2024	LDT2	DSL	0	0.008000002	0.036750011	0.006406166	0	0	0.002000001	0.015750005	0.002472	0	0	0.041109	0	0
MERCED	2024	LDT2	ELEC	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2025	LDT1	GAS	0.002499948	0.008000002	0.036750011	0.001839511	0	0.00229861	0.002000001	0.015750005	0.003001	0	0.000617	0.008209	0	0.02871
MERCED	2025	LDT1	DSL	0	0.008000002	0.036750011	0.080187517	0	0	0.002000001	0.015750005	0.004116	0	0	0.068431	0	0
MERCED	2025	LDT1	ELEC	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2025	LDT2	GAS	0.001885515	0.008000002	0.036750011	0.001411455	0	0.001733662	0.002000001	0.015750005	0.003199	0	0.000665	0.006927	0	0.031576
MERCED	2025	LDT2	DSL	0	0.008000002	0.036750011	0.005608237	0	0	0.002000001	0.015750005	0.002403	0	0	0.039953	0	0
MERCED	2025	LDT2	ELEC	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2026	LDT1	GAS	0.002324412	0.008000002	0.036750011	0.001734293	0	0.002137211	0.002000001	0.015750005	0.002928	0	0.000598	0.007325	0	0.027356
MERCED	2026	LDT1	DSL	0	0.008000002	0.036750011	0.074322866	0	0	0.002000001	0.015750005	0.004074	0	0	0.067732	0	0
MERCED	2026	LDT1	ELEC	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2026	LDT2	GAS	0.001819531	0.008000002	0.036750011	0.001383432	0	0.001672992	0.002000001	0.015750005	0.003101	0	0.000643	0.006319	0	0.02995
MERCED	2026	LDT2	DSL	0	0.008000002	0.036750011	0.005225581	0	0	0.002000001	0.015750005	0.002355	0	0	0.039163	0	0
MERCED	2026	LDT2	ELEC	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0

EMFAC2017 (v1.0.2) Emission Rates
Region Type: County
Region: MERCED
Calendar Year: 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN

										2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	Percent	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSOAK	ROG_RUNLOSS	ROG_RESTLOSS	ROG_DIURN	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTSOAK	TOG_RUNLOSS	TOG_RESTLOSS	TOG_DIURN	CO_RUNEX	CO_IDLEX	CO_STREX	NOx_RUNEX	NOx_IDLEX	NOx_STREX	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	CH4_IDLEX	CH4_STREX	PM10_RUNEX	PM10_IDLEX	PM10_STREX	PM10_PMTW	PM10_PMBW	PM2_5_RUNEX	PM2_5_IDLEX	PM2_5_STREX	PM2_5_PMTW	PM2_5_PMBW	SOx_RUNEX	SOx_IDLEX	SOx_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX
MERCED	2019	LDT1	Aggregated	Aggregated	GAS	10189.12769	345290.532	44452.87182	23%	0.075140084	0	0.757151959	0.442975316	1.525123348	0.867055095	1.465638645	0.108952652	0	0.828939773	0.442975316	1.525123348	0.867055095	1.465638645	2.820721943	0	3.045142283	0.282349208	0	0.458895516	356.5996643	0	74.16520554	0.016118976	0	0.136711478	0.003416695	0	0.004077356	0.008000002	0.036750011	0.003142388	0	0.003750899	0.002000001	0.015750005	0.003529	0	0.000734	0.018112	0	0.038603
MERCED	2019	LDT1	Aggregated	Aggregated	DSL	13.72845613	298.8475637	49.27656607	0%	0.173755622	0	0	0	0	0	0	0.197809224	0	0	0	0	0	0	1.16297925	0	0	1.178202038	0	0	455.1853078	0	0	0.008070617	0	0	0.123788066	0	0	0.008000002	0.036750011	0.118433049	0	0	0.002000001	0.015750005	0.004303	0	0	0.071549	0	0
MERCED	2019	LDT1	Aggregated	Aggregated	ELEC	6.359139417	268.2377647	32.75525172	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2019	LDT2	Aggregated	Aggregated	GAS	32968.21192	1210417.829	149772.2959	77%	0.041352107	0	0.567957172	0.234631808	0.759508505	0.502299695	0.732290569	0.060021789	0	0.621820186	0.234631808	0.759508505	0.502299695	0.732290569	1.743926269	0	3.418283771	0.207958599	0	0.503565742	394.9012599	0	82.05867895	0.009254801	0	0.110466987	0.001979894	0	0.002435266	0.008000002	0.036750011	0.001820805	0	0.00223998	0.002000001	0.015750005	0.003908	0	0.000812	0.013712	0	0.044141
MERCED	2019	LDT2	Aggregated	Aggregated	DSL	94.69507869	3919.633712	451.1329906	0%	0.035531648	0	0	0	0	0	0	0.040450419	0	0	0	0	0	0	0.235238833	0	0	0.160286279	0	0	303.990982	0	0	0.001650377	0	0	0.018749656	0	0	0.008000002	0.036750011	0.017938554	0	0	0.002000001	0.015750005	0.002874	0	0	0.047783	0	0
MERCED	2019	LDT2	Aggregated	Aggregated	ELEC	84.59751613	3019.896271	432.7304144	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2020	LDT1	Aggregated	Aggregated	GAS	10176.67403	348156.1294	44627.71306	23%	0.062176935	0	0.67629706	0.408517432	1.399922346	0.808898385	1.348001062	0.090649435	0	0.740451271	0.408517432	1.399922346	0.808898385	1.348001062	2.434968965	0	2.886372624	0.240001338	0	0.419964876	347.572615	0	72.13053315	0.013597684	0	0.123826827	0.003107646	0	0.003757331	0.008000002	0.036750011	0.002857652	0	0.003455353	0.002000001	0.015750005	0.00344	0	0.000714	0.015791	0	0.036817
MERCED	2020	LDT1	Aggregated	Aggregated	DSL	12.50376922	267.402342	44.56458743	0%	0.164881905	0	0	0	0	0	0	0.187707086	0	0	0	0	0	0	1.113740158	0	0	1.122296901	0	0	453.3685143	0	0	0.007658449	0	0	0.116889995	0	0	0.008000002	0.036750011	0.111833385	0	0	0.002000001	0.015750005	0.004286	0	0	0.071263	0	0
MERCED	2020	LDT1	Aggregated	Aggregated	ELEC	14.31835546	625.0220765	73.65149402	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2020	LDT2	Aggregated	Aggregated	GAS	33014.59856	1212743.1	150150.5718	77%	0.035053889	0	0.518328504	0.22226611	0.722388591	0.485272788	0.695423422	0.051120877	0	0.56750107	0.22226611	0.722388591	0.485272788	0.695423422	1.54821583	0	3.27297949	0.178723764	0	0.45857623	382.7649579	0	79.57266365	0.008014785	0	0.102315659	0.001896896	0	0.002334388	0.008000002	0.036750011	0.001744228	0	0.002146612	0.002000001	0.015750005	0.003788	0	0.000787	0.012126	0	0.041808
MERCED	2020	LDT2	Aggregated	Aggregated	DSL	112.7749093	4720.790638	541.5760558	0%	0.030005795	0	0	0	0	0	0	0.034159602	0	0	0	0	0	0	0.208114963	0	0	0.125191428	0	0	293.4950344	0	0	0.001393712	0	0	0.01458895	0	0	0.008000002	0.036750011	0.013957838	0	0	0.002000001	0.015750005	0.002775	0	0	0.046133	0	0
MERCED	2020	LDT2	Aggregated	Aggregated	ELEC	116.9811969	4101.602158	595.5347728	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2021	LDT1	Aggregated	Aggregated	GAS	10199.94974	351875.5023	44950.20218	23%	0.053525778	0	0.604528881	0.376236425	1.282382343	0.752770468	1.23726656	0.078059715	0	0.661877928	0.376236425	1.282382343	0.752770468	1.23726656	2.128872959	0	2.745546944	0.204466544	0	0.384201036	339.3783375	0	70.14512783	0.011774489	0	0.112000905	0.002853155	0	0.003444472	0.008000002	0.036750011	0.002623553	0	0.003167466	0.002000001	0.015750005	0.003358	0	0.000694	0.0138	0	0.035066
MERCED	2021	LDT1	Aggregated	Aggregated	DSL	11.43148786	240.2162529	40.46384444	0%	0.157382418	0	0	0	0	0	0	0.17916942	0	0	0	0	0	0	1.060787355	0	0	1.059493336	0	0	452.4577389	0	0	0.007310113	0	0	0.110833798	0	0	0.008000002	0.036750011	0.106039177	0	0	0.002000001	0.015750005	0.004277	0	0	0.07112	0	0
MERCED	2021	LDT1	Aggregated	Aggregated	ELEC	27.74208858	1247.813597	142.3985578	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2021	LDT2	Aggregated	Aggregated	GAS	33139.85956	1217235.698	150876.0989	76%	0.031036969	0	0.474541455	0.210990044	0.688522722	0.470552209	0.66420951	0.045268406	0	0.519560725	0.210990044	0.688522722	0.470552209	0.66420951	1.400885588	0	3.150678433	0.154489351	0	0.417521724	371.3253209	0	77.0813707	0.007156792	0	0.094824638	0.001826533	0	0.002224689	0.008000002	0.036750011	0.001679505	0	0.002045691	0.002000001	0.015750005	0.003675	0	0.000763	0.010781	0	0.039537
MERCED	2021	LDT2	Aggregated	Aggregated	DSL	131.4967432	5519.990961	633.9247939	0%	0.027247995	0	0	0	0	0	0	0.031020031	0	0	0	0	0	0	0.197741794	0	0	0.101689251	0	0	284.9657395	0	0	0.001265617	0	0	0.011970813	0	0	0.008000002	0.036750011	0.01145296	0	0	0.002000001	0.015750005	0.002694	0	0	0.044793	0	0
MERCED	2021	LDT2	Aggregated	Aggregated	ELEC	167.3684966	5800.54827	849.8038238	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2022	LDT1	Aggregated	Aggregated	GAS	10257.21462	355560.7114	45407.98812	23%	0.045351444	0	0.53988983	0.345244048	1.174767182	0.699887165	1.135357753	0.066147724	0	0.591107945	0.345244048	1.174767182	0.699887165	1.135357753	1.854185861	0	2.638298502	0.174163516	0	0.351313853	330.2058144	0	68.20445831	0.010043116	0	0.101330992	0.00258813	0	0.003175094	0.008000002	0.036750011	0.002379819	0	0.002919677	0.002000001	0.015750005	0.003268	0	0.000675	0.012077	0	0.033392
MERCED	2022	LDT1	Aggregated	Aggregated	DSL	10.44737855	215.7441345	36.74880738	0%	0.148444035	0	0	0	0	0	0	0.168993665	0	0	0	0	0	0	1.009199347	0	0	0.998856268	0	0	449.2227882	0	0	0.006894942	0	0	0.103969617	0	0	0.008000002	0.036750011	0.099471937	0	0	0.002000001	0.015750005	0.004247	0	0	0.070612	0	0
MERCED	2022	LDT1	Aggregated	Aggregated	ELEC	44.69132526	2050.835403	228.5949455	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2022	LDT2	Aggregated	Aggregated	GAS	33329.71176	1220998.932	151895.2201	76%	0.027054358	0	0.434033059	0.19989772	0.657469271	0.455979329	0.634952453	0.03946209	0	0.475209627	0.19989772	0.657469271	0.455979329	0.634952453	1.261300127	0	3.041084195	0.13337404	0	0.379705387	358.9097296	0	74.59571761	0.006298746	0	0.087838734	0.00173319	0	0.002125968	0.008000002	0.036750011	0.001593663	0	0.001954891	0.002000001	0.015750005	0.003552	0	0.000738	0.009589	0	0.03734
MERCED	2022	LDT2	Aggregated	Aggregated	DSL	150.4819828	6285.165271	726.5669334	0%	0.02478089	0	0	0	0	0	0	0.028211396	0	0	0	0	0	0	0.187961885	0	0	0.085094407	0	0	276.5005882	0	0	0.001151025	0	0	0.010098065	0	0	0.008000002	0.036750011	0.009661227	0	0	0.002000001	0.015750005	0.002614	0	0	0.043462	0	0
MERCED	2022	LDT2	Aggregated	Aggregated	ELEC	230.5094532	7883.56427	1167.123679	1%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2023	LDT1	Aggregated	Aggregated	GAS	10338.40334	360093.3629	45967.05627	23%	0.038160113	0	0.480710044	0.315485607	1.075662167	0.647257521	1.037525353	0.055672294	0	0.5263156	0.315485607	1.075662167	0.647257521	1.037525353	1.612834194	0	2.525429664	0.147760966	0	0.32105601	320.9354097	0	66.23318349	0.00852095	0	0.091492501	0.002353317	0	0.002924267	0.008000002	0.036750011	0.002163859	0	0.002688923	0.002000001	0.015750005	0.003176	0	0.000655	0.01057	0	0.031778
MERCED	2023	LDT1	Aggregated	Aggregated	DSL	9.589346041	194.6893454	33.52741808	0%	0.139474892	0	0	0	0	0	0	0.158782892	0	0	0	0	0	0	0.955747721	0	0	0.936909152	0	0	445.263976	0	0	0.006478342	0	0	0.097172486	0	0	0.008000002	0.036750011	0.092968847	0	0	0.002000001	0.015750005	0.004209	0	0	0.069989	0	0
MERCED	2023	LDT1	Aggregated	Aggregated	ELEC	64.607494	3022.250599	329.1501463	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2023	LDT2	Aggregated	Aggregated	GAS	33570.11175	1227377.431	153161.3368	76%	0.023458389	0	0.3964569	0.188808637	0.628313763	0.439565975	0.604273764	0.034224998	0	0.434069679	0.188808637	0.628313763	0.439565975	0.604273764	1.136058406	0	2.927415028	0.115005845	0	0.345943694	346.5421524	0	72.10296849	0.005526453	0	0.081286228	0.001649119	0	0.002031826	0.008000002	0.036750011	0.001516333	0	0.001868261	0.002000001	0.015750005	0.003429	0	0.000714	0.008546	0	0.03528
MERCED	2023	LDT2	Aggregated	Aggregated	DSL	169.4943923	7034.211261	818.3629473	0%	0.022974531	0	0	0	0	0	0	0.026154976	0	0	0	0	0	0	0.181875365	0	0	0.072788314	0	0	268.6762474	0	0	0.001067123	0	0	0.008720753	0	0	0.008000002	0.036750011	0.008343497	0	0	0.002000001	0.015750005	0.00254	0	0	0.042232	0	0
MERCED	2023	LDT2	Aggregated	Aggregated	ELEC	303.9736004	10241.95047	1534.257748	1%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2024	LDT1	Aggregated	Aggregated	GAS	10440.05919	364962.7783	46604.30436	23%	0.032492774	0	0.427683704	0.287657995	0.98561351	0.597037645	0.946445812	0.047407853	0	0.468259087	0.287657995	0.98561351	0.597037645	0.946445812	1.42059601	0	2.423487927	0.125697577	0	0.293530453	312.5050964	0	64.27951949	0.00731186	0	0.082505156	0.002178126	0	0.002702751	0.008000002	0.036750011	0.002002743	0	0.002485169	0.002000001	0.015750005	0.003092	0	0.000636	0.009301	0	0.030213
MERCED	2024	LDT1	Aggregated	Aggregated	DSL	8.770377111	175.5777645	30.51380079	0%	0.131288397	0	0	0	0	0	0	0.149463112	0	0	0	0	0	0	0.903027482	0	0	0.867244144	0	0	441.4206506	0	0	0.006098095	0	0	0.090614637	0	0	0.008000002	0.036750011	0.086694688	0	0	0.002000001	0.015750005	0.004173	0	0	0.069385	0	0
MERCED	2024	LDT1	Aggregated	Aggregated	ELEC	87.28985229	4154.418836	442.8646591	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2024	LDT2	Aggregated	Aggregated	GAS	33863.15102	1235069.461	154652.5575	76%	0.020641931	0	0.362463418	0.178316196	0.601518596	0.4234979	0.575537094	0.030118314	0	0.396851499	0.178316196	0.601518596	0.4234979	0.575537094	1.039129371	0	2.826662629	0.099770695	0	0.316216801	335.2459593	0	69.65554415	0.004918631	0	0.07520943	0.001597542	0	0.001953484	0.008000002	0.036750011	0.001468894	0	0.001796188	0.002000001	0.015750005	0.003318	0	0.000689	0.007676	0	0.033351
MERCED	2024	LDT2	Aggregated	Aggregated	DSL	186.6043242	7740.046851	904.0948162	0%	0.020897593	0	0	0	0	0	0	0.023790521	0	0	0	0	0	0	0.180528646	0	0	0.059965826	0	0	261.5312573	0	0	0.000970653	0	0	0.006695824	0	0	0.008000002	0.036750011	0.006406166	0	0	0.002000001	0.015750005	0.002472	0	0	0.041109	0	0
MERCED	2024	LDT2	Aggregated	Aggregated	ELEC	387.1176276	12839.35777	1947.357161	1%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2025	LDT1	Aggregated	Aggregated	GAS	10561.67338	370076.211	47321.35835	23%	0.027243281	0	0.379632081	0.261898976	0.904139936	0.549197723	0.861101178	0.039753331	0	0.415649343	0.261898976	0.904139936	0.549197723	0.861101178	1.246294738	0	2.311058892	0.106796052	0	0.268520795	303.2647085	0	62.30487131	0.006190044	0	0.074300577	0.002000636	0	0.002499948	0.008000002	0.036750011	0.001839511	0	0.00229861	0.002000001	0.015750005	0.003001	0	0.000617	0.008209	0	0.02871
MERCED	2025	LDT1	Aggregated	Aggregated	DSL	8.07698037	159.3856492	27.96428225	0%	0.122363202	0	0	0	0	0	0	0.13930237	0	0	0	0	0	0	0.848892379	0	0	0.799972944	0	0	435.3526009	0	0	0.005683537	0	0	0.083813241	0	0	0.008000002	0.036750011	0.080187517	0	0	0.002000001	0.015750005	0.004116	0	0	0.068431	0	0
MERCED	2025	LDT1	Aggregated	Aggregated	ELEC	112.6078684	5443.659661	568.9336084	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2025	LDT2	Aggregated	Aggregated	GAS	34205.33976	1243445.728	156350.3035	75%	0.017967523	0	0.331529419	0.168391004	0.575592618	0.407849284	0.548338982	0.026218167	0	0.362982984	0.168391004	0.575592618	0.407849284	0.548338982	0.949697898	0	2.725736259	0.086762111	0	0.289892016	323.2670378	0	67.23761597	0.004336185	0	0.069631605	0.001535087	0	0.001885515	0.008000002	0.036750011	0.001411455	0	0.001733662	0.002000001	0.015750005	0.003199	0	0.000665	0.006927	0	0.031576
MERCED	2025	LDT2	Aggregated	Aggregated	DSL	204.374441	8419.219983	990.3735812	0%	0.019876682	0	0	0	0	0	0	0.022628281	0	0	0	0	0	0	0.178173835	0	0	0.051715485	0	0	254.1762172	0	0	0.000923234	0	0	0.005861816	0	0	0.008000002	0.036750011	0.005608237	0	0	0.002000001	0.015750005	0.002403	0	0	0.039953	0	0
MERCED	2025	LDT2	Aggregated	Aggregated	ELEC	479.8645066	15652.16555	2405.516965	1%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2026	LDT1	Aggregated	Aggregated	GAS	10703.78779	374907.0765	48119.8066	23%	0.023379822	0	0.33726745	0.238291682	0.831136042	0.503948031	0.78219665	0.034115781	0	0.369265405	0.238291682	0.831136042	0.503948031	0.78219665	1.115981448	0	2.200383026	0.091474501	0	0.246665166	295.9297357	0	60.44948008	0.005362584	0	0.066940986	0.001886202	0	0.002324412	0.008000002	0.036750011	0.001734293	0	0.002137211	0.002000001	0.015750005	0.002928	0	0.000598	0.007325	0	0.027356
MERCED	2026	LDT1	Aggregated	Aggregated	DSL	7.457137122	145.3839054	25.71943675	0%	0.115024948	0	0	0	0	0	0	0.130948256	0	0	0	0	0	0	0.798187401	0	0	0.729890393	0	0	430.9028168	0	0	0.005342689	0	0	0.077683416	0	0	0.008000002	0.036750011	0.074322866	0	0	0.002000001	0.015750005	0.004074	0	0	0.067732	0	0
MERCED	2026	LDT1	Aggregated	Aggregated	ELEC	138.6231696	6551.073351	697.1911228	0%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0
MERCED	2026	LDT2	Aggregated	Aggregated	GAS	34605.3102	1251209.296	158300.495	75%	0.016042119	0	0.30369674	0.158943922	0.550760902	0.392079524	0.522221115	0.023408623	0	0.332509703	0.158943922	0.550760902	0.392079524	0.522221115	0.886701182	0	2.63086008	0.076155225	0	0.266677603	313.4017098	0	64.95409074	0.00391881	0	0.06450247	0.001504609	0	0.001819531	0.008000002	0.036750011	0.001383432	0	0.001672992	0.002000001	0.015750005	0.003101	0	0.000643	0.006319	0	0.02995
MERCED	2026	LDT2	Aggregated	Aggregated	DSL	222.5500167	9048.324908	1076.359276	1%	0.020398979	0	0	0	0	0	0	0.023222881	0	0	0	0	0	0	0.188029365	0	0	0.047093131	0	0	249.1503051	0	0	0.000947494	0	0	0.005461859	0	0	0.008000002	0.036750011	0.005225581	0	0	0.002000001	0.015750005	0.002355	0	0	0.039163	0	0
MERCED	2026	LDT2	Aggregated	Aggregated	ELEC	575.3527286	18433.77122	2872.75849	1%	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0.004888026	0	0.008733424	0.028482783	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008000002	0.036750011	0	0	0	0.002000001	0.015750005	0	0	0	0	0	0

EMFAC2017 (v1.0.2) Emission Rates
Region Type: County
Region: MERCED
Calendar Year: 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

											2	3	4	5	6	7	8
Region	CalYr	VehClass		MdlYr	Speed	Fuel	Population	VMT	Trips	Lookup	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSOAK	ROG_RUNLOSS	ROG_RESTLOSS	ROG_DIURN
MERCED	2019	T6 instate heavy	T6Instate	Aggregated	Aggregated	DSL	451.114256	51850.14635	5205.795969	2019MERCEDT6I	0.435458407	0.187800665	0	0	0	0	0
MERCED	2019	T6 utility	T6Utility	Aggregated	Aggregated	DSL	39.64788023	662.5595323	455.9506226	2019MERCEDT6U	0.02969683	0.141470928	0	0	0	0	0
MERCED	2019	T7 single construction	T7Single	Aggregated	Aggregated	DSL	533.3878649	37090.37316	2411.425799	2019MERCEDT7S	0.786315827	1.923502653	0	0	0	0	0
MERCED	2019	T7 tractor construction	T7Tractor	Aggregated	Aggregated	DSL	436.5207418	30596.29239	1973.493302	2019MERCEDT7T	0.772918233	1.742559911	0	0	0	0	0
MERCED	2020	T6 instate heavy	T6Instate	Aggregated	Aggregated	DSL	437.0290006	49602.84786	5043.254075	2020MERCEDT6I	0.327992477	0.127560373	0	0	0	0	0
MERCED	2020	T6 utility	T6Utility	Aggregated	Aggregated	DSL	40.03093587	668.1356001	460.3557625	2020MERCEDT6U	0.025999201	0.140742661	0	0	0	0	0
MERCED	2020	T7 single construction	T7Single	Aggregated	Aggregated	DSL	572.7528692	40395.31168	2589.393453	2020MERCEDT7S	0.527049061	1.571257355	0	0	0	0	0
MERCED	2020	T7 tractor construction	T7Tractor	Aggregated	Aggregated	DSL	474.1712267	33322.5757	2143.70968	2020MERCEDT7T	0.550075814	1.584838589	0	0	0	0	0
MERCED	2021	T6 instate heavy	T6Instate	Aggregated	Aggregated	DSL	424.6205786	47716.5063	4900.062606	2021MERCEDT6I	0.258315563	0.111422631	0	0	0	0	0
MERCED	2021	T6 utility	T6Utility	Aggregated	Aggregated	DSL	40.03676373	673.7662425	460.4227829	2021MERCEDT6U	0.007331856	0.13558037	0	0	0	0	0
MERCED	2021	T7 single construction	T7Single	Aggregated	Aggregated	DSL	596.8316732	41965.14041	2698.25279	2021MERCEDT7S	0.426036513	1.57802503	0	0	0	0	0
MERCED	2021	T7 tractor construction	T7Tractor	Aggregated	Aggregated	DSL	498.3898123	34617.54619	2253.200964	2021MERCEDT7T	0.431012579	1.588449648	0	0	0	0	0
MERCED	2022	T6 instate heavy	T6Instate	Aggregated	Aggregated	DSL	393.5231271	46069.08574	4541.202327	2022MERCEDT6I	0.075182715	0.067630733	0	0	0	0	0
MERCED	2022	T6 utility	T6Utility	Aggregated	Aggregated	DSL	40.29653988	679.4615024	463.4102086	2022MERCEDT6U	0.007356955	0.13558037	0	0	0	0	0
MERCED	2022	T7 single construction	T7Single	Aggregated	Aggregated	DSL	623.3755401	43546.84508	2818.25658	2022MERCEDT7S	0.178470739	1.584215532	0	0	0	0	0
MERCED	2022	T7 tractor construction	T7Tractor	Aggregated	Aggregated	DSL	520.7451241	35922.31329	2354.268459	2022MERCEDT7T	0.211988886	1.591893451	0	0	0	0	0
MERCED	2023	T6 instate heavy	T6Instate	Aggregated	Aggregated	DSL	385.0919023	44549.77916	4443.907162	2023MERCEDT6I	0.009464422	0.049331958	0	0	0	0	0
MERCED	2023	T6 utility	T6Utility	Aggregated	Aggregated	DSL	40.88273523	685.192343	470.1514552	2023MERCEDT6U	0.007362582	0.13558037	0	0	0	0	0
MERCED	2023	T7 single construction	T7Single	Aggregated	Aggregated	DSL	650.489453	45140.4257	2940.837526	2023MERCEDT7S	0.044122269	1.57627884	0	0	0	0	0
MERCED	2023	T7 tractor construction	T7Tractor	Aggregated	Aggregated	DSL	546.6340203	37236.877	2471.311153	2023MERCEDT7T	0.04365423	1.587470025	0	0	0	0	0
MERCED	2024	T6 instate heavy	T6Instate	Aggregated	Aggregated	DSL	393.3627062	43290.78844	4539.351092	2024MERCEDT6I	0.009652648	0.049331958	0	0	0	0	0
MERCED	2024	T6 utility	T6Utility	Aggregated	Aggregated	DSL	41.38916816	690.9606688	475.9754338	2024MERCEDT6U	0.00736176	0.13558037	0	0	0	0	0
MERCED	2024	T7 single construction	T7Single	Aggregated	Aggregated	DSL	668.7699056	46745.88227	3023.482742	2024MERCEDT7S	0.042253085	1.578710464	0	0	0	0	0
MERCED	2024	T7 tractor construction	T7Tractor	Aggregated	Aggregated	DSL	566.3127858	38561.23732	2560.278086	2024MERCEDT7T	0.042894722	1.588700493	0	0	0	0	0
MERCED	2025	T6 instate heavy	T6Instate	Aggregated	Aggregated	DSL	404.5155183	42058.08575	4668.052997	2025MERCEDT6I	0.00982035	0.049331958	0	0	0	0	0
MERCED	2025	T6 utility	T6Utility	Aggregated	Aggregated	DSL	41.85269544	696.7096218	481.3059976	2025MERCEDT6U	0.007356204	0.13558037	0	0	0	0	0
MERCED	2025	T7 single construction	T7Single	Aggregated	Aggregated	DSL	678.7587714	47494.33482	3068.642016	2025MERCEDT7S	0.040573345	1.580880965	0	0	0	0	0
MERCED	2025	T7 tractor construction	T7Tractor	Aggregated	Aggregated	DSL	577.299755	39178.64479	2609.949747	2025MERCEDT7T	0.042226903	1.589694758	0	0	0	0	0
MERCED	2026	T6 instate heavy	T6Instate	Aggregated	Aggregated	DSL	413.8793994	40809.31789	4776.110887	2026MERCEDT6I	0.009952757	0.049331958	0	0	0	0	0
MERCED	2026	T6 utility	T6Utility	Aggregated	Aggregated	DSL	42.27952186	702.4205947	486.2145014	2026MERCEDT6U	0.007347272	0.13558037	0	0	0	0	0
MERCED	2026	T7 single construction	T7Single	Aggregated	Aggregated	DSL	685.3832993	48029.85817	3098.591249	2026MERCEDT7S	0.039073948	1.582785215	0	0	0	0	0
MERCED	2026	T7 tractor construction	T7Tractor	Aggregated	Aggregated	DSL	582.7339647	39620.4044	2634.517598	2026MERCEDT7T	0.041566636	1.590513686	0	0	0	0	0

		9	10	11	12	13	14	15	16	17	18	19	20	21
CalYr		TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTSOAK	TOG_RUNLOSS	TOG_RESTLOSS	TOG_DIURN	CO_RUNEX	CO_IDLEX	CO_STREX	NOx_RUNEX	NOx_IDLEX	NOx_STREX
2019	T6Instate	0.495736249	0.213796761	0	0	0	0	0	1.131171064	2.2260061	0	5.911659227	8.362455403	0.800557788
2019	T6Utility	0.03380758	0.161053882	0	0	0	0	0	0.124700591	4.67640168	0	2.044103892	12.85133507	1.467104228
2019	T7Single	0.895160713	2.189761351	0	0	0	0	0	1.798457286	16.10310252	0	9.095975386	25.96759055	2.127844962
2019	T7Tractor	0.879908573	1.983771813	0	0	0	0	0	1.854989461	16.90959054	0	8.642248647	25.69093297	2.505485848
2020	T6Instate	0.373394467	0.145217774	0	0	0	0	0	0.894315591	2.069109472	0	4.824129662	7.619974172	1.016259742
2020	T6Utility	0.029598111	0.160224806	0	0	0	0	0	0.118511704	4.865845925	0	1.82625384	11.91127671	1.555070831
2020	T7Single	0.600005237	1.788756892	0	0	0	0	0	1.2975974	19.31049448	0	7.582768674	23.26477742	3.313673264
2020	T7Tractor	0.626219442	1.804218093	0	0	0	0	0	1.460365182	19.49614351	0	7.581100051	23.28172897	3.375487701
2021	T6Instate	0.294072606	0.126846183	0	0	0	0	0	0.734414107	2.069379237	0	3.900622552	6.702239713	1.221600334
2021	T6Utility	0.00834676	0.154347931	0	0	0	0	0	0.085809808	5.741129953	0	0.994950071	7.8478412	1.946302958
2021	T7Single	0.48501014	1.796461376	0	0	0	0	0	1.137284463	20.04249044	0	6.516499512	22.67282546	3.516604753
2021	T7Tractor	0.490675012	1.808329009	0	0	0	0	0	1.266172057	20.14861855	0	6.828613256	22.71467434	3.557950001
2022	T6Instate	0.085589798	0.076992442	0	0	0	0	0	0.257554735	2.032587525	0	2.234352928	3.837175587	1.811969686
2022	T6Utility	0.008375334	0.154347931	0	0	0	0	0	0.086103562	5.741129953	0	0.996353763	7.8478412	1.949382935
2022	T7Single	0.203175351	1.803508791	0	0	0	0	0	0.664434564	21.62709474	0	4.727930654	21.41237312	3.986891072
2022	T7Tractor	0.24133321	1.812249517	0	0	0	0	0	0.84703857	21.21152301	0	5.747211175	21.80301479	3.87150825
2023	T6Instate	0.010774524	0.056160679	0	0	0	0	0	0.107702619	2.088954181	0	1.586007071	2.855497231	2.116825945
2023	T6Utility	0.008381739	0.154347931	0	0	0	0	0	0.086169416	5.741129953	0	0.992395474	7.8478412	1.952706188
2023	T7Single	0.050229844	1.794473471	0	0	0	0	0	0.426234994	23.20726366	0	3.550675051	18.99420187	4.429731006
2023	T7Tractor	0.049697018	1.807213784	0	0	0	0	0	0.525240716	23.41712014	0	4.483930217	18.92151657	4.477959211
2024	T6Instate	0.010988805	0.056160679	0	0	0	0	0	0.10984465	2.088954181	0	1.63781238	2.855497231	2.116506042
2024	T6Utility	0.008380804	0.154347931	0	0	0	0	0	0.086159798	5.741129953	0	0.987426562	7.8478412	1.955740458
2024	T7Single	0.048101921	1.79724169	0	0	0	0	0	0.42659832	23.25551614	0	3.507530268	18.97546312	4.444040348
2024	T7Tractor	0.048832376	1.808614577	0	0	0	0	0	0.529316656	23.44133905	0	4.515461637	18.90857573	4.487457461
2025	T6Instate	0.011179721	0.056160679	0	0	0	0	0	0.111753117	2.088954181	0	1.683859279	2.855497231	2.116225056
2025	T6Utility	0.008374478	0.154347931	0	0	0	0	0	0.086094769	5.741129953	0	0.981881691	7.8478412	1.95849122
2025	T7Single	0.046189664	1.79971264	0	0	0	0	0	0.427310127	23.29829352	0	3.473109429	18.95850639	4.456662902
2025	T7Tractor	0.048072115	1.809746473	0	0	0	0	0	0.532342491	23.46126017	0	4.538150458	18.89769737	4.495003785
2026	T6Instate	0.011330456	0.056160679	0	0	0	0	0	0.113259765	2.088954181	0	1.72013107	2.855497231	2.11635852
2026	T6Utility	0.00836431	0.154347931	0	0	0	0	0	0.085990234	5.741129953	0	0.97607285	7.8478412	1.960954238
2026	T7Single	0.044482715	1.801880483	0	0	0	0	0	0.427860137	23.33603581	0	3.442068961	18.94342142	4.467736363
2026	T7Tractor	0.047320451	1.81067876	0	0	0	0	0	0.533262087	23.4777672	0	4.53787951	18.88876218	4.501873154

		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
CalYr		CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	CH4_IDLEX	CH4_STREX	PM10_RUNEX	PM10_IDLEX	PM10_STREX	PM10_PMTW	PM10_PMBW	PM2_5_RUNEX	PM2_5_IDLEX	PM2_5_STREX	PM2_5_PMTW	PM2_5_PMBW	SOx_RUNEX	SOx_IDLEX	SOx_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX
2019	T6Instate	1116.927712	683.6293934	0	0.020225915	0.008722854	0	0.191813018	0.05781933	0	0.012000003	0.130340037	0.183515272	0.055318092	0	0.003000001	0.055860016	0.010552	0.006459	0	0.175565	0.107457	0
2019	T6Utility	1089.082675	1809.943633	0	0.001379341	0.006570958	0	0.009212872	0.006114828	0	0.012000003	0.130340037	0.008814327	0.005850303	0	0.003000001	0.055860016	0.010289	0.017099	0	0.171189	0.284498	0
2019	T7Single	1910.496432	3224.422917	0	0.036522334	0.089341716	0	0.225745472	0.155591226	0	0.03600001	0.061740018	0.215979823	0.148860418	0	0.009000003	0.026460008	0.018049	0.030463	0	0.300303	0.506834	0
2019	T7Tractor	1917.992461	3702.935739	0	0.03590005	0.080937395	0	0.184737187	0.088041582	0	0.03600001	0.061740018	0.176745538	0.084232942	0	0.009000003	0.026460008	0.01812	0.034984	0	0.301482	0.58205	0
2020	T6Instate	1100.517149	683.9741686	0	0.015234401	0.005924849	0	0.140678609	0.036488535	0	0.012000003	0.130340037	0.134592915	0.034910057	0	0.003000001	0.055860016	0.010397	0.006462	0	0.172986	0.107511	0
2020	T6Utility	1070.671497	1782.876034	0	0.001207596	0.006537132	0	0.00815056	0.005235326	0	0.012000003	0.130340037	0.007797971	0.005008848	0	0.003000001	0.055860016	0.010115	0.016844	0	0.168295	0.280243	0
2020	T7Single	1892.045773	3866.101195	0	0.024480064	0.072980835	0	0.141891411	0.039487867	0	0.03600001	0.061740018	0.135753252	0.03777964	0	0.009000003	0.026460008	0.017875	0.036525	0	0.297403	0.607697	0
2020	T7Tractor	1897.639274	4078.094288	0	0.025549597	0.073611648	0	0.128766567	0.027509301	0	0.03600001	0.061740018	0.123196182	0.026319261	0	0.009000003	0.026460008	0.017928	0.038528	0	0.298282	0.64102	0
2021	T6Instate	1078.583458	675.1151336	0	0.011998089	0.005175293	0	0.11330617	0.028928734	0	0.012000003	0.130340037	0.108404595	0.02767729	0	0.003000001	0.055860016	0.01019	0.006378	0	0.169538	0.106119	0
2021	T6Utility	1030.016006	1690.38047	0	0.000340546	0.006297357	0	0.003484552	0.001958878	0	0.012000003	0.130340037	0.003333812	0.001874138	0	0.003000001	0.055860016	0.009731	0.01597	0	0.161904	0.265704	0
2021	T7Single	1859.782655	3917.791879	0	0.019788293	0.073295176	0	0.115258911	0.032354446	0	0.03600001	0.061740018	0.110272862	0.030954807	0	0.009000003	0.026460008	0.01757	0.037013	0	0.292332	0.615822	0
2021	T7Tractor	1870.277629	4104.585987	0	0.020019418	0.073779372	0	0.102008802	0.022016293	0	0.03600001	0.061740018	0.097595947	0.021063878	0	0.009000003	0.026460008	0.017669	0.038778	0	0.293982	0.645184	0
2022	T6Instate	1024.452852	638.9091798	0	0.003492042	0.003141272	0	0.030280045	0.007840935	0	0.012000003	0.130340037	0.028970144	0.00750174	0	0.003000001	0.055860016	0.009679	0.006036	0	0.16103	0.100428	0
2022	T6Utility	1014.428686	1671.297376	0	0.000341712	0.006297357	0	0.003525491	0.001958878	0	0.012000003	0.130340037	0.00337298	0.001874138	0	0.003000001	0.055860016	0.009584	0.01579	0	0.159454	0.262705	0
2022	T7Single	1793.762646	4085.245936	0	0.008289504	0.073582708	0	0.044225082	0.013174374	0	0.03600001	0.061740018	0.042311924	0.012604456	0	0.009000003	0.026460008	0.016947	0.038595	0	0.281955	0.642144	0
2022	T7Tractor	1824.97875	4185.390728	0	0.009846335	0.073939328	0	0.04756277	0.010519421	0	0.03600001	0.061740018	0.045505225	0.010064356	0	0.009000003	0.026460008	0.017241	0.039541	0	0.286861	0.657885	0
2023	T6Instate	994.9399243	616.0193297	0	0.000439598	0.002291342	0	0.007652381	0.000712753	0	0.012000003	0.130340037	0.007321343	0.00068192	0	0.003000001	0.055860016	0.0094	0.00582	0	0.156391	0.09683	0
2023	T6Utility	996.5060631	1647.889566	0	0.000341973	0.006297357	0	0.003535316	0.001958878	0	0.012000003	0.130340037	0.00338238	0.001874138	0	0.003000001	0.055860016	0.009414	0.015568	0	0.156637	0.259025	0
2023	T7Single	1726.738313	3991.319169	0	0.002049365	0.07321407	0	0.018044295	0.007743168	0	0.03600001	0.061740018	0.017263706	0.007408202	0	0.009000003	0.026460008	0.016313	0.037708	0	0.271419	0.62738	0
2023	T7Tractor	1734.409176	4010.851011	0	0.002027626	0.073733871	0	0.024297695	0.007040875	0	0.03600001	0.061740018	0.023246588	0.00673629	0	0.009000003	0.026460008	0.016386	0.037893	0	0.272625	0.63045	0
2024	T6Instate	987.439252	613.9529557	0	0.000448341	0.002291342	0	0.00798652	0.000712753	0	0.012000003	0.130340037	0.007641026	0.00068192	0	0.003000001	0.055860016	0.009329	0.0058	0	0.155212	0.096505	0
2024	T6Utility	973.4064746	1616.66454	0	0.000341935	0.006297357	0	0.003534833	0.001958878	0	0.012000003	0.130340037	0.003381918	0.001874138	0	0.003000001	0.055860016	0.009196	0.015273	0	0.153006	0.254117	0
2024	T7Single	1704.129946	3953.553029	0	0.001962546	0.073327012	0	0.017628639	0.007589267	0	0.03600001	0.061740018	0.016866031	0.007260959	0	0.009000003	0.026460008	0.0161	0.037351	0	0.267865	0.621443	0
2024	T7Tractor	1714.503135	3973.395829	0	0.001992349	0.073791023	0	0.024512134	0.006991524	0	0.03600001	0.061740018	0.02345175	0.006689074	0	0.009000003	0.026460008	0.016198	0.037539	0	0.269496	0.624562	0
2025	T6Instate	979.2508258	611.7567789	0	0.00045613	0.002291342	0	0.008284188	0.000712753	0	0.012000003	0.130340037	0.007925817	0.00068192	0	0.003000001	0.055860016	0.009251	0.00578	0	0.153925	0.09616	0
2025	T6Utility	951.2099844	1585.973945	0	0.000341677	0.006297357	0	0.003526759	0.001958878	0	0.012000003	0.130340037	0.003374193	0.001874138	0	0.003000001	0.055860016	0.008987	0.014983	0	0.149517	0.249293	0
2025	T7Single	1682.269485	3913.501859	0	0.001884527	0.073427826	0	0.017290645	0.007456915	0	0.03600001	0.061740018	0.016542659	0.007134332	0	0.009000003	0.026460008	0.015893	0.036973	0	0.264429	0.615148	0
2025	T7Tractor	1695.578401	3934.479402	0	0.00196133	0.073837204	0	0.024659463	0.006952338	0	0.03600001	0.061740018	0.023592706	0.006651582	0	0.009000003	0.026460008	0.016019	0.037171	0	0.266521	0.618445	0
2026	T6Instate	970.4822801	609.5222922	0	0.00046228	0.002291342	0	0.008519696	0.000712753	0	0.012000003	0.130340037	0.008151138	0.00068192	0	0.003000001	0.055860016	0.009169	0.005758	0	0.152546	0.095808	0
2026	T6Utility	930.5140852	1556.494468	0	0.000341262	0.006297357	0	0.003513249	0.001958878	0	0.012000003	0.130340037	0.003361267	0.001874138	0	0.003000001	0.055860016	0.008791	0.014705	0	0.146264	0.244659	0
2026	T7Single	1660.702329	3873.132981	0	0.001814884	0.073516274	0	0.016987111	0.007338984	0	0.03600001	0.061740018	0.016252256	0.007021502	0	0.009000003	0.026460008	0.015689	0.036591	0	0.261039	0.608803	0
2026	T7Tractor	1675.431076	3892.073059	0	0.001930663	0.073875241	0	0.024647017	0.006920393	0	0.03600001	0.061740018	0.023580798	0.00662102	0	0.009000003	0.026460008	0.015829	0.03677	0	0.263354	0.61178	0

EMFAC2017 (v1.0.2) Emission Rates
Region Type: County
Region: MERCED
Calendar Year: 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

Region	CalYr	VehClass		MdlYr	Speed	Fuel	Population	VMT	Trips	Lookup
MERCED	2019	T6 instate heavy	T6Instate	Aggregated	Aggregated	DSL	451.114256	51850.14635	5205.795969	2019MERCEDT6Instate
MERCED	2019	T6 utility	T6Utility	Aggregated	Aggregated	DSL	39.64788023	662.5595323	455.9506226	2019MERCEDT6Utility
MERCED	2019	T7 single construction	T7Single	Aggregated	Aggregated	DSL	533.3878649	37090.37316	2411.425799	2019MERCEDT7Single
MERCED	2019	T7 tractor construction	T7Tractor	Aggregated	Aggregated	DSL	436.5207418	30596.29239	1973.493302	2019MERCEDT7Tractor
MERCED	2020	T6 instate heavy	T6Instate	Aggregated	Aggregated	DSL	437.0290006	49602.84786	5043.254075	2020MERCEDT6Instate
MERCED	2020	T6 utility	T6Utility	Aggregated	Aggregated	DSL	40.03093587	668.1356001	460.3557625	2020MERCEDT6Utility
MERCED	2020	T7 single construction	T7Single	Aggregated	Aggregated	DSL	572.7528692	40395.31168	2589.393453	2020MERCEDT7Single
MERCED	2020	T7 tractor construction	T7Tractor	Aggregated	Aggregated	DSL	474.1712267	33322.5757	2143.70968	2020MERCEDT7Tractor
MERCED	2021	T6 instate heavy	T6Instate	Aggregated	Aggregated	DSL	424.6205786	47716.5063	4900.062606	2021MERCEDT6Instate
MERCED	2021	T6 utility	T6Utility	Aggregated	Aggregated	DSL	40.03676373	673.7662425	460.4227829	2021MERCEDT6Utility
MERCED	2021	T7 single construction	T7Single	Aggregated	Aggregated	DSL	596.8316732	41965.14041	2698.25279	2021MERCEDT7Single
MERCED	2021	T7 tractor construction	T7Tractor	Aggregated	Aggregated	DSL	498.3898123	34617.54619	2253.200964	2021MERCEDT7Tractor
MERCED	2022	T6 instate heavy	T6Instate	Aggregated	Aggregated	DSL	393.5231271	46069.08574	4541.202327	2022MERCEDT6Instate
MERCED	2022	T6 utility	T6Utility	Aggregated	Aggregated	DSL	40.29653988	679.4615024	463.4102086	2022MERCEDT6Utility
MERCED	2022	T7 single construction	T7Single	Aggregated	Aggregated	DSL	623.3755401	43546.84508	2818.25658	2022MERCEDT7Single
MERCED	2022	T7 tractor construction	T7Tractor	Aggregated	Aggregated	DSL	520.7451241	35922.31329	2354.268459	2022MERCEDT7Tractor
MERCED	2023	T6 instate heavy	T6Instate	Aggregated	Aggregated	DSL	385.0919023	44549.77916	4443.907162	2023MERCEDT6Instate
MERCED	2023	T6 utility	T6Utility	Aggregated	Aggregated	DSL	40.88273523	685.192343	470.1514552	2023MERCEDT6Utility
MERCED	2023	T7 single construction	T7Single	Aggregated	Aggregated	DSL	650.489453	45140.4257	2940.837526	2023MERCEDT7Single
MERCED	2023	T7 tractor construction	T7Tractor	Aggregated	Aggregated	DSL	546.6340203	37236.877	2471.311153	2023MERCEDT7Tractor
MERCED	2024	T6 instate heavy	T6Instate	Aggregated	Aggregated	DSL	393.3627062	43290.78844	4539.351092	2024MERCEDT6Instate
MERCED	2024	T6 utility	T6Utility	Aggregated	Aggregated	DSL	41.38916816	690.9606688	475.9754338	2024MERCEDT6Utility
MERCED	2024	T7 single construction	T7Single	Aggregated	Aggregated	DSL	668.7699056	46745.88227	3023.482742	2024MERCEDT7Single
MERCED	2024	T7 tractor construction	T7Tractor	Aggregated	Aggregated	DSL	566.3127858	38561.23732	2560.278086	2024MERCEDT7Tractor
MERCED	2025	T6 instate heavy	T6Instate	Aggregated	Aggregated	DSL	404.5155183	42058.08575	4668.052997	2025MERCEDT6Instate
MERCED	2025	T6 utility	T6Utility	Aggregated	Aggregated	DSL	41.85269544	696.7096218	481.3059976	2025MERCEDT6Utility
MERCED	2025	T7 single construction	T7Single	Aggregated	Aggregated	DSL	678.7587714	47494.33482	3068.642016	2025MERCEDT7Single
MERCED	2025	T7 tractor construction	T7Tractor	Aggregated	Aggregated	DSL	577.299755	39178.64479	2609.949747	2025MERCEDT7Tractor
MERCED	2026	T6 instate heavy	T6Instate	Aggregated	Aggregated	DSL	413.8793994	40809.31789	4776.110887	2026MERCEDT6Instate
MERCED	2026	T6 utility	T6Utility	Aggregated	Aggregated	DSL	42.27952186	702.4205947	486.2145014	2026MERCEDT6Utility
MERCED	2026	T7 single construction	T7Single	Aggregated	Aggregated	DSL	685.3832993	48029.85817	3098.591249	2026MERCEDT7Single
MERCED	2026	T7 tractor construction	T7Tractor	Aggregated	Aggregated	DSL	582.7339647	39620.4044	2634.517598	2026MERCEDT7Tractor

	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lookup	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSOAK	ROG_RUNLOSS	ROG_RESTLOSS	ROG_DIURN	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTSOAK	TOG_RUNLOSS	TOG_RESTLOSS	TOG_DIURN
2019MERCEDT6Instate	0.435458407	0.187800665	0	0	0	0	0	0.495736249	0.213796761	0	0	0	0	0
2019MERCEDT6Utility	0.02969683	0.141470928	0	0	0	0	0	0.03380758	0.161053882	0	0	0	0	0
2019MERCEDT7Single	0.786315827	1.923502653	0	0	0	0	0	0.895160713	2.189761351	0	0	0	0	0
2019MERCEDT7Tractor	0.772918233	1.742559911	0	0	0	0	0	0.879908573	1.983771813	0	0	0	0	0
2020MERCEDT6Instate	0.327992477	0.127560373	0	0	0	0	0	0.373394467	0.145217774	0	0	0	0	0
2020MERCEDT6Utility	0.025999201	0.140742661	0	0	0	0	0	0.029598111	0.160224806	0	0	0	0	0
2020MERCEDT7Single	0.527049061	1.571257355	0	0	0	0	0	0.600005237	1.788756892	0	0	0	0	0
2020MERCEDT7Tractor	0.550075814	1.584838589	0	0	0	0	0	0.626219442	1.804218093	0	0	0	0	0
2021MERCEDT6Instate	0.258315563	0.111422631	0	0	0	0	0	0.294072606	0.126846183	0	0	0	0	0
2021MERCEDT6Utility	0.007331856	0.13558037	0	0	0	0	0	0.00834676	0.154347931	0	0	0	0	0
2021MERCEDT7Single	0.426036513	1.57802503	0	0	0	0	0	0.48501014	1.796461376	0	0	0	0	0
2021MERCEDT7Tractor	0.431012579	1.588449648	0	0	0	0	0	0.490675012	1.808329009	0	0	0	0	0
2022MERCEDT6Instate	0.075182715	0.067630733	0	0	0	0	0	0.085589798	0.076992442	0	0	0	0	0
2022MERCEDT6Utility	0.007356955	0.13558037	0	0	0	0	0	0.008375334	0.154347931	0	0	0	0	0
2022MERCEDT7Single	0.178470739	1.584215532	0	0	0	0	0	0.203175351	1.803508791	0	0	0	0	0
2022MERCEDT7Tractor	0.211988886	1.591893451	0	0	0	0	0	0.24133321	1.812249517	0	0	0	0	0
2023MERCEDT6Instate	0.009464422	0.049331958	0	0	0	0	0	0.010774524	0.056160679	0	0	0	0	0
2023MERCEDT6Utility	0.007362582	0.13558037	0	0	0	0	0	0.008381739	0.154347931	0	0	0	0	0
2023MERCEDT7Single	0.044122269	1.57627884	0	0	0	0	0	0.050229844	1.794473471	0	0	0	0	0
2023MERCEDT7Tractor	0.04365423	1.587470025	0	0	0	0	0	0.049697018	1.807213784	0	0	0	0	0
2024MERCEDT6Instate	0.009652648	0.049331958	0	0	0	0	0	0.010988805	0.056160679	0	0	0	0	0
2024MERCEDT6Utility	0.00736176	0.13558037	0	0	0	0	0	0.008380804	0.154347931	0	0	0	0	0
2024MERCEDT7Single	0.042253085	1.578710464	0	0	0	0	0	0.048101921	1.79724169	0	0	0	0	0
2024MERCEDT7Tractor	0.042894722	1.588700493	0	0	0	0	0	0.048832376	1.808614577	0	0	0	0	0
2025MERCEDT6Instate	0.00982035	0.049331958	0	0	0	0	0	0.011179721	0.056160679	0	0	0	0	0
2025MERCEDT6Utility	0.007356204	0.13558037	0	0	0	0	0	0.008374478	0.154347931	0	0	0	0	0
2025MERCEDT7Single	0.040573345	1.580880965	0	0	0	0	0	0.046189664	1.79971264	0	0	0	0	0
2025MERCEDT7Tractor	0.042226903	1.589694758	0	0	0	0	0	0.048072115	1.809746473	0	0	0	0	0
2026MERCEDT6Instate	0.009952757	0.049331958	0	0	0	0	0	0.011330456	0.056160679	0	0	0	0	0
2026MERCEDT6Utility	0.007347272	0.13558037	0	0	0	0	0	0.00836431	0.154347931	0	0	0	0	0
2026MERCEDT7Single	0.039073948	1.582785215	0	0	0	0	0	0.044482715	1.801880483	0	0	0	0	0
2026MERCEDT7Tractor	0.041566636	1.590513686	0	0	0	0	0	0.047320451	1.81067876	0	0	0	0	0

	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Lookup	CO_RUNEX	CO_IDLEX	CO_STREX	NOx_RUNEX	NOx_IDLEX	NOx_STREX	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	CH4_IDLEX	CH4_STREX	PM10_RUNEX	PM10_IDLEX
2019MERCEDT6Instate	1.131171064	2.2260061	0	5.911659227	8.362455403	0.800557788	1116.927712	683.6293934	0	0.020225915	0.008722854	0	0.191813018	0.05781933
2019MERCEDT6Utility	0.124700591	4.67640168	0	2.044103892	12.85133507	1.467104228	1089.082675	1809.943633	0	0.001379341	0.006570958	0	0.009212872	0.006114828
2019MERCEDT7Single	1.798457286	16.10310252	0	9.095975386	25.96759055	2.127844962	1910.496432	3224.422917	0	0.036522334	0.089341716	0	0.225745472	0.155591226
2019MERCEDT7Tractor	1.854989461	16.90959054	0	8.642248647	25.69093297	2.505485848	1917.992461	3702.935739	0	0.03590005	0.080937395	0	0.184737187	0.088041582
2020MERCEDT6Instate	0.894315591	2.069109472	0	4.824129662	7.619974172	1.016259742	1100.517149	683.9741686	0	0.015234401	0.005924849	0	0.140678609	0.036488535
2020MERCEDT6Utility	0.118511704	4.865845925	0	1.82625384	11.91127671	1.555070831	1070.671497	1782.876034	0	0.001207596	0.006537132	0	0.00815056	0.005235326
2020MERCEDT7Single	1.2975974	19.31049448	0	7.582768674	23.26477742	3.313673264	1892.045773	3866.101195	0	0.024480064	0.072980835	0	0.141891411	0.039487867
2020MERCEDT7Tractor	1.460365182	19.49614351	0	7.581100051	23.28172897	3.375487701	1897.639274	4078.094288	0	0.025549597	0.073611648	0	0.128766567	0.027509301
2021MERCEDT6Instate	0.734414107	2.069379237	0	3.900622552	6.702239713	1.221600334	1078.583458	675.1151336	0	0.011998089	0.005175293	0	0.11330617	0.028928734
2021MERCEDT6Utility	0.085809808	5.741129953	0	0.994950071	7.8478412	1.946302958	1030.016006	1690.38047	0	0.000340546	0.006297357	0	0.003484552	0.001958878
2021MERCEDT7Single	1.137284463	20.04249044	0	6.516499512	22.67282546	3.516604753	1859.782655	3917.791879	0	0.019788293	0.073295176	0	0.115258911	0.032354446
2021MERCEDT7Tractor	1.266172057	20.14861855	0	6.828613256	22.71467434	3.557950001	1870.277629	4104.585987	0	0.020019418	0.073779372	0	0.102008802	0.022016293
2022MERCEDT6Instate	0.257554735	2.032587525	0	2.234352928	3.837175587	1.811969686	1024.452852	638.9091798	0	0.003492042	0.003141272	0	0.030280045	0.007840935
2022MERCEDT6Utility	0.086103562	5.741129953	0	0.996353763	7.8478412	1.949382935	1014.428686	1671.297376	0	0.000341712	0.006297357	0	0.003525491	0.001958878
2022MERCEDT7Single	0.664434564	21.62709474	0	4.727930654	21.41237312	3.986891072	1793.762646	4085.245936	0	0.008289504	0.073582708	0	0.044225082	0.013174374
2022MERCEDT7Tractor	0.84703857	21.21152301	0	5.747211175	21.80301479	3.87150825	1824.97875	4185.390728	0	0.009846335	0.073939328	0	0.04756277	0.010519421
2023MERCEDT6Instate	0.107702619	2.088954181	0	1.586007071	2.855497231	2.116825945	994.9399243	616.0193297	0	0.000439598	0.002291342	0	0.007652381	0.000712753
2023MERCEDT6Utility	0.086169416	5.741129953	0	0.992395474	7.8478412	1.952706188	996.5060631	1647.889566	0	0.000341973	0.006297357	0	0.003535316	0.001958878
2023MERCEDT7Single	0.426234994	23.20726366	0	3.550675051	18.99420187	4.429731006	1726.738313	3991.319169	0	0.002049365	0.07321407	0	0.018044295	0.007743168
2023MERCEDT7Tractor	0.525240716	23.41712014	0	4.483930217	18.92151657	4.477959211	1734.409176	4010.851011	0	0.002027626	0.073733871	0	0.024297695	0.007040875
2024MERCEDT6Instate	0.10984465	2.088954181	0	1.63781238	2.855497231	2.116506042	987.439252	613.9529557	0	0.000448341	0.002291342	0	0.00798652	0.000712753
2024MERCEDT6Utility	0.086159798	5.741129953	0	0.987426562	7.8478412	1.955740458	973.4064746	1616.66454	0	0.000341935	0.006297357	0	0.003534833	0.001958878
2024MERCEDT7Single	0.42659832	23.25551614	0	3.507530268	18.97546312	4.444040348	1704.129946	3953.553029	0	0.001962546	0.073327012	0	0.017628639	0.007589267
2024MERCEDT7Tractor	0.529316656	23.44133905	0	4.515461637	18.90857573	4.487457461	1714.503135	3973.395829	0	0.001992349	0.073791023	0	0.024512134	0.006991524
2025MERCEDT6Instate	0.111753117	2.088954181	0	1.683859279	2.855497231	2.116225056	979.2508258	611.7567789	0	0.00045613	0.002291342	0	0.008284188	0.000712753
2025MERCEDT6Utility	0.086094769	5.741129953	0	0.981881691	7.8478412	1.95849122	951.2099844	1585.973945	0	0.000341677	0.006297357	0	0.003526759	0.001958878
2025MERCEDT7Single	0.427310127	23.29829352	0	3.473109429	18.95850639	4.456662902	1682.269485	3913.501859	0	0.001884527	0.073427826	0	0.017290645	0.007456915
2025MERCEDT7Tractor	0.532342491	23.46126017	0	4.538150458	18.89769737	4.495003785	1695.578401	3934.479402	0	0.00196133	0.073837204	0	0.024659463	0.006952338
2026MERCEDT6Instate	0.113259765	2.088954181	0	1.72013107	2.855497231	2.11635852	970.4822801	609.5222922	0	0.00046228	0.002291342	0	0.008519696	0.000712753
2026MERCEDT6Utility	0.085990234	5.741129953	0	0.97607285	7.8478412	1.960954238	930.5140852	1556.494468	0	0.000341262	0.006297357	0	0.003513249	0.001958878
2026MERCEDT7Single	0.427860137	23.33603581	0	3.442068961	18.94342142	4.467736363	1660.702329	3873.132981	0	0.001814884	0.073516274	0	0.016987111	0.007338984
2026MERCEDT7Tractor	0.533262087	23.4777672	0	4.53787951	18.88876218	4.501873154	1675.431076	3892.073059	0	0.001930663	0.073875241	0	0.024647017	0.006920393

	30	31	32	33	34	35	36	37	38	39	40	41	42	43
Lookup	PM10_STREX	PM10_PMTW	PM10_PMBW	PM2_5_RUNEX	PM2_5_IDLEX	PM2_5_STREX	PM2_5_PMTW	PM2_5_PMBW	SOx_RUNEX	SOx_IDLEX	SOx_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX
2019MERCEDT6Instate	0	0.012000003	0.130340037	0.183515272	0.055318092	0	0.003000001	0.055860016	0.010552	0.006459	0	0.175565	0.107457	0
2019MERCEDT6Utility	0	0.012000003	0.130340037	0.008814327	0.005850303	0	0.003000001	0.055860016	0.010289	0.017099	0	0.171189	0.284498	0
2019MERCEDT7Single	0	0.03600001	0.061740018	0.215979823	0.148860418	0	0.009000003	0.026460008	0.018049	0.030463	0	0.300303	0.506834	0
2019MERCEDT7Tractor	0	0.03600001	0.061740018	0.176745538	0.084232942	0	0.009000003	0.026460008	0.01812	0.034984	0	0.301482	0.58205	0
2020MERCEDT6Instate	0	0.012000003	0.130340037	0.134592915	0.034910057	0	0.003000001	0.055860016	0.010397	0.006462	0	0.172986	0.107511	0
2020MERCEDT6Utility	0	0.012000003	0.130340037	0.007797971	0.005008848	0	0.003000001	0.055860016	0.010115	0.016844	0	0.168295	0.280243	0
2020MERCEDT7Single	0	0.03600001	0.061740018	0.135753252	0.03777964	0	0.009000003	0.026460008	0.017875	0.036525	0	0.297403	0.607697	0
2020MERCEDT7Tractor	0	0.03600001	0.061740018	0.123196182	0.026319261	0	0.009000003	0.026460008	0.017928	0.038528	0	0.298282	0.64102	0
2021MERCEDT6Instate	0	0.012000003	0.130340037	0.108404595	0.02767729	0	0.003000001	0.055860016	0.01019	0.006378	0	0.169538	0.106119	0
2021MERCEDT6Utility	0	0.012000003	0.130340037	0.003333812	0.001874138	0	0.003000001	0.055860016	0.009731	0.01597	0	0.161904	0.265704	0
2021MERCEDT7Single	0	0.03600001	0.061740018	0.110272862	0.030954807	0	0.009000003	0.026460008	0.01757	0.037013	0	0.292332	0.615822	0
2021MERCEDT7Tractor	0	0.03600001	0.061740018	0.097595947	0.021063878	0	0.009000003	0.026460008	0.017669	0.038778	0	0.293982	0.645184	0
2022MERCEDT6Instate	0	0.012000003	0.130340037	0.028970144	0.00750174	0	0.003000001	0.055860016	0.009679	0.006036	0	0.16103	0.100428	0
2022MERCEDT6Utility	0	0.012000003	0.130340037	0.00337298	0.001874138	0	0.003000001	0.055860016	0.009584	0.01579	0	0.159454	0.262705	0
2022MERCEDT7Single	0	0.03600001	0.061740018	0.042311924	0.012604456	0	0.009000003	0.026460008	0.016947	0.038595	0	0.281955	0.642144	0
2022MERCEDT7Tractor	0	0.03600001	0.061740018	0.045505225	0.010064356	0	0.009000003	0.026460008	0.017241	0.039541	0	0.286861	0.657885	0
2023MERCEDT6Instate	0	0.012000003	0.130340037	0.007321343	0.00068192	0	0.003000001	0.055860016	0.0094	0.00582	0	0.156391	0.09683	0
2023MERCEDT6Utility	0	0.012000003	0.130340037	0.00338238	0.001874138	0	0.003000001	0.055860016	0.009414	0.015568	0	0.156637	0.259025	0
2023MERCEDT7Single	0	0.03600001	0.061740018	0.017263706	0.007408202	0	0.009000003	0.026460008	0.016313	0.037708	0	0.271419	0.62738	0
2023MERCEDT7Tractor	0	0.03600001	0.061740018	0.023246588	0.00673629	0	0.009000003	0.026460008	0.016386	0.037893	0	0.272625	0.63045	0
2024MERCEDT6Instate	0	0.012000003	0.130340037	0.007641026	0.00068192	0	0.003000001	0.055860016	0.009329	0.0058	0	0.155212	0.096505	0
2024MERCEDT6Utility	0	0.012000003	0.130340037	0.003381918	0.001874138	0	0.003000001	0.055860016	0.009196	0.015273	0	0.153006	0.254117	0
2024MERCEDT7Single	0	0.03600001	0.061740018	0.016866031	0.007260959	0	0.009000003	0.026460008	0.0161	0.037351	0	0.267865	0.621443	0
2024MERCEDT7Tractor	0	0.03600001	0.061740018	0.02345175	0.006689074	0	0.009000003	0.026460008	0.016198	0.037539	0	0.269496	0.624562	0
2025MERCEDT6Instate	0	0.012000003	0.130340037	0.007925817	0.00068192	0	0.003000001	0.055860016	0.009251	0.00578	0	0.153925	0.09616	0
2025MERCEDT6Utility	0	0.012000003	0.130340037	0.003374193	0.001874138	0	0.003000001	0.055860016	0.008987	0.014983	0	0.149517	0.249293	0
2025MERCEDT7Single	0	0.03600001	0.061740018	0.016542659	0.007134332	0	0.009000003	0.026460008	0.015893	0.036973	0	0.264429	0.615148	0
2025MERCEDT7Tractor	0	0.03600001	0.061740018	0.023592706	0.006651582	0	0.009000003	0.026460008	0.016019	0.037171	0	0.266521	0.618445	0
2026MERCEDT6Instate	0	0.012000003	0.130340037	0.008151138	0.00068192	0	0.003000001	0.055860016	0.009169	0.005758	0	0.152546	0.095808	0
2026MERCEDT6Utility	0	0.012000003	0.130340037	0.003361267	0.001874138	0	0.003000001	0.055860016	0.008791	0.014705	0	0.146264	0.244659	0
2026MERCEDT7Single	0	0.03600001	0.061740018	0.016252256	0.007021502	0	0.009000003	0.026460008	0.015689	0.036591	0	0.261039	0.608803	0
2026MERCEDT7Tractor	0	0.03600001	0.061740018	0.023580798	0.00662102	0	0.009000003	0.026460008	0.015829	0.03677	0	0.263354	0.61178	0

Re-entrained Unpaved Road Dust Emission Factors

Methodology

Calculation Methodology: USEPA AP-42,Unpaved Roads, Section 13.2.2, Revised November 2006

http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s0202.pdf

IAMF, from Western Regional Air Partnership (WRAP) Fugtive Dust Handbook, September 7, 2006:

http://www.wrapair.org/forums/dejf/fdh/content/FDHandbook_Rev_06.pdf

Equation 1a (unpaved roads dominated by trucks)

	Pollutant	k	s	W	a	b	E (g/mile)
Uncontrolled	PM10	1.50	6.9%	17.50	0.90	0.45	14.5
	PM.25	0.15	6.9%	17.50	0.90	0.45	1.4
With Natural	PM10						12.7
SJVAB	PM.25						1.3

(Columns k through b are headed "Variables".)

T6	14,001	33,000	23500.5
T7	33,001	60,000	46500.5
			35000.5
			17.50025

E = size-specific emission factor (g/VMT)	AP-42, Table 13.2.2-2
k = particle size multiplier (lb/VMT)	AP-42, Table 13.2.2-2
s = surface material silt content (%)	CalEEMod
W = vehicle weight (tons)	Avg. of T6 and T7
a	AP-42, Table 13.2.2-2
b	AP-42, Table 13.2.2-2
g to lb conversion	0.002204623

Natural Precipitation Reduction

Equation 2, Section 13.2.2, page 13.2.2-7, based on number of days with measurable (more than 0.254 mm [0.01 inch]) precipitation

Eext = E[(365 - P) / 365]

	SJVAB	reduction SJVAB
PM10	13	12%
PM2.5	1	12%

p= precipitation Days greater than 0.254mm (0.01 in) 45

Re-entrained Paved Road Dust Emission Factors

Methodology

Calculation Methodology: USEPA AP-42, Paved Roads, Section 13.2.1, Revised January 2011:
http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s0201.pdf
Avg vehicle weight and silt loading on Local Roads within Mendocino County
http://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9.pdf
Precipitation Days greater than 0.254mm (0.01 in)
https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7011

	sL	W	P	WRCC Code	
Merced County	0.32	2.4	45	49073	Turlock #2

Equation 2

Pollutant	Variables					NCAB EF (g per mi)
	k	sL	W	P	N	
PM_{10}	0.0022	0.32	2.4	45	365	0.83752
$PM_{2.5}$	0.00054	0.32	2.4	45	365	0.20557

E = particulate emission factor (grams of particulate matter/VMT)	
k = particle size multiplier (lb/VMT)	default from AP-42
sL = local roadway silt loading (g/m2)	ARB Section 7.9, Table 3
W = average weight of vehicles on the road (tons)	ARB Section 7.9, Table 3
P = number of wet days with at least 0.254mm of precipitation	from WRCC
N = number of days in the averaging period	annual days (365)
g to lb conversion	0.002204623

Appendix B
California Natural Diversity Database Species List

CALIFORNIA DEPARTMENT OF FISH and WILDLIFE RareFind

Query Summary:
Quad IS (Turlock (3712047))

Print Close

CNDDB Element Query Results

Scientific Name	Common Name	Taxonomic Group	Element Code	Total Occs	Returned Occs	Federal Status	State Status	Global Rank	State Rank	CA Rare Plant Rank	Other Status	Habitats
Agelaius tricolor	tricolored blackbird	Birds	ABPBXB0020	951	2	None	Candidate Endangered	G2G3	S1S2	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_EN-Endangered, NABCI_RWL-Red Watch List, USFWS_BCC-Birds of Conservation Concern	Freshwater marsh, Marsh & swamp, Swamp, Wetland
Anniella pulchra	northern California legless lizard	Reptiles	ARACC01020	333	2	None	None	G3	S3	null	CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	Chaparral, Coastal dunes, Coastal scrub
Bombus crotchii	Crotch bumble bee	Insects	IIHYM24480	234	1	None	None	G3G4	S1S2	null	null	null
Buteo swainsoni	Swainson's hawk	Birds	ABNKC19070	2465	1	None	Threatened	G5	S3	null	BLM_S-Sensitive, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Great Basin grassland, Riparian forest, Riparian woodland, Valley & foothill grassland
Dipodomys heermanni dixoni	Merced kangaroo rat	Mammals	AMAFD03062	21	1	None	None	G3G4T2T3	S2S3	null	null	Valley & foothill grassland
Lasiurus cinereus	hoary bat	Mammals	AMACC05030	238	1	None	None	G5	S4	null	IUCN_LC-Least Concern, WBWG_M-Medium Priority	Broadleaved upland forest, Cismontane woodland, Lower montane coniferous forest, North coast coniferous forest
Monardella leucocephala	Merced monardella	Dicots	PDLAM180C0	3	1	None	None	GH	SH	1A	null	Valley & foothill grassland
Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	Fish	AFCHA0209K	31	1	Threatened	None	G5T2Q	S2	null	AFS_TH-Threatened	Aquatic, Sacramento/San Joaquin flowing waters
Vireo bellii pusillus	least Bell's vireo	Birds	ABPBW01114	483	1	Endangered	Endangered	G5T2	S2	null	IUCN_NT-Near Threatened, NABCI_YWL-Yellow Watch List	Riparian forest, Riparian scrub, Riparian woodland

Appendix C

California Native Plant Society Inventory of Rare and Endangered Plants of California Species List

Inventory of Rare and Endangered Plants - 7th edition interface

CNPS California Native Plant Society

v7-18mar 3-19-18

Status: search results - Tue, Oct. 2, 2018, 17:34 ET b

{CNPS_LIST} =~ m/ 1A| 1B| 2| 3| 4/ and {QUADS_123} =~ m/423/ Search

Tip: Having trouble with a multi-word search? Try a single word, e.g. `ginger` or `cobra`.
[all tips and help.][search history]

Your Quad Selection: Turlock (423A) 3712047

Hits 1 to 2 of 2

Requests that specify topo quads will return only Lists 1-3.

To save selected records for later study, click the ADD button.

ADD checked items to Plant Press | check all | check none

Selections will appear in a new window.

open	save	hits	scientific	common	family	CNPS
	☑	1	**Eryngium racemosum**	Delta button-celery	Apiaceae	List 1B.1
	☑	1	**Monardella leucocephala**	Merced monardella	Lamiaceae	List 1A

No more hits.

powered by WODA

Appendix D
U.S. Fish and Wildlife Service Information for Planning and Conservation Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: October 02, 2018
Consultation Code: 08ESMF00-2019-SLI-0019
Event Code: 08ESMF00-2019-E-00054
Project Name: Hilmar Cheese Company Facility Expansion

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2019-SLI-0019

Event Code: 08ESMF00-2019-E-00054

Project Name: Hilmar Cheese Company Facility Expansion

Project Type: DEVELOPMENT

Project Description: Expansion of existing facilities

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/37.423265554997016N120.85216336473027W

Counties: Merced, CA

Endangered Species Act Species

There is a total of 9 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Fresno Kangaroo Rat *Dipodomys nitratoides exilis* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5150 Species survey guidelines: https://ecos.fws.gov/ipac/guideline/survey/population/37/office/11420.pdf	Endangered

Reptiles

NAME	STATUS
Blunt-nosed Leopard Lizard *Gambelia silus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/625	Endangered
Giant Garter Snake *Thamnophis gigas* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7850 Habitat assessment guidelines: https://ecos.fws.gov/ipac/guideline/assessment/population/436/office/11420.pdf	Threatened

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Appendix E
Cultural Resources Inventory Report

CULTURAL RESOURCES INVENTORY REPORT

HILMAR CHEESE MAJOR MODIFICATION TO CONDITIONAL USE PERMIT 08-011

PREPARED FOR:

Merced County
Planning and Community Development Department
2222 "M" Street
Merced, CA 95340
Contact: Brian Guerrero
209.385.7654

PREPARED BY:

ICF
201 Mission Street, Suite 1500
San Francisco, CA 94105
Contact: Lily Arias
415.677.7132

September 2018

ICF. 2018. *Cultural Resources Inventory Report, Hilmar Cheese Major Modification to Conditional Use Permit 08-011*. September. (ICF 482.18.) Hilmar, CA. Prepared for Merced County, Merced, CA.

Contents

Tables and Figures

Acronyms and Abbreviations

Error! No table of figures entries found.

Chapter 1
Introduction

Project Description

The project site has approval for an existing Conditional Use Permit (CUP) 08-011 approved by Merced County in 2008. The CUP allows HCC to conduct a variety of conditional uses on the site and to expand the facility in a manner consistent with plans reviewed in 2008 by the County. In January 2012, an IS/MND was prepared that identified the potential impacts associated with a major modification to CUP 08-011 (Major Modification No. MM11-014). This major modification included the following components:

- Phase I administrative office building (53,000 square feet[sf])
- Phase I cold storage expansion (60,000 sf)
- Phase I cream process building (4,000 sf)
- Phase I renewable energy tanks (2) (51,000 sf)
- Phase I solar energy production facility/new storm water retention pond (217,800 sf)
- Phase I relocated storm water retention pond (3.4 acres)
- Phase I parking lot (72,000 sf)
- Phase II administrative office building (53,000 sf)
- Phase II parking lot (56,000 sf)

All of these improvements, which were approved under Major Modification No. MM11-014 have been constructed except for (1) the 60,000 Phase I cold storage expansion and (2) one of the phase i renewable energy tanks.

The project consists of Major Modification CUP 08-011. The improvements that would be a part of the project are in addition to the improvements approved in Major Modification No. MM11-014. The project would include one change to an improvement approved under the Major Modification No. MM11-014. The cold storage facility that was approved for Phase I at 60,000 sf has been modified by the project to include an additional 61,000 square feet. In addition, the project would include a Phase II cold storage facility that is 81,000 sf.

The project site has been used for agricultural production and for processing cheese and other dairy products. The project would result in the construction of approximately 202,100 sf of new buildings and structures and approximately 204,100 sf of new asphalt. A summary of these new buildings is provided in Table 2-1. These buildings will be constructed in two phases over a five-year period.

Project Location

The project site is located within the existing HCC facility and vacant agricultural land in the Hilmar area of unincorporated Merced County, as shown on Figure 1 and Figure 2 (Appendix A). The closest intersection to the project site is the intersection of Lander Avenue (State Route [SR] 165) and August Avenue. The project site would be included within the existing HCC facility (approximately 40.2 acres) and vacant agricultural land (approximately 11.4 acres). All of the project facilities would be located west of Lander Avenue and north of August Avenue.

Site Background

HCC, established in 1984, is a privately held corporation owned by 11 dairy families. Production began in 1985. HCC produces a variety of cheeses, including Cheddar, Monterey Jack, Pepper Jack, Colby, and Colby-Jack, from its two facilities in California and Texas. The project site has approval for an existing CUP #08-011 approved by Merced County in 2008. The CUP allows HCC to conduct a variety of conditional uses on the site and to expand the facility in a manner consistent with plans reviewed in 2008 by the County.

Existing Setting

Existing Site Conditions and Surrounding Land Uses

The project site includes the existing Hilmar Cheese Company processing facility located at the northwest corner of Lander Avenue and August Avenue and the existing agricultural land located at the southwestern corner of Lander Avenue and Oslo Road. The current HCC processing facilities consist of milk receiving areas, three cheese processing plants, a protein plant, a lactose plant, labs and office buildings, a visitor/education center, a wastewater treatment facility, and utilities buildings, located primarily at the northwest corner of August Avenue and Lander Avenue. The existing structures are up to approximately 85 feet in height.

HCC operates an onsite water reclamation facility, located south of Oslo Road on the northwest portion of the project site. The facility includes a maintenance shop, wells, blower rooms, evaporator, and a water reclamation building with boiler room. Nearly all of the water used in the facility is reclaimed for use as irrigation water and used on local farmland or internally for non-food production applications. HCC also utilizes a private septic system for wastewater generated from the existing restrooms in the office building. HCC operates in full compliance with all applicable water quality requirements and the facility is designed to be fully protective of groundwater and surface water resources.

The project involves improvements to Assessor's Parcel Numbers (APNs) 045-140-086, 045-140-087, and 045-140-088. The site is zoned as A-1-General Agriculture, and the General Plan land use designation is Agriculture.

The project site is located in an unincorporated rural area, surrounded by commercial, agricultural and residential land uses. Adjacent land uses include:

- Commercial (Rick's Saddle Shop) and agricultural uses to the east.

- Agricultural and residential uses to the north.
- Single family residential land uses and agricultural land to the south.
- Agricultural uses to the west.

Proposed Project

Description of the Proposed Project

The project consists of an application from HCC to Merced County for a modification to existing CUP 08-011 to allow for the expansion of their existing facility. The project consists of three new or expanded buildings with a maximum height of approximately 40 feet. The project components are shown in Figure 3 (Appendix A).

HCC is proposing the following major modifications to their facility.

- Cold storage facility in two phases. Phase I would add 61,000 sf to the previously approved 60,000 sf for a total of 121,000 sf. Phase I would also include an approximately 9,400 sf dock. Phase II would add 81,000 sf. Phase II would also include an approximately 8,000 sf dock.
- Additional asphalt in two phases. Phase I would add approximately 114,000 sf of asphalt around the proposed cold storage facility. Phase II would add approximately 90,100 sf of asphalt around the proposed cold storage facility.
- Warehouse facility in two phases. Phase I would add approximately 6,900 sf and Phase II would add approximately 6,800 sf.
- Re-packaging facilities in two phases. Phase I would add approximately 24,000 sf and Phase II would add approximately 5,000 sf. There would be an area next to the Phase I Re-packaging facility that would be stabilized with gravel and that would be the location of a leach field to service the new restrooms proposed for the Phase 1 Re-packaging facility.

Proposed structural improvements are summarized in Table 2-1. The proposed structures would be designed to be architecturally consistent with the style of the existing HCC facility.

Table 2-1. Summary of Proposed Structural Additions on the Project Site

Proposed Additions	Area (sf)	Site Location
Phase I Construction		
Cold storage facility	61,000	Vacant agricultural parcel
Dock (near the cold storage facility)	9,400	Vacant agricultural parcel
Asphalt	114,000	Vacant agricultural parcel
Warehouse facility	6,900	Existing HCC site, north of the Existing Visitor Center
Re-packaging facility	24,000	Vacant agricultural parcel
Total	215,300	--

Proposed Additions	Area (sf)	Site Location
Phase II Construction		
Cold storage facility	81,000	Vacant agricultural parcel
Dock (near the cold storage facility)	8,000	Vacant agricultural parcel
Asphalt	90,100	Vacant agricultural parcel
Warehouse facility	6,800	Existing HCC site, north of the Existing Visitor Center
Re-packaging facility	5,000	Existing HCC site, directly east of loading docks in existing building, south of the vacant agricultural parcel.
Total	190,900	--

Construction

The project would result in the construction of new buildings and structures. Construction of the project is anticipated to begin in March 2019 and would take approximately 5 years. Construction activities would span two phases (see Table 2-2).

Building construction would produce approximately 3,900 cubic yards of earth during Phase I and 2,200 cubic yards of earth during Phase II of the project. The project would require 3,900 cubic yards of fill during Phase I of the project and 2,200 cubic yards of fill during Phase II of the project. Because the amount of fill required for construction would equal the amount produced, no soil is anticipated to be exported offsite. In addition, 383 cy of demolished materials, including asphalt, related to site clearing for Phase I of the cold storage facility, and Phases 1 and 2 of the warehouse facility would be exported. A summary of the construction phases, construction duration, number of workers per day, and the total amount of demolished or imported/exported materials is included in Table 2-2.

Table 2-2. Demolition and Construction Activities

Construction Phase	Activity Duration (days)	Schedule	Maximum Number of Workers per day	Volume of Demolition Materials (cy)
Phase I Construction				
Cold storage facility, asphalt, and repackaging facility				
Demolition/Site Clearing	5	3/1/19 – 3/7/19	3	222
Site Excavation	8	3/8/19 – 3/19/19	3	
Site Grading	10	3/18/19 – 3/29/19	6	
Building Construction	120	4/4/2019 - 9/18/2019	30	
Architectural Coating	30	8/1/19 – 9/11/19	5	
Paving	7	9/1/19 – 9/10/19	4	
Warehouse facility				
Demolition/Site Clearing	10	9/1/19 – 9/13/19	2	100
Site Excavation	10	9/15/19 – 9/27/19	3	
Site Grading	10	10/1/19 – 10/14/19	6	

Construction Phase	Activity Duration (days)	Schedule	Maximum Number of Workers per day	Volume of Demolition Materials (cy)
Building Construction	90	10/15/19 – 2/17/20	15	
Paving	7	1/15/20 – 1/23/20	4	
Phase II Construction				
Cold storage facility, asphalt, and repackaging facility				
Demolition/Site Clearing	5	1/1/24 – 1/1/24	3	
Site Excavation	8	1/8/24 – 1/8/24	3	
Site Grading	10	1/18/24 – 1/18/24	6	
Building Construction	120	2/4/24 – 2/4/24	30	
Architectural Coating	30	6/2/24 – 6/2/24	5	
Paving	7	7/3/24 – 7/3/24	4	
Warehouse facility				
Demolition/Site Clearing	10	6/1/24 – 6/1/24	2	61
Site Excavation	10	6/15/24 – 6/15/24	3	
Site Grading	10	7/1/24 – 7/1/24	6	
Building Construction	90	7/15/24 – 7/15/24	15	
Paving	7	10/15/24 – 10/15/24	4	

Construction Equipment

Construction equipment required during construction is summarized in Table 2-3.

Table 2-3. Summary of Construction Equipment

Construction Phase	Activity Duration (days)
Phase I Construction	
Cold storage facility, asphalt, and re-packaging facility	
Demolition/Site Clearing	1 Front loader 1 ten yard dump truck
Site Excavation	1 tractor, loader, or backhoe 1 water truck
Site Grading	1 grader 1 rubber tire blade 1 belly scraper 1 tractor, loader, or backhoe 1 water truck
Building Construction	1 reach lift 1 skip loader 1 concrete pump

	1 crane
Architectural Coating	1 airless paint pump
Paving	1 tractor
	1 paving machine
Warehouse facility	
Demolition/Site Clearing	1 Front loader
	1 ten yard dump truck
Site Excavation	1 tractor, loader, or backhoe
	1 water truck
Site Grading	1 grader
	1 rubber tire blade
	1 belly scraper
	1 tractor, loader, or backhoe
	1 water truck
Building Construction	1 reach lift
	1 skip loader
	1 concrete pump
	1 crane
Paving	1 tractor
	1 paving machine
Phase II Construction	
Cold storage facility, asphalt, and re-packaging facility	
Demolition/Site Clearing	1 Front loader
	1 ten yard dump truck
Site Excavation	1 tractor, loader, or backhoe
	1 water truck
Site Grading	1 grader
	1 rubber tire blade
	1 belly scraper
	1 tractor, loader, or backhoe
	1 water truck
Building Construction	1 reach lift
	1 skip loader
	1 concrete pump
	1 crane
Architectural Coating	1 airless paint pump
Paving	1 tractor
	1 paving machine
Warehouse facility	
Demolition/Site Clearing	1 Front loader
	1 ten yard dump truck
Site Excavation	1 tractor, loader, or backhoe
	1 water truck
Site Grading	1 grader
	1 rubber tire blade
	1 belly scraper
	1 tractor, loader, or backhoe
	1 water truck

Building Construction	1 reach lift 1 skip loader 1 concrete pump 1 crane
Paving	1 tractor 1 paving machine

Schedule, Lighting, and Construction Hours

The project site would be fenced during construction, with access limited to construction personnel and other authorized personnel only. All construction staging would occur on the project site. Nighttime lighting onsite during construction would be limited, providing only lighting that is necessary for safety and security. Construction activities would be limited to daytime hours between 7 a.m. and 6 p.m., consistent with the County's Noise Ordinance.

Relocation of Power Lines

Construction of the project would also require the relocation of existing power lines that are located around the vacant agricultural parcel. In order to construct and operate the cold storage facility and re-packaging facility, the existing power lines would need to be relocated further north of the existing cold storage building. New poles and power lines would need to be installed north of the new planned asphalt paving on the north side of the Phase II cold storage facility. Additional poles and power lines would be installed along the west side of the new cold storage facility and be connected to the existing power lines at the northwest corner of the existing cold storage facility. All power line installation and modification would be scheduled at a time to minimize downtime for the Hilmar Cheese Company production and operation and would not interrupt service to other Turlock Irrigation District (TID) customers.

Operation

Operational Employees

Currently Hilmar Cheese Company produces approximately 1.5 million pounds of cheese per day for use in food service, ingredients, retail and restaurant trade with the current processing facilities. The project would not result in increased production and the amount of production would remain at the current levels. Although the new project facilities would not trigger any additional cheese production growth, new employees would be needed for operation. As shown in Table 2-4, the project would generate approximately 66 employees during Phase I and 22 employees during Phase II of the project.

Table 2-4. Employees Generated by the Project

Project Facility	Number of Employees
Phase I	
Cold storage facility	16
Re-packaging facility	40
Warehouse facility	10
Total	***66***
Phase II	

Project Facility	Number of Employees
Cold storage facility	10
Re-packaging facility	6
Warehouse facility	6
Total	***22***

Operational Truck Trips

Operation of the project would result in one 21-mile daily truck trip. This truck trip would be required to meet additional equipment and material delivery needs.

Operational Water Use and Generation of Sewage, Stormwater, and Solid Waste

Operation of Phase I of the project would require approximately 28,509 gallons of water per day and operation of Phase II of the project would require approximately 21,540 gallons of water per day. Overall the proposed facilities would generate approximately 770 gallons per day of sewage, approximately 49,223 cubic feet of stormwater, and approximately 22 cubic yards of solid waste.

Regulatory Context

California Environmental Quality Act

CEQA Guidelines Section 15064.5 provides specific guidance for determining the significance of impacts on historic and unique archaeological resources. Under CEQA these resources are called "historical resources" whether they are of historic or prehistoric age. California Public Resources Code (Public Res. Code) Section 21084.1 defines historical resources as those listed, or eligible for listing, in the CRHR, or those listed in the historical register of a local jurisdiction (county or city). NRHP-listed "historic properties" located in California are considered historical resources for the purposes of CEQA and are also listed in the CRHR. The CRHR criteria for listing such resources are based on, and are very similar to, the NRHP criteria. Public Res Code Section 21083.2 and CEQA Guidelines Section 15064.5(c) provide further definitions and guidance for archaeological sites and their treatment.

Section 15064.5 of the CEQA Guidelines also provides a process and procedures for addressing the existence of, or probable likelihood of, Native American human remains, as well as the unexpected discovery of any human remains within the area of potential effect (APE). This includes consultations with appropriate Native American tribes.

Guidelines for the implementation of CEQA define procedures, types of activities, persons, and public agencies required to comply with CEQA. Section 15064.5(b) defines impacts that would "cause a substantial adverse change in the significance of an historical resource" are significant impacts on the environment. Substantial adverse changes include physical changes to both the historical resource and its immediate surroundings.

Public Res Code Section 21081.6, entitled Mitigation Monitoring Compliance and Reporting, requires that the CEQA lead agency demonstrate project compliance with mitigation measures developed during the environmental impact review process.

California Register of Historical Resources

Public Res. Code Section 5024.1 establishes the CRHR. The register lists all California properties considered to be significant historical resources. The CRHR also includes all properties listed or determined eligible for listing in the NRHP, including properties evaluated under Section 106. The criteria for listing are similar to those of the NRHP. The CRHR regulations govern the nomination of resources to the CRHR (14 Cal. Code Regs. 4850). The regulations set forth the criteria for eligibility as well as guidelines for assessing historical integrity and resources that have special considerations.

California Public Resources Code Section 5097.98 and 5097.99

Public Res. Code Section 5097.98 discusses the procedures that need to be followed upon the discovery of Native American human remains. The NAHC, upon notification of the discovery of human remains by the coroner, is required to notify those persons it believes to be most likely descended from the deceased Native American. It enables the descendant to inspect the site of the discovery of the Native American human remains and to recommend to the land owner (or person responsible for the excavation) means of treating, with dignity, the human remains and any associated grave goods. Furthermore, under Section 5097.99, it is a felony to obtain or possess Native American artifacts or human remains taken from a grave or cairn and sets penalties for these actions. Section 5097.99 also mandates that it is the policy of California to repatriate Native American remains and associated grave goods.

California Health and Safety Code Section 7050.5(b)

This code established that any person who knowingly mutilates, disinters, wantonly disturbs, or willfully removes any human remains in or from any location without authority of the law is guilty of a misdemeanor. It further defines procedures for the discovery and treatment of Native American remains.

Assembly Bill 52

This bill provides a new definition of a resource, tribal cultural resource, which is separate from the definitions for "historical resource" and "archaeological resource." Tribal cultural resources are defined as sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe. Assembly Bill (AB) 52 also provides both federal and non-federally recognized tribes the right to formal consultation with project lead agencies.

Chapter 2
Environmental and Cultural Context

Environment

The study area is located in the San Joaquin Valley watershed and has a Mediterranean subtropical climate with cool, wet winters and hot, dry summers. Summer high temperatures often exceed 100° Fahrenheit (F), averaging in the low 90°s in the northern valley and high 90°s in the south. The average annual rainfall is 15 inches, with the majority falling between November and April. The study area is situated east of the Diablo Range (South Coast Ranges) foothills at elevations of 153–177 meters (95–110 feet) above mean sea level (U.S. Geological Survey 1949). Local geology consists of Holocene Era basin deposits, sediments that were deposited during flood stages of major streams (Rogers 1966).

Approximately 76% of the project site is underlain with Delhi sand and approximately 24% of the project site is underlain with Hilmar loamy sand. Delhi sand soils are moderately deep and deep over hardpan. Hilmar loamy sand are expansive (shrink-swell) soils, fine-grained (generally high plasticity clays) that can undergo a significant increase and decrease in volume with an increase/decrease in water content (U.S. Department of Agriculture Web Soil Survey).

According to the California Department of Water Resources (DWR) Groundwater Bulletin 118, the proposed project is located in the San Joaquin Valley Groundwater Basin, Turlock Subbasin (Basin Number 5-22.03) (California Department of Water Resources 2006). The proposed project is located approximately 4 miles north of the Merced River and 7.5 miles east of the San Joaquin River. The

Merced River flows from east to west prior to its confluence with the San Joaquin River approximately 8.3 miles southwest of the proposed project. Today the area surrounding the proposed project is dominated by agricultural land and irrigation canals. There are no natural drainages within the project limits. Prior to agricultural development and water conveyance the study area probably consisted of tule marshes of various sizes and valley grassland toward the drier, more elevated margins.

Prehistory

Although few archaeological sites demonstrate evidence of human occupation of the San Joaquin Valley during the late Pleistocene and early Holocene epochs (12,000–6000 B.C.), this is likely a product of the archaeological record itself rather than lack of human habitation in the valley. Most Pleistocene- and Holocene-epoch archaeological sites are deeply buried in accumulated gravels and silts or have eroded away. The earliest sites in the San Joaquin Valley are believed to be the Farmington Complex sites in San Joaquin and Stanislaus Counties (Riddell 1949; Treganza 1952), the Tranquility site in Fresno County (Riddell 1949; Treganza 1952), and the Witt site in Kings County (Riddell and Olsen 1969; Wallace 1991). Archaeologists have identified fluted projectile points on the margin of Tulare Lake. The points, which are morphologically similar to Clovis points, may date as early as 11,000–12,000 years ago (Wallace 1991). The closest discovery of fluted projectile points to Los Banos was made at CA-Mer-215, in the vicinity of the City of Newman (Dillon 2002).

The closest-available prehistoric chronology to the study area comes from the western side of the San Joaquin Valley as a result of the excavation of several sites discovered within reservoir study areas. The chronology is most clearly presented by Olsen and Payen (1969) and Moratto (1984). This chronology has not been modified significantly by archaeological research at the Los Banos Grandes Reservoir (Mikkelsen and Hildebrandt 1990).

The Positas Complex (5200-4600 B.P.) is characterized by small, shaped mortars; cylindrical pestles; millingstones; perforated flat cobbles; small flake scrapers; handstones; and spire-lopped *Olivella* beads. The perforated cobbles resemble the cog-stones documented at many southern Californian archaeological sites, prompting some researchers to posit a cultural relationship between the Positas Complex and southern Californian cultures. To date, archaeologists have not identified burials or structures associated with the Positas Complex (Mikkelsen and Hildebrandt 1990).

The Pacheco Complex (4600-1600 B.P.) consists of two subcomplexes: Pacheco Complex A (3600-1600 B.P.) and Pacheco Complex B (4600–3600 B.P.). Pacheco Complex B is characterized by foliate bifaces, rectangular shell ornaments, flexed burials, and thick rectangular *Olivella* beads. Sites attributed to Pacheco Complex A exhibit spire-ground *Olivella* beads, perforated canine teeth, bone awls, whistles, grass saws, large stemmed and side-notched points, flexed burials, millingstones, mortars, and pestles. Domestic structure remnants attributed to Pacheco Complex A were probably circular in outline and 10–12 feet in diameter (Mikkelsen and Hildebrandt 1990; Olsen and Payen 1969).

The Gonzaga Complex (1600–1000 B.P.) is characterized by extended and flexed burials; bowl mortars; shaped pestles; squared and tapered-stem points; few bone awls; distinctive shell ornaments; and thin rectangular, split-punched, and oval *Olivella* beads (Mikkelsen and Hildebrandt 1990; Olsen and Payen 1969). Projectile points are rare in comparison to the Pacheco Complex and are predominantly made from silicate stones. Archaeologists have reported a few fragmentary serrated projectile points fashioned from obsidian. Architectural features from the Gonzaga Complex are larger than those reported from earlier complexes. Archaeologists hypothesize that the Gonzaga Complex marks the arrival of the Yokuts in the San Joaquin Valley (Mikkelsen and Hildebrandt 1990).

The Panoche Complex (400–200 B.P.) is recognized by large circular structures (pits), flexed burials and primary and secondary cremations, varied mortars and pestles, bone awls, whistles, small sidenotched points, clamshell disk beads, and other bead types. The Panoche Complex appears to represent Yokuts occupation of the valley (Mikkelsen and Hildebrandt 1990; Olsen and Payen1969).

Ethnography

Ethnographers and archaeologists traditionally identify the study area as within the territory of the Northern Valley Yokuts (Kroeber 1976; Wallace 1978). The study area is located in the territory of the Northern Valley Yokuts (Wallace 1978: Figure 1). Northern Valley Yokuts territory is bounded roughly by the crest of the Diablo Range on the west and the foothills of the Sierra Nevada on the east. The southern boundary is approximately where the San Joaquin River bends northward, and the northern boundary is roughly halfway between the Calaveras and Mokelumne Rivers. The Yokuts may have been fairly recent arrivals in the San Joaquin Valley, perhaps being pushed out of the foothills about 500 years ago (Wallace 1978.) Ethnographic and archaeological sources do not indicate the presence of known village sites in the study area.

Population estimates for the Northern Valley Yokuts vary from 11,000 to more than 31,000 individuals. Populations were concentrated along waterways and on the more hospitable east side of the San Joaquin River. Clusters of villages made up tribelets that were governed by headmen. The number of tribelets estimated to exist at contact is 30 to 40; each tribe spoke their own dialect of the Yokuts language (Wallace 1978).

Principal settlements were located on the tops of low mounds, on or near the banks of the larger watercourses. Settlements were composed of single-family dwellings, sweathouses, and ceremonial assembly chambers. Dwellings were small and lightly constructed, semi-subterranean, and oval. The public structures were large and earth-covered. Sedentism was fostered by the abundance of riverine resources in the area (Wallace 1978).

Subsistence among the Northern Valley Yokuts revolved around the waterways and marshes of the lower San Joaquin Valley. Fishing with dragnets, harpoons, and hook and line yielded salmon, white sturgeon, river perch, and other species of edible fish. Waterfowl and small game that were attracted to the riverine environment also provided sources of protein. The contribution of big game to the diet was probably minimal. Vegetal staples included acorns, tule roots, and seeds (Wallace 1978).

Goods not available locally were obtained through trade. Paiute and Shoshone groups on the eastern side of the Sierra were suppliers of obsidian. Shell beads and mussels were obtained from Salinan and Costanoan groups. Trading relations with Miwok groups to the north yielded baskets, and bows and arrows. A network of trails facilitated overland transport, and tule rafts were used for water transport (Wallace 1978).

Most Northern Valley Yokuts groups had their first contact with Europeans in the early 1800s, when the Spanish began exploring the Sacramento–San Joaquin river delta. The gradual erosion of Yokuts culture began during the mission period when escaped neophytes brought foreign (European and Native American) habits and tastes back to their native culture, and Spanish expeditions to recover them followed. Epidemics of European diseases played a large role in the decimation of the native population. The secularization of the missions and the release of neophytes set tribal and territorial adjustments in motion. Former neophytes returned to Native American groups other than their group of origin, and a number of polyglot “tribes” were formed. The final blow to the aboriginal population came with the Gold Rush and its aftermath. In the rush to the mines, native populations were pushed out or exterminated. Many natives became dependent on the Gold Rush economy for their subsistence, drastically changing their way of life. Ex-miners who settled in the fertile valley applied further pressure to the native groups and altered the landforms and waterways of the valley. Many Yokuts resorted to wage labor on farms and ranches. Others were settled on land set aside for them on the Fresno and Tule River Reserves (Wallace 1978).

Regional History

Spanish Period (1806–1822) and Mexican Periods (1822–1848)

The first Spanish expedition to enter the San Joaquin Valley did so in 1806 under the leadership of Gabriel Moraga. Searching for Native Americans who had purportedly taken horses from Mission San Juan Bautista as well as sites for new missions, Moraga was accompanied by Father Pedro Munoz and an escort of 25 soldiers.

Americans also began transecting the region during the Mexican period. In both 1827 and 1828, Jedediah Smith entered the San Joaquin Valley via Tejon Pass and trapped beaver along the San Joaquin, Kings, and numerous other rivers and streams that flowed down from the Sierra. Smith was followed by fellow trappers such as Peter Ogden, Ewing Young, Kit Carson, and Joseph Walker, as well as John Fremont, who crossed the San Joaquin River on his way south through the Central Valley in 1844. During the same period, Mexican ranchers began to settle in the San Joaquin Valley. Throughout the Spanish era the land of Alta California remained under sovereign domain; however, under Mexican rule the government systematically began granting large parcels of land to individuals who, to a great extent, engaged in the cattle and tallow trade.

Although grazing livestock from the ranchos, as well as the paths of the early-nineteenth century Spanish expeditions and, later, American fur trappers and explorers, may have traversed the boundaries of the area, except for the unconfirmed structures on Rancho Rio del San Joaquin, no potential historical archaeological remains or features associated with the Spanish or Mexican periods are known to exist within or immediately adjacent to the project site (Kyle et. al. 2002).

American Period (1848–present)

The following information was referenced from Beck and Hassee 1974, Pisani 1984, and Caltrans and JRP 2000: 73-75, unless otherwise noted.

On January 24, 1848, John Marshall discovered gold in the Sierra foothills; ten days later, on February 2, 1848, the Mexicans and Americans signed the Treaty of Guadalupe–Hidalgo and California became part of the United States. Over the next two years, gold-seekers poured into California from across the nation and around the world. By the early 1850s, trading posts, mining camps, and small settlements had been established along the sloughs and rivers as well as at ferry crossings throughout the southern Sierra foothills and San Joaquin Valley.

As a result of California's increasing population, in February 1850 the territorial legislature passed an act that would divide the province into 27 counties. Mariposa County, which was the largest, contained 30,000 square miles and enveloped one-fifth of the State. This county alone consisted of land that would eventually become part of ten other counties including Merced. On April 19, 1855, Merced County was carved from the northwest section of Mariposa County and the seat of government established along Mariposa Creek at the Turner and Osborn Ranch. In 1857 the County seat was relocated to Snelling's Ranch. In December 1872, Merced County voters chose to relocate the seat of government from Snelling to the town of Merced.

Not only did the Central Pacific Railroad establish towns and provide transportation throughout the Valley, along with several other factors it also promoted a change in land use from ranching to farming. In addition to the railroad providing a more efficient and reliable method of shipping freight and farm products, as well as transporting passengers, the development of more productive agricultural machinery such as combines and threshers allowed farmers to produce larger harvests.

Although early agriculture in Merced County focused on “dry-farming” methods, during the 1860s many local ranchers and farmers began to develop small-scale irrigation projects. The Robla Canal Company and the Farmer’s Canal Company (which eventually absorbed the Robla Canal Company) expanded the extent of irrigation in the area. These irrigation networks relied heavily on existing natural waterways that were modified (i.e., channeled) for the purpose of irrigation (JRP 1995:68).

In 1919, Merced County voters approved the creation of the Merced Irrigation District (MID), a publicly owned entity that purchased the Crocker–Huffman system in 1922. Voters soon passed a bond issue funding improvements and expansion of the existing irrigation system, an effort that has continued into the present (JRP 1995: 68).

Hilmar is a historic era town that had its beginnings in the early 1900s when agricultural investors came to the Central Valley. These investors would purchase large amounts of land and would create “colonies” in order to sell parcels of land that would share the same water sources. The town of Hilmar started as the Swedish Colony (the Hilmar Colony) founded by Nels O. Hultberg and Horace Crane, a joint venture that started in 1902. By 1917 the town of Hilmar was in its infancy when the Yosemite Valley Railroad entered the area (Cabezut-Ortiz 1987).

Beginning in the 1910s and continuing through the middle of the twentieth century, the San Joaquin Valley’s population grew with the arrival of immigrants from elsewhere in the United States, as well as from abroad (including individuals from Europe and Asia). These new residents contributed to the San Joaquin Valley’s agricultural development by promoting crops and livestock that diverged from the region’s dominant cattle ranching industry. Increasingly prevalent forms of agricultural production included sheep and pig farming, nut and fruit cultivation, and dairy farming. These trends continued in the post-World War II period, when Merced County’s agricultural industry became characterized by intensified cultivation methods, advances in farming technologies, and the consolidation of smaller farms into large-scale agricultural operations (JRP and Caltrans 2000).

Over time, immigrants to the region emerged as leaders in the agricultural and dairy industries. The dairy industry, led by Portuguese immigrants, emerged in the early 1990s as a major contributor to the county’s economy. To date, the area’s economy still focuses on dairy and agricultural industries. The agricultural and dairy industries growth has led to modern developments within the larger cities of the Valley, but the general area is still very much dependent on these two industries (EIP Associates 2001).

The Hilmar Cheese Company was built in 1984 and started its operation in 1985. The Hilmar Cheese Company quickly became a great addition to the area, generating jobs and growth opportunities within its surroundings. Today the company is a regional leader in sustainable, large scale, industry with its 100% water reclamation, a proposed solar facility, and recyclable energy.

Chapter 3
Methods and Results

Records Search and Literature Review

On October 29, 2011, ICF archaeologists requested a search of database files from the Central California Information Center (CCIC) of the California Historical Resources Information System (CHRIS). The records search area included the study area and a 0.25-mile buffer of surrounding area.

The records search provided information on previous cultural resources studies and previously recorded cultural resources in the study area and the 0.25-mile surrounding area. Sources consulted included base maps marked with the locations of previous cultural resource studies and known cultural resources. The following sources were consulted at the CCIC.

- California Inventory of Historic Resources (Department of Parks and Recreation 1976)
- California Points of Historical Interest (Department of Parks and Recreation 1992 and updates)
- California Historical Landmarks (Department of Parks and Recreation 1996 and updates)
- Directory of Properties in the Historic Property Data File (Office of Historic Preservation 2011) Archeological Determinations of Eligibility (California OHP computer list date 8/9 and 15/2011)
- The National Register of Historic Places (NRHP) (listings on file at the NCIC)
- California Register of Historic Resources (listings on file at the NCIC)
- Caltrans State and Local Bridge Survey (1989 and updates)
- The Survey of Surveys (1989)
- GLO Plat (Sheet 44-402, 1853-1855) and historic topographic maps (USGS Turlock 7.5' 1947, 1949; USGS Turlock 15' 1962)

This search did not identify any previously recorded cultural resources in the study area. One previously conducted study was identified within the study area.

- William Self & Associates. 1995. *Class I Overview Santa Fe Pacific Pipeline Partners, L.P. Proposed Concord to Colton Pipeline Project.* S-2743

One bridge (BR39C0123) was identified within 0.5-mile of the study area. This bridge was evaluated as part of the Caltrans Structure Maintenance and Investigations and was determined to be ineligible for listing to the National Register of Historic Places (NRHP).

The results of the 2011 records search were summarized in the *Cultural Resources Inventory Report for the Hilmar Cheese Company Facility Expansion Project* (CRIR), prepared by ICF International in January 2012 to support the 2012 IS/MND.

An updated records search was performed at the CCIC on September 11, 2018. This search included the study area as well as 0.5-mile of the surrounding area. This search did not identify any additional previously recorded cultural resources within the project area or in its vicinity. Two additional cultural resources studies have been conducted within 0.5-mile of the project area. These studies are detailed below.

- Applied Earth Works. 1999. *Cultural Resources Survey for the Turlock Irrigation District Westside Transmission Line Project, Stanislaus and Merced Counties, California.* S-3630
- Earth Touch. 2001. *Nextel Communications Wireless Telecommunications Service Facilities located in Counties Covered by the Central California Information Center*. S-4668

The results of the literature reviews detailed above can be found in Appendix B.

Correspondence with Native Americans

On November 21, 2011 ICF cultural resources specialists contacted the Native American Heritage Commission (NAHC) requesting a search of their Sacred Lands File and a list of potentially interested parties. The NAHC responded that a records search of the Sacred Land Files had not revealed any known Native American cultural resources within the study area. NAHC staff also supplied ICF with a list of Native American contacts within Merced County.

The NAHC contact list included the following Indian tribes and individuals.

- Jay Johnson, Spiritual Leader–Southern Sierra Miwuk Nation (Miwok, Pauite, Northern Valley Yokut)
- Anthony Brochini, Chairperson Southern– Sierra Miwuk Nation (Miwok, Paiute, Northern Valley Yokut)
- Katherine Erolinda Perez–North Valley Yokuts Tribe (Ohlone/Costanoan, Northern Valley Yokuts, Bay Miwok)
- Les James, Spiritual Leader– Southern Sierra Miwuk Nation (Miwok Pauite, Northern Valley Yokut)
- Edward Ketchum Amah–Mutsun Tribal Band (Ohlone/Costanoan, Northern Valley Yokuts)

On December 6, 2011 ICF sent letters to the tribes and individuals listed under Merced County contacts. To date, no responses have been received.

In 2014 the State of California passed Assembly Bill 52 (AB52), which requires a lead agency under CEQA to consult with any California Native American Tribes (Tribes) who have formally requested consultation on projects in their jurisdiction. AB52 recognizes that Tribes may have knowledge regarding the geographic regions in which they are traditionally and culturally affiliated.

On September 28, 2018, the County, pursuant to AB52, provided formal notification to those California Native American Tribes that previously requested to be informed of proposed projects in the geographic area per PRC Section 21080.3.1. The County sent letters summarizing the project along with accompanying figures showing the regional and project location to the following Tribes:

- Amah Mutsun Tribal Band
- Southern Sierra Miwuk Nation

- Dumna Wo-Wah Tribal Government
- Northern Valley Yokuts Tribe

As of the date of this writing no tribes have responded or requested consultation.

Correspondence can be found in Appendix C.

Field Methods

In December 2011, an ICF archaeologist conducted a pedestrian survey of the proposed project expansion areas. The survey area north of the existing facility (HCC) consisted of a fallow field with a modern power facility enclosed within a fenced area on the northeast corner of the land. The west half of the area contains retaining ponds and was not surveyed. The south area of the project, south of August Avenue, consists of a recently planted field with winter oats just beginning to sprout. The soil is the same on both surveyed areas, consisting of light sand of medium to fine grain. Visibility was 100% even in the recently planted field. No cultural resources were identified as a result of the pedestrian survey.

Due to the developed nature of the majority of the project area, as well as the negative findings of the previously conducted survey, no supplemental archaeological survey was performed in 2018. Additionally, no built environment survey was conducted in 2018, and the findings of the 2012 CRIR will be used for the impacts analysis of the project.

Chapter 4
Recommendations

A cultural review was conducted for modifications to the project in 2011. During this review no previously recorded cultural resources were identified within the project area or within 0.5-mile of the project area, no Tribal areas of concern were identified during consultation with Native American Tribes, and the pedestrian survey did not find any indications of buried archaeological deposits. The 2011 review concluded that the proposed project activities had a low potential for encountering as-yet undocumented cultural resources within the project area.

The current review conducted an updated literature review at the CCIC which did not identify any previously recorded cultural resources in the project area or within 0.5-mile. New consultation with Native American Tribes was also initiated and did not result any Tribal areas of concern within the project area. This updated review concludes that the setting of the project area has not changed and that the currently proposed project activities hold a low potential for encountering as-yet undocumented cultural resources.

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Appendix F
Short-Term Noise Monitoring Results

Short-Term Noise Monitoring Results (ST-1 through ST-6)

Summary			
Filename	831_Data.020		
Serial Number	3785		
Model	Model 831		
Firmware Version	2.314		
User			
Location			
Job Description			
Note			
Measurement Description			
Start	2018/10/16 11:55:02		
Stop	2018/10/16 12:10:03		
Duration	0:15:00.8		
Run Time	0:15:00.8		
Pause	0:00:00.0		
Pre Calibration	2018/10/16 11:52:48		
Post Calibration	None		
Calibration Deviation	---		
Overall Settings			
RMS Weight	A Weighting		
Peak Weight	A Weighting		
Detector	Slow		
Preamp	PRM831		
Microphone Correction	Off		
Integration Method	Linear		
OBA Range	Normal		
OBA Bandwidth	1/1 and 1/3		
OBA Freq. Weighting	A Weighting		
OBA Max Spectrum	At Lmax		
Gain	0.0 dB		
Overload	144.9 dB		
	A	**C**	**Z**
Under Range Peak	**77.4**	74.4	79.4 dB
Under Range Limit	**26.8**	27.3	33.4 dB
Noise Floor	17.7	18.2	23.7 dB

Results		
LAeq	64.4 dB	
LAE	93.9 dB	
EA	272.929 µPa²h	
LApeak (max)	2018/10/16 11:58:35	89.1 dB
LASmax	2018/10/16 12:06:18	71.5 dB
LASmin	2018/10/16 12:09:35	57.7 dB
SEA	-99.9 dB	
LAS > 75.0 dB (Exceedence Counts / Duration)	0	0.0 s
LAS > 85.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 135.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 137.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 140.0 dB (Exceedence Counts / Duration)	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	64.4	64.4	-99.9	64.4	64.4	-99.9	-99.9
LCeq	72.8 dB						
LAeq	64.4 dB						
LCeq - LAeq	8.5 dB						
LAIeq	68.8 dB						
LAeq	64.4 dB						
LAIeq - LAeq	4.4 dB						
# Overloads	0						
Overload Duration	0.0 s						
# OBA Overloads	0						
OBA Overload Duration	0.0 s						

Statistics	
LAS5.00	67.5 dB
LAS10.00	66.2 dB
LAS33.30	64.6 dB
LAS50.00	63.8 dB
LAS66.60	63.0 dB
LAS90.00	61.4 dB

Summary			
Filename	831_Data.019		
Serial Number	3785		
Model	Model 831		
Firmware Version	2.314		
User			
Location			
Job Description			
Note			
Measurement Description			
Start	2018/10/16 11:20:06		
Stop	2018/10/16 11:35:07		
Duration	0:15:00.7		
Run Time	0:15:00.7		
Pause	0:00:00.0		
Pre Calibration	2018/10/16 11:17:53		
Post Calibration	None		
Calibration Deviation	---		
Overall Settings			
RMS Weight	A Weighting		
Peak Weight	A Weighting		
Detector	Slow		
Preamp	PRM831		
Microphone Correction	Off		
Integration Method	Linear		
OBA Range	Normal		
OBA Bandwidth	1/1 and 1/3		
OBA Freq. Weighting	A Weighting		
OBA Max Spectrum	At Lmax		
Gain	0.0 dB		
Overload	144.8 dB		
	A	**C**	**Z**
Under Range Peak	**77.3**	74.3	79.3 dB
Under Range Limit	**26.8**	27.3	33.3 dB
Noise Floor	17.6	18.1	23.7 dB
Results			
LAeq	52.7 dB		
LAE	82.2 dB		
EA	18.423 µPa²h		
LApeak (max)	2018/10/16 11:30:53	87.5 dB	
LASmax	2018/10/16 11:20:06	63.7 dB	
LASmin	2018/10/16 11:28:06	50.1 dB	
SEA	-99.9 dB		
LAS > 75.0 dB (Exceedence Counts / Duration)	0	0.0 s	
LAS > 85.0 dB (Exceedence Counts / Duration)	0	0.0 s	
LApeak > 135.0 dB (Exceedence Counts / Duration)	0	0.0 s	
LApeak > 137.0 dB (Exceedence Counts / Duration)	0	0.0 s	
LApeak > 140.0 dB (Exceedence Counts / Duration)	0	0.0 s	

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	52.7	52.7	-99.9	52.7	52.7	-99.9	-99.9
LCeq	67.6 dB						
LAeq	52.7 dB						
LCeq - LAeq	15.0 dB						
LAIeq	53.9 dB						
LAeq	52.7 dB						
LAIeq - LAeq	1.2 dB						
# Overloads	0						
Overload Duration	0.0 s						
# OBA Overloads	0						
OBA Overload Duration	0.0 s						

Statistics	
LAS5.00	54.0 dB
LAS10.00	53.7 dB
LAS33.30	53.0 dB
LAS50.00	52.6 dB
LAS66.60	52.2 dB
LAS90.00	51.3 dB

Summary							
Filename	831_Data.018						
Serial Number	3785						
Model	Model 831						
Firmware Version	2.314						
User							
Location							
Job Description							
Note							
Measurement Description							
Start	2018/10/16 10:26:47						
Stop	2018/10/16 10:41:47						
Duration	0:15:00.5						
Run Time	0:15:00.5						
Pause	0:00:00.0						
Pre Calibration	2018/10/16 10:24:29						
Post Calibration	None						
Calibration Deviation	---						
Overall Settings							
RMS Weight	A Weighting						
Peak Weight	A Weighting						
Detector	Slow						
Preamp	PRM831						
Microphone Correction	Off						
Integration Method	Linear						
OBA Range	Normal						
OBA Bandwidth	1/1 and 1/3						
OBA Freq. Weighting	A Weighting						
OBA Max Spectrum	At Lmax						
Gain	0.0 dB						
Overload	144.9 dB						
	A	**C**	**Z**				
Under Range Peak	**77.4**	74.4	79.4 dB				
Under Range Limit	**26.8**	27.3	33.4 dB				
Noise Floor	17.7	18.2	23.7 dB				
Results							
LAeq	65.3 dB						
LAE	94.8 dB						
EA	338.611 µPa²h						
LApeak (max)	2018/10/16 10:38:41	96.1 dB					
LASmax	2018/10/16 10:31:47	74.4 dB					
LASmin	2018/10/16 10:26:50	51.7 dB					
SEA	-99.9 dB						
LAS > 75.0 dB (Exceedence Counts / Duration)	0	0.0 s					
LAS > 85.0 dB (Exceedence Counts / Duration)	0	0.0 s					
LApeak > 135.0 dB (Exceedence Counts / Duration)	0	0.0 s					
LApeak > 137.0 dB (Exceedence Counts / Duration)	0	0.0 s					
LApeak > 140.0 dB (Exceedence Counts / Duration)	0	0.0 s					
Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	65.3	65.3	-99.9	65.3	65.3	-99.9	-99.9
LCeq	75.0 dB						
LAeq	65.3 dB						
LCeq - LAeq	9.7 dB						
LAIeq	67.0 dB						
LAeq	65.3 dB						
LAIeq - LAeq	1.7 dB						
# Overloads	0						
Overload Duration	0.0 s						
# OBA Overloads	0						
OBA Overload Duration	0.0 s						
Statistics							
LAS5.00	70.9 dB						
LAS10.00	69.0 dB						
LAS33.30	65.2 dB						
LAS50.00	63.3 dB						
LAS66.60	60.9 dB						
LAS90.00	54.8 dB						

Summary			
Filename	831_Data.023		
Serial Number	3785		
Model	Model 831		
Firmware Version	2.314		
User			
Location			
Job Description			
Note			
Measurement Description			
Start	2018/10/16 15:09:55		
Stop	2018/10/16 15:24:55		
Duration	0:15:00.6		
Run Time	0:15:00.6		
Pause	0:00:00.0		
Pre Calibration	2018/10/16 15:07:43		
Post Calibration	None		
Calibration Deviation	---		
Overall Settings			
RMS Weight	A Weighting		
Peak Weight	A Weighting		
Detector	Slow		
Preamp	PRM831		
Microphone Correction	Off		
Integration Method	Linear		
OBA Range	Normal		
OBA Bandwidth	1/1 and 1/3		
OBA Freq. Weighting	A Weighting		
OBA Max Spectrum	At Lmax		
Gain	0.0 dB		
Overload	144.9 dB		
	A	**C**	**Z**
Under Range Peak	**77.4**	74.4	79.4 dB
Under Range Limit	**26.8**	27.3	33.4 dB
Noise Floor	17.7	18.2	23.7 dB

Results		
LAeq	64.4 dB	
LAE	93.9 dB	
EA	274.403 µPa²h	
LApeak (max)	2018/10/16 15:16:07	107.4 dB
LASmax	2018/10/16 15:16:07	85.8 dB
LASmin	2018/10/16 15:13:17	55.5 dB
SEA	-99.9 dB	
LAS > 75.0 dB (Exceedence Counts / Duration)	1	6.9 s
LAS > 85.0 dB (Exceedence Counts / Duration)	1	1.2 s
LApeak > 135.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 137.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 140.0 dB (Exceedence Counts / Duration)	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	64.4	64.4	-99.9	64.4	64.4	-99.9	-99.9

LCeq	74.2 dB
LAeq	64.4 dB
LCeq - LAeq	9.8 dB
LAIeq	67.6 dB
LAeq	64.4 dB
LAIeq - LAeq	3.2 dB
# Overloads	0
Overload Duration	0.0 s
# OBA Overloads	0
OBA Overload Duration	0.0 s
Statistics	
LAS5.00	67.0 dB
LAS10.00	65.7 dB
LAS33.30	62.7 dB
LAS50.00	61.4 dB
LAS66.60	60.0 dB
LAS90.00	57.7 dB

Summary			
Filename	831_Data.022		
Serial Number	3785		
Model	Model 831		
Firmware Version	2.314		
User			
Location			
Job Description			
Note			
Measurement Description			
Start	2018/10/16 14:31:57		
Stop	2018/10/16 14:46:58		
Duration	0:15:00.5		
Run Time	0:15:00.5		
Pause	0:00:00.0		
Pre Calibration	2018/10/16 14:29:13		
Post Calibration	None		
Calibration Deviation	---		
Overall Settings			
RMS Weight	A Weighting		
Peak Weight	A Weighting		
Detector	Slow		
Preamp	PRM831		
Microphone Correction	Off		
Integration Method	Linear		
OBA Range	Normal		
OBA Bandwidth	1/1 and 1/3		
OBA Freq. Weighting	A Weighting		
OBA Max Spectrum	At Lmax		
Gain	0.0 dB		
Overload	144.8 dB		
	A	**C**	**Z**
Under Range Peak	**77.3**	74.3	79.3 dB
Under Range Limit	**26.8**	27.3	33.3 dB
Noise Floor	17.6	18.1	23.7 dB

Results		
LAeq	65.5 dB	
LAE	95.0 dB	
EA	352.370 µPa²h	
LApeak (max)	2018/10/16 14:39:41	90.6 dB
LASmax	2018/10/16 14:39:42	76.7 dB
LASmin	2018/10/16 14:38:54	46.2 dB
SEA	-99.9 dB	
LAS > 75.0 dB (Exceedence Counts / Duration)	2	3.9 s
LAS > 85.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 135.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 137.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 140.0 dB (Exceedence Counts / Duration)	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	65.5	65.5	-99.9	65.5	65.5	-99.9	-99.9

LCeq	73.7 dB
LAeq	65.5 dB
LCeq - LAeq	8.2 dB
LAIeq	66.9 dB
LAeq	65.5 dB
LAIeq - LAeq	1.4 dB
# Overloads	0
Overload Duration	0.0 s
# OBA Overloads	0
OBA Overload Duration	0.0 s
Statistics	
LAS5.00	70.2 dB
LAS10.00	68.6 dB
LAS33.30	65.8 dB
LAS50.00	64.1 dB
LAS66.60	61.9 dB
LAS90.00	54.1 dB

Summary			
Filename	831_Data.021		
Serial Number	3785		
Model	Model 831		
Firmware Version	2.314		
User			
Location			
Job Description			
Note			
Measurement Description			
Start	2018/10/16 14:02:16		
Stop	2018/10/16 14:17:17		
Duration	0:15:00.6		
Run Time	0:15:00.6		
Pause	0:00:00.0		
Pre Calibration	2018/10/16 13:59:35		
Post Calibration	None		
Calibration Deviation	---		
Overall Settings			
RMS Weight	A Weighting		
Peak Weight	A Weighting		
Detector	Slow		
Preamp	PRM831		
Microphone Correction	Off		
Integration Method	Linear		
OBA Range	Normal		
OBA Bandwidth	1/1 and 1/3		
OBA Freq. Weighting	A Weighting		
OBA Max Spectrum	At Lmax		
Gain	0.0 dB		
Overload	144.9 dB		
	A	C	Z
Under Range Peak	**77.4**	74.4	79.4 dB
Under Range Limit	**26.8**	27.3	33.4 dB
Noise Floor	17.7	18.2	23.8 dB

Results		
LAeq	41.9 dB	
LAE	71.4 dB	
EA	1.534 µPa²h	
LApeak (max)	2018/10/16 14:02:27	83.9 dB
LASmax	2018/10/16 14:10:19	56.0 dB
LASmin	2018/10/16 14:07:33	37.7 dB
SEA	-99.9 dB	
LAS > 75.0 dB (Exceedence Counts / Duration)	0	0.0 s
LAS > 85.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 135.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 137.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 140.0 dB (Exceedence Counts / Duration)	0	0.0 s

Community Noise	Ldn	LDay 07:00-22:00	LNight 22:00-07:00	Lden	LDay 07:00-19:00	LEvening 19:00-22:00	LNight 22:00-07:00
	41.9	41.9	-99.9	41.9	41.9	-99.9	-99.9
LCeq	58.7 dB						
LAeq	41.9 dB						
LCeq - LAeq	16.9 dB						
LAIeq	47.6 dB						
LAeq	41.9 dB						
LAIeq - LAeq	5.8 dB						
# Overloads	0						
Overload Duration	0.0 s						
# OBA Overloads	0						
OBA Overload Duration	0.0 s						

Statistics	
LAS5.00	44.9 dB
LAS10.00	43.8 dB
LAS33.30	41.7 dB
LAS50.00	40.8 dB
LAS66.60	40.1 dB
LAS90.00	38.9 dB

Long-Term Noise Monitoring Results (2011)

24-hour Noise Measurement
East Driveway at Nyman Brothers (20445 August Ave, Hilmar, CA)
40 feet between the power pole to the center of the road

Date	Time	Duration	Leq	Lmax	Lmin	L(10)	L(33)	L(50)	L(90)
9/20/2011	11:32:06	1674	67.2	82.8	59.4	70.2	63.4	62.6	61.1
9/20/2011	12:00:00	3600	67.8	83.4	59.1	71	63.7	62.8	61.2
9/20/2011	13:00:00	3600	67.6	84.6	59.4	70.1	63.5	62.6	61.1
9/20/2011	14:00:00	3600	67.8	86.1	59.6	70.5	63.9	63	61.3
9/20/2011	15:00:00	3600	68.2	82.9	59.6	71.9	65	63.6	61.5
9/20/2011	16:00:00	3600	69.1	84.9	59.4	72.5	65.7	63.9	61.6
9/20/2011	17:00:00	3600	67.9	85.4	59.9	71.1	63.9	62.8	61.3
9/20/2011	18:00:00	3600	67.1	84.3	60.7	69.3	62.9	62.5	61.4
9/20/2011	19:00:00	3600	67.2	86.8	60.3	69.4	63.4	62.7	61.4
9/20/2011	20:00:00	3600	67	96.2	60.2	64.7	63.4	62.9	61.8
9/20/2011	21:00:00	3600	64.5	80.8	59.4	63.7	62.5	62	60.9
9/20/2011	22:00:00	3600	63.9	87.3	59.8	62.9	62	61.7	60.6
9/20/2011	23:00:00	3600	64.9	84.1	60.3	64	62.7	62.3	61.2
9/21/2011	00:00:00	3600	65.5	82.2	61	66.8	64.5	63.9	62.4
9/21/2011	01:00:00	3600	65	82	61.7	65.6	64.5	64	63
9/21/2011	02:00:00	3600	65.5	81.5	61.4	65.9	65	64.5	63.3
9/21/2011	03:00:00	3600	65	85.2	59.1	65	63.3	62.6	61
9/21/2011	04:00:00	3600	65.5	83.9	60	65.3	63.7	63.2	61.4
9/21/2011	05:00:00	3600	65.8	83.9	61.1	66.4	64.1	63.5	62.3
9/21/2011	06:00:00	3600	68.3	84.5	61.2	70.5	64.8	64.1	63
9/21/2011	07:00:00	3600	69	85.9	61	72.8	64	63.4	62.1
9/21/2011	08:00:00	3600	67.7	85.6	60.5	69.7	63.8	63.2	61.9
9/21/2011	09:00:00	3600	68	84.4	59.8	70.4	64.6	63.7	62.1
9/21/2011	10:00:00	3600	68.1	83.8	59.4	71.2	65.4	64.4	62.3
9/21/2011	11:00:00	3600	69	83.7	60.4	72.8	66.2	64.5	62.3
9/21/2011	12:00:00	236.2	69.4	79.8	61	73.7	67.3	64.8	62.6

Time	Leq	Lmax	Lmin	Ldn addition	Ldn Leq	Leq Transf.
00:00:00	**65.5**	**82.2**	**61.0**	10.0	75.5	35481338.92
01:00:00	**65.0**	**82.0**	**61.7**	10.0	75.0	31622776.6
02:00:00	**65.5**	**81.5**	**61.4**	10.0	75.5	35481338.92
03:00:00	**65.0**	**85.2**	**59.1**	10.0	75.0	31622776.6
04:00:00	**65.5**	**83.9**	**60.0**	10.0	75.5	35481338.92
05:00:00	**65.8**	**83.9**	**61.1**	10.0	75.8	38018939.63
06:00:00	**68.3**	**84.5**	**61.2**	10.0	78.3	67608297.54
07:00:00	69.0	85.9	61.0	0.0	69.0	7943282.347
08:00:00	67.7	85.6	60.5	0.0	67.7	5888436.554
09:00:00	68.0	84.4	59.8	0.0	68.0	6309573.445
10:00:00	68.1	83.8	59.4	0.0	68.1	6456542.29
11:00:00	69.0	83.7	60.4	0.0	69.0	7943282.347
12:00:00	67.8	83.4	59.1	0.0	67.8	6025595.861
13:00:00	67.6	84.6	59.4	0.0	67.6	5754399.373
14:00:00	67.8	86.1	59.6	0.0	67.8	6025595.861
15:00:00	68.2	82.9	59.6	0.0	68.2	6606934.48
16:00:00	69.1	84.9	59.4	0.0	69.1	8128305.162
17:00:00	67.9	85.4	59.9	0.0	67.9	6165950.019
18:00:00	67.1	84.3	60.7	0.0	67.1	5128613.84
19:00:00	67.2	86.8	60.3	0.0	67.2	5248074.602
20:00:00	67.0	96.2	60.2	0.0	67.0	5011872.336
21:00:00	64.5	80.8	59.4	0.0	64.5	2818382.931
22:00:00	**63.9**	**87.3**	**59.8**	10.0	73.9	24547089.16
23:00:00	**64.9**	**84.1**	**60.3**	10.0	74.9	30902954.33
					Average Leq Transfer	17592570.5
					Ldn	72.5

	Leq	**Lmax**	**Lmin**
Daytime Max	69.1	96.2	61.0
Daytime Min	64.5	80.8	59.1
Nighttime Max	68.3	87.3	61.7
Nighttime Min	63.9	81.5	59.1
Ldn	**72.5**		

Appendix G
Transportation Assessment

Prepared by

FEHR PEERS

100 Pringle Avenue
Suite 600
Walnut Creek, CA 94596

November 2018

Transportation Assessment

Hilmar Cheese Company

Prepared for:
Hilmar Cheese Company, Inc.

HilmaR CHEESE COMPANY

Hilmar Cheese Company Administrative Draft Transportation Impact Assessment

Prepared for:
Hilmar Cheese Company, Inc.

November 2018

WC18-3539

FEHR PEERS

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Executive Summary

This study evaluates the potential transportation impacts of the proposed expansion of the Hilmar Cheese Company facility in Hilmar, California.

Project Description

The study purpose is to evaluate the transportation impacts of the Hilmar Cheese Company's proposed expansion. The existing facility is roughly bound by Olso Road to the north, farmland to the south and west, and Lander Avenue (State Route [SR] 165) to the east, and is bisected by August Avenue. The proposed project would be constructed in two phases, with approximately 91,900 square-feet of development in the first phase and 92,800 square-feet of development in the second phase. Site access would continue to occur through the existing driveways. This assessment also considers uses that were approved under the Company's existing conditional use permits, but not yet constructed, including office, light industrial, warehousing and research and development uses, totaling approximately 197,600 square-feet of building area.

Study Intersections and Analysis Scenarios

Project impacts on the study area roadway facilities were determined by measuring the effect project traffic would have on operations of the Lander Avenue (SR 165)/August Avenue intersection during the morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak periods. Additionally, the driveways that serve the site were evaluated under existing and cumulative conditions, both without and with the project.

Findings and Recommendations

Off-Site Findings

Results of the intersection analysis indicate that in the Existing with Project and Cumulative with Project conditions, the study intersection and project driveways are projected to continue to operate at overall acceptable levels of service.

Under all analysis scenarios, Lander Avenue (SR 165), south of August Avenue, operates at LOS E. The Project would increase traffic volumes on this roadway segment by 1 percent in both the existing and cumulative condition, which is less than the 5 percent increase which triggers a project specific significant impact. Therefore, the project impact is ***less-than-significant***. Although the project specific impact is less than significant, the project applicant will be required to pay all applicable local and regional traffic impact fees that will fund the construction of future roadway improvements in Merced County.

On-Site Findings

Site access and circulation were reviewed for the proposed project, and the following is recommended:

- Monitor operations of the midblock crossing on August Avenue after completion of the currently proposed project and the Phase 2 office, and install additional crossing treatments if necessary based on field conditions.

Construction Impacts

Although construction impacts are expected to be temporary and less-than-significant, the following is recommended to minimize the effects of construction related activity:

- Prepare a construction management plan, including:
  - A set of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak hours; lane closure proceedings; signs, cones, and other warning devices for drivers; and designation of construction access routes
  - Permitted construction hours
  - Location of construction staging
  - Provision of on-site parking for all construction employees, site visitors, and inspectors
  - Provisions for street sweeping to remove construction related debris on public streets

1. INTRODUCTION

This report presents the analysis and findings of the Transportation Impact Analysis (TIA) for the proposed expansion of Hilmar Cheese Company's existing facility (project), located in Hilmar, an unincorporated community in northern Merced County. This chapter discusses the TIA purpose, analysis methods, criteria used to identify significant impacts, and report organization.

Study Purpose

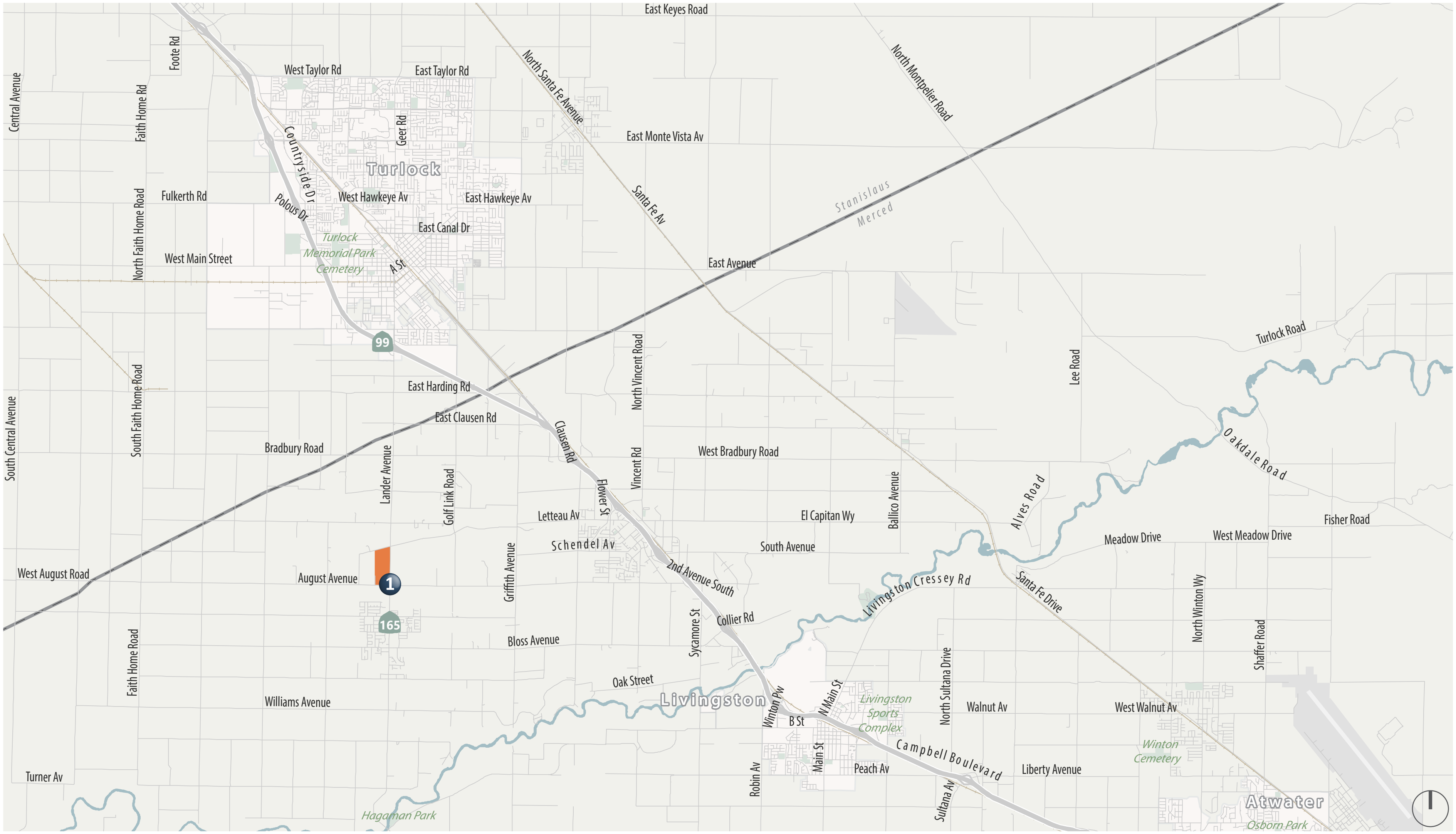
The study purpose is to evaluate the transportation impacts of the Hilmar Cheese Company's proposed expansion. The existing facility is roughly bound by Olso Road to the north, farmland to the south and west, and Lander Avenue (State Route [SR] 165) to the east, as shown on **Figure 1.** The site is also bisected by August Avenue. The proposed project would be constructed in two phases, with approximately 91,900 square-feet of development in the first phase and 92,800 square-feet of development in the second phase. Site access would continue to occur through the existing driveways. A conceptual project site plan is shown on **Figure 2.** This assessment also considers uses that were approved under the Company's existing conditional use permits, but not yet constructed, including office, light industrial, warehousing and research and development uses, totaling approximately 197,600 square-feet of building area.

This study addresses the project's impacts on the roadway system under two scenarios and discusses the adjacent bicycle, pedestrian, and transit network. A pedestrian crossing assessment was also conducted for the mid-block crossing on August Avenue.

Study Intersections and Analysis Scenarios

Project impacts on the study area roadway facilities were determined by measuring the effect project traffic would have on operations of the Lander Avenue (SR 165)/August Avenue intersection as well as site access driveways during the morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak periods. For this study, the following scenarios were evaluated:

- ***Existing*** – Existing (2018) conditions based on recent traffic counts.
- ***Existing With Project*** – Existing (2018) conditions with Project-related traffic
- ***Cumulative Without Project*** – Future forecast conditions, which considers local and regional traffic growth. No roadway improvements in the immediate Project vicinity were assumed.
- ***Cumulative With Project*** – Future forecast conditions plus project-related traffic.

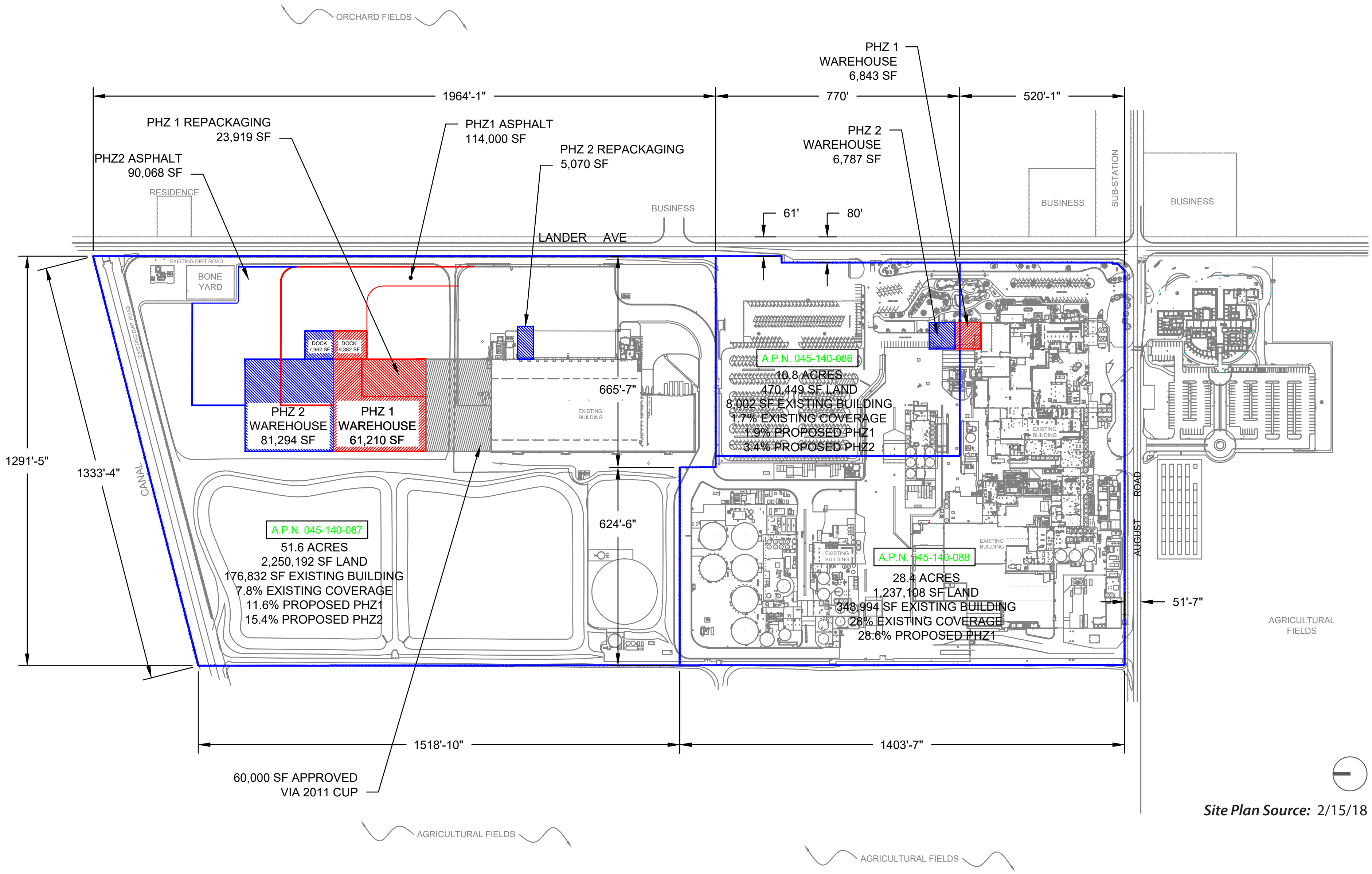


Project Site
1 Study Intersection

Figure 1

Project Site Vicinity and Study Intersection Locations

WC18-3539_1_ProjSiteVic



Site Plan Source: 2/15/18

Figure 2

Conceptual Project Site Plan

Analysis Methods

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

Signalized Intersections

Traffic conditions at signalized intersections were evaluated using the method developed by the Transportation Research Board (TRB), as documented in the 2010 *Highway Capacity Manual* (HCM). The HCM method calculates control delay at an intersection based on inputs such as traffic volumes, lane geometry, signal phasing and timing, pedestrian crossing times, and peak hour factors. Control delay is defined as the delay directly associated with the traffic control device (i.e., a stop sign or a traffic signal) and specifically includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. These delay estimates are considered meaningful indicators of driver discomfort and frustration, fuel consumption and lost travel time. The relationship between average control delay and LOS for signalized intersections is summarized in **Table 1.**

In Merced County, acceptable operations at signalized intersections are defined as LOS D for intersections on regional roadways, such as Lander Avenue (SR 165), or LOS C for intersections on minor roadways, such as August Avenue.

Unsignalized Intersections

For unsignalized (all-way stop-controlled and side-street stop-controlled) intersections, the Transportation Research Board's 2010 *Highway Capacity Manual* (HCM) method for unsignalized intersections was used. With this method, operations are defined by the average control delay per vehicle (measured in seconds). The control delay incorporates delay associated with deceleration, acceleration, stopping, and moving up in queue. **Table 2** summarizes the relationship between delay and LOS for unsignalized intersections. At side-street stop-controlled intersections, the delay is calculated for the each stop-controlled movement and for the left-turn movement from the major street. The intersection average delay and highest movement/ approach delay are reported for side-street stop-controlled intersections.

Table 1: Signalized Intersection LOS Criteria

Level of Service	Description	Delay in Seconds
A	Progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	< 10.0
B	Progression is good, cycle lengths are short, or both. More vehicles stop than with LOS A, causing higher levels of average delay.	> 10.0 to 20.0
C	Higher congestion may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, though many still pass through the intersection without stopping.	> 20.0 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	> 35.0 to 55.0
E	This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	> 55.0 to 80.0
F	This level is considered unacceptable with oversaturation, which is when arrival flow rates exceed the capacity of the intersection. This level may also occur at high V/C ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to such delay levels.	> 80.0

Source: *Highway Capacity Manual*, Transportation Research Board, 2010.

Table 2: Unsignalized Intersection LOS Criteria

Level of Service	Description	Average Control Per Vehicle (Seconds)[1]
A	Little or no delays	< 10.0
B	Short traffic delays	> 10.0 to 15.0
C	Average traffic delays	> 15.0 to 25.0
D	Long traffic delays	> 25.0 to 35.0
E	Very long traffic delays	> 35.0 to 50.0
F	Extreme traffic delays with intersection capacity exceeded	> 50.0

Source: *Highway Capacity Manual*, Transportation Research Board, 2010.

Roadway Segments

Roadway segments were analyzed by comparing roadway segment volumes to daily roadway segment capacities. LOS thresholds from the 2030 Merced County General Plan Program Environmental Impact Report were used to evaluate the roadway segment level of service. The LOS thresholds are presented in **Table 3**. For each type of roadway, thresholds are reported in average daily traffic volume (ADT). For this analysis August Avenue is classified as a 2-lane County Road and Lander Avenue (SR 165) is defined as a 2-lane Highway south of August Avenue and a 3-lane facility north of August Avenue.

Table 3: Roadway Segment Average Daily Volume Level of Service Thresholds

Roadway Classification	LOS[1] A	LOS B	LOS C	LOS D	LOS E	LOS F
Two-lane Rural Highway	2,600	5,300	8,600	13,800	22,300	>22,300
Three-lane Rural Highway	3,900	7,950	12,900	20,700	33,450	>33,450
Rural –Two Lanes Isolated Stops	-	1,900	8,000	10,700	12,100	>12,100

[1] LOS = Level of Service
Source: Fehr & Peers, 2018.

Significance Criteria

Based on standards of significance used in recently prepared environmental documents within Merced County and CEQA guidelines, a significant traffic-related Project impact would occur if:

- The addition of project traffic causes a signalized intersection to deteriorate from an acceptable level to an unacceptable level; the *2030 Merced County General Plan* specifies the following peak hour level of service standards:

  a) For roadways located within rural areas: LOS C or better (applied to August Avenue)

  b) For roadways located outside Urban Communities that serve as connectors between Urban Communities: LOS of D or better (applied to Lander Avenue)

  c) For roadways located within Urban Communities: LOS of D or better

- The project would increase traffic volumes by more than 5 percent at a signalized intersection operating at an unacceptable level without the project

- The addition of project traffic causes the level of service at an unsignalized intersection to degrade from an acceptable to an unacceptable service level or causes an unsignalized intersection to meet traffic signal warrants based on the peak hour volume warrant
- The addition of project traffic causes a roadway segment to deteriorate from an acceptable level to an unacceptable level
- The addition of project traffic increases the volume on a roadway segment operating at an unacceptable level by more than 5 percent
- The project substantially increases hazards or congestion due to a design feature (e.g., sharp curves) or incompatible uses (e.g., farm equipment)
- The project results in inadequate emergency access
- The project conflicts with adopted transportation policies, plans, or programs

Report Organization

This report is divided into six chapters as described below:

- ***Chapter 1 – Introduction*** discusses the purpose and organization of this report.
- ***Chapter 2 – Existing Conditions*** describes the transportation system in the project vicinity, including the surrounding roadway network, daily roadway segment volumes, morning and evening peak period driveway and intersection turning movement volumes, existing bicycle, pedestrian, and transit facilities, and intersection and roadway segment levels of service.
- ***Chapter 3 – Project Characteristics*** presents relevant project information, such as the project components and project trip generation, distribution, and assignment.
- ***Chapter 4 – Existing with Project Traffic Conditions*** addresses the existing conditions with the project, and discusses project vehicular impacts. Construction related impacts are also discussed.
- ***Chapter 5 – Cumulative Traffic Conditions*** addresses the future conditions, both without and with the project, and discusses project vehicular impacts.
- ***Chapter 6 – Site Access and Circulation*** describes project access and circulation, and provides recommendations to improve site access. An assessment of the pedestrian crossing on August Avenue is also provided.

2. EXISTING CONDITIONS

This chapter describes transportation facilities in the project study area, including the surrounding roadway network, transit, pedestrian, and bicycle facilities in the project site vicinity.

Roadway System

The project site is located at the northwest and southwest corners of the Lander Avenue (SR 165)/August Avenue intersection the community of Hilmar in unincorporated Merced County. Regional access to the site is provided from SR 165. Adjacent land uses are primarily agricultural and industrial. The roadways in the study area are described below and their locations in relation to the site are shown on **Figure 1.**

Lander Avenue (SR 165) is a north-south oriented highway that forms the eastern boundary of the Project site. Generally, one travel lane per direction is provided on Lander Avenue, however, two southbound travel lanes are provided from the northern driveway to August Avenue; one northbound travel lane is provided on this same segment. SR 165 is a major north-south route within Merced County, connecting SR 99, approximately 4 miles north in the City of Turlock, to Interstate 5 (I-5), 35 miles to the south. No bicycle or pedestrian facilities are provided in Lander Avenue in the study area. Unrestricted access to the project site is provided from a driveway connection to SR 165. The speed limit changes from 45 MPH south of the project driveway to 55 MPH north of the driveway.

August Avenue is an east-west two-lane roadway that bisects the project site. No on-street parking is permitted within the study area and no bicycle or pedestrian facilities are provided. As the designated truck route to the facility, all trucks going to the project site enter through August Avenue. No bicycle or pedestrian facilities are provided, except for a mid-block crossing that connects the buildings located on the north side of August Avenue with the buildings located on the south side of August Avenue.

Western August Driveway (Driveway 1) is the primary heavy truck driveway for the facility, located on the western edge of the existing facility. This driveway primarily serves loading dock area and access to staff and visitor parking supplies is restricted. This driveway provides unrestricted access to the site.

Central August Driveways (Driveways 2) is located between Driveways 1 and 3 on August Avenue. The north leg of the driveway is restricted to service vehicles only and experiences very low levels of activity. The southern leg-of the driveway is off-set and serves the existing office building. These driveways provide unrestricted access to the site.

Eastern August Driveway (Driveway 3) is located on August Avenue approximately 260 feet east of the Lander Avenue/August Avenue intersection. It serves as an entry/exit for the main Visitor Center parking lot and provides unrestricted access to the site.

Lander Avenue Driveway (Driveway 4) is located on Lander Avenue approximately 800 feet north of the Lander Avenue/August Avenue intersection and provides unrestricted access to the employee parking lot as well as the Visitor Center parking lot and overflow parking lot. A dedicated left-turn lane into the site is provided from Lander Avenue, as well an acceleration lane for vehicles exiting the facility.

Existing Pedestrian and Bicycle Facilities

Pedestrian facilities include sidewalks, crosswalks, and pedestrian signals. With the rural, agricultural setting and location along a state highway, pedestrian facilities are not provided on the public roadways adjacent the site. However, within the existing Hilmar Cheese site, landscaped pedestrian pathways are provided to connect the various facilities and parking lots. A mid-block crossing is located on August Avenue approximately 260 feet west of Lander Avenue connecting the office building to the visitors center and other facilities north of August Avenue.

Bicycle facilities include the following:

- Bike paths (Class I) – Paved trails that are separated from roadways.
- Bike lanes (Class II) – Lanes on roadways designated for use by bicycles through striping, pavement legends, and signs.
- Bike routes (Class III) – Designated roadways for bicycle use by signs only; may or may not include additional pavement width for cyclists.

Presently no bicycle facilities are present; however, Class II bike lanes are proposed for portions of Lander Avenue (SR 165) from Bloss Avenue north to the Merced County Line. Bicycle parking is not currently provided on the site.

Existing Transit Service

Transit service is not provided in the project site vicinity.

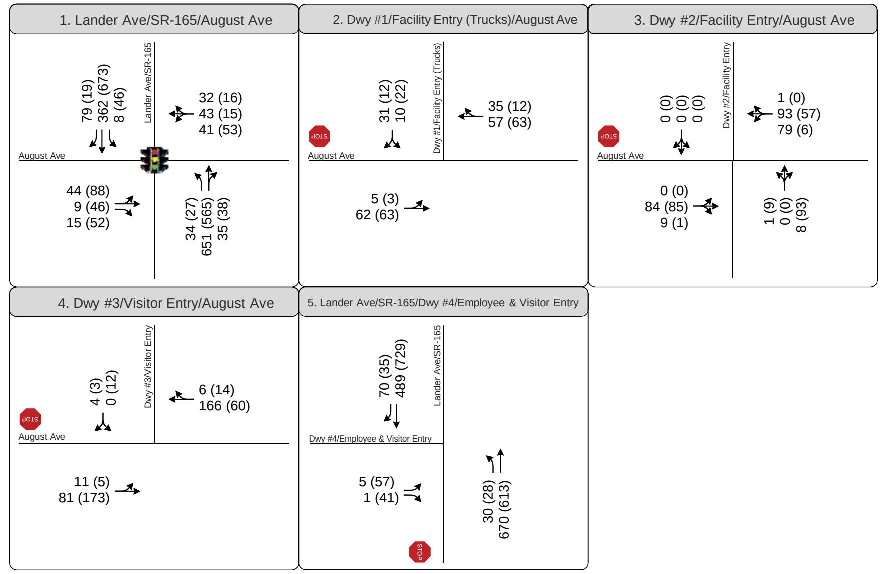
Existing Rail Service

No passenger rail service or facilities are provided in the study area.

Existing Traffic Counts

Weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak period intersection turning movement counts were conducted at the study intersection and primary driveways, including counts of pedestrians, bicyclists and trucks. 72-hour counts were conducted on August Avenue, west of Lander Avenue and on Lander Avenue, north of August Avenue. For the study intersection and driveways, the single hour with the highest traffic volumes during the count periods was identified. The peak hour volumes are presented on **Figure 3** along with the existing lane configuration and traffic control. The existing traffic counts are provided in Appendix A.

Vehicle classification counts were conducted to determine the level of truck traffic in the area because trucks behave differently than passenger vehicles as they take longer to accelerate, decelerate, and negotiate turns. Therefore, they also affect intersection operations. Based on the existing driveway counts at Hilmar Cheese, peak hour driveway volumes consist of about 75 percent passenger vehicles and 25 percent trucks during the AM peak hour and 90 percent passenger vehicles and 10 percent trucks during the PM peak hour. To reflect the operational characteristics of large trucks, the observed heavy vehicle percentages for each movement were used in the intersection operation analysis.



XX (YY) AM (PM) Peak Hour Traffic Volumes — Signalized Intersection — Stop Sign — # Study Intersection

Figure 3

Existing (2018) Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

WC18-3539_X_Volumes

Existing Intersection Operations

Existing operations were evaluated using the methodology described previously for the weekday AM and PM peak hours at the study intersection and driveways, as summarized in **Table 4.** The analysis is based on the volumes, lane configurations and traffic control shown previously on Figure 3. Observed peak hour factors[1] were used at all intersections for the existing analysis, in addition to the heavy vehicle percentages discussed previously.

As shown, the study intersection and driveways currently operate at acceptable service levels during both AM and PM peak hours, indicating good operations with little delay. Detailed intersection LOS calculation worksheets are presented in Appendix B. Field observations confirmed the calculated levels of service.

Table 4: Existing (2018) Peak Hour Level of Service

Location	Control[1]	Peak Hour	Delay (in seconds)[2]	LOS[3]
1. Lander Avenue (SR 165)/August Avenue	Signal	AM PM	11 12	B B
2. Driveway 1/August Avenue	SSSC	AM PM	2 (11) 2 (11)	A (B) A (B)
3. Driveway 2/August Avenue	SSSC	AM PM	3 (8) 4 (9)	A (A) A (A)
4. Driveway 3/August Avenue	SSSC	AM PM	1 (10) 1 (11)	A (A) A (B)
5. Driveway 4/Lander Avenue	SSSC	AM PM	0 (19) 2 (23)	A (C) A (C)

Notes:
1. Signal = signalized intersection, SSSC = side street stop-controlled intersection
2. Delay presented as seconds per vehicle; for side-street stop-controlled intersections, delay presented as Intersection average (worst approach).
3. LOS = Level of Service

Source: Fehr & Peers, 2018.

[1] The relationship between the peak 15-minute flow rate and the full hourly volume is given by the peak-hour factor (PHF) as shown in the following equation: PHF=Hourly volume/(4* volume during the peak 15 minutes of flow). The analysis of level of service is based on peak rates of flow occurring within the peak hour because substantial short-term fluctuations typically occur during an hour.

Existing Roadway Operations

Existing roadway segment operations were evaluated for the weekday condition for the roadway segments in the Project vicinity, as summarized in **Table 5.** The existing volumes were compared to the LOS thresholds presented in Table 3. As a three-lane highway, Lander Avenue north of August Avenue currently operates at LOS D, which is within the level of service standard for the roadway, while the two lane portion of Lander Avenue south of August Avenue operates at LOS E, which is considered deficient based on Merced County standards. August Avenue in the site vicinity operates at LOS C.

Table 5: Existing (2018) Roadway Segment Level of Service

Roadway	Location	Travel Lanes	ADT[1]	LOS[2]
August Avenue	Along Project Site	2	2,710	C
SR 165-Lander Avenue	North of August Avenue	3	18,140	D
SR 165-Lander Avenue	South of August Avenue	2	**17,880**	**E**

Notes: **Bold** indicates deficient operations
1. ADT = Average Daily Traffic
2. LOS = Level of Service

Source: Fehr and Peers, 2018

3. PROJECT CHARACTERISTICS

This chapter provides an overview of the proposed project components and addresses the project trip generation, distribution, and assignment characteristics. This allows for an 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 and exiting the project site was estimated.
2. ***Trip Distribution*** – The *direction* trips use to approach and depart the site was projected.
3. ***Trip Assignment*** – Trips were then *assigned* to specific roadway segments and intersection turning movements.

Project Description

The Hilmar Cheese Company operates a facility on Lander Avenue (SR 165) that is bisected by August Avenue that includes a visitor center, office, processing facilities, and warehousing facilities. The site is generally bound by Olso Road to the north, farmland to the south and west, and Lander Avenue to the east. The project proposes to construct the following in two phases:

Phase 1

- 61,000 square feet cold storage (warehouse)
- 6,900 square feet warehouse
- 24,000 square feet re-packaging (light industrial)

Phase 2

- 81,000 square feet cold storage (warehouse)
- 6,800 square feet warehouse
- 5,000 square feet re-packaging (light industrial)

In addition to the current proposal, a number of uses have been approved for the site but are not yet constructed. Remaining uses to be constructed under CUP 08-011 include:

- 6,200 square-feet of research and development
- 52,400 square-feet of storage

- 22,000 square-foot dryer building

Remaining uses to be constructed under MM 11-014 include:

- 53,000 square-feet of administrative office space in two buildings
- 60,000 square-feet of cold storage
- 4,000 square-feet of cream storage

The approved but not yet constructed uses were considered in the analysis of cumulative conditions.

Trip Generation

Project trip generation refers to the process for estimating the amount of vehicular traffic a project would add to the surrounding roadway system. Estimates of the total amount of traffic entering and exiting the project driveways are calculated for an average weekday. Separate estimates are created for the peak one-hour periods during the morning and evening commute periods when traffic volumes on the surrounding streets are highest.

Estimates of project trip generation were developed by using rates contained in the Institute of Transportation Engineers (ITE), *Trip Generation*, (10th Edition). The ITE trip generation rates for the proposed and approved project uses are presented in **Table 6** for the weekday daily, morning and evening peak hours.

Table 6: ITE Average Trip Vehicle Trip Generation Rates (per 1,000 square-feet)

ITE Use	Daily	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Office	7.95	1.36	0.19	1.55	0.25	1.24	1.49
Light Industrial	4.96	0.62	0.08	0.70	0.08	0.55	0.63
Warehouse	1.74	0.13	0.04	0.17	0.05	0.14	0.19
Research & Development	11.26	0.32	0.10	0.42	0.07	0.42	0.49

Source: ITE: *Trip Generation*, 10th Edition

The project trip generation rates presented in Table 6 were applied to the proposed project components, as presented in **Table 7**. Based on the existing driveway counts at Hilmar Cheese, peak hour driveway volumes consist of about 75 percent passenger vehicles and 25 percent trucks during the AM peak hour and 90 percent passenger vehicles and 10 percent trucks during the PM peak hour. To reflect the operational characteristics of large trucks, heavy vehicle percentages were used in the intersection operation analysis. It is expected that these proportions would remain similar under with project conditions.

Table 7: Project Trip Generation Estimates

Phase	Land Use	Size (Square Feet)	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Phase 1	Cold Storage (warehouse)	61,000	110	8	2	10	3	9	12
	Warehouse (warehouse)	6,900	10	1	0	1	0	1	1
	Re-packaging (light industrial)	24,000	120	15	2	17	2	13	15
Phase 2	Cold Storage (warehouse)	81,000	140	11	3	14	4	11	15
	Warehouse (warehouse)	6,800	10	1	0	1	0	1	1
	Re-packaging (light industrial)	5,000	20	4	0	4	0	3	3
	Total	***184,700***	***620***	***59***	***11***	***70***	***14***	***57***	***71***

Source: Fehr & Peers, 2018

The project is could generate up to 620 new daily trips, including 70 vehicle trips during the AM peak hour and 71 trips during the PM peak hour upon completion of both Phases 1 and 2. These trips were assigned to the roadway network based on the directions of approach and departure (or trip distribution) described in the next section. Use of ITE trip generation rates may overstate actual trip generation from the project as it is expected to increase the number of employees at the site by 88, and add one additional truck trip per day. Based on each employee generating approximately 2 trips per day, and one additional round-trip truck trip, approximately 180 new daily trips could be generated. Use of the higher trip generation, as estimated using the ITE trip generation rates, to identify potential impacts to the transportation system presents a conservative assessment of potential project impacts, and allows for flexibility in future staffing levels.

New vehicle trips that could be generated by the approved site uses that have not yet been constructed were calculated, as presented in **Table 8**, based on the trip generation rates shown in Table 6. These uses could be constructed without further approvals. The approved project uses are expected to generate approximately 810 daily trips, including 122 vehicle trips during the AM peak hour and 120 trips during the

PM peak hour. These trips were assigned to the roadway network and accounted for in the analysis of cumulative conditions.

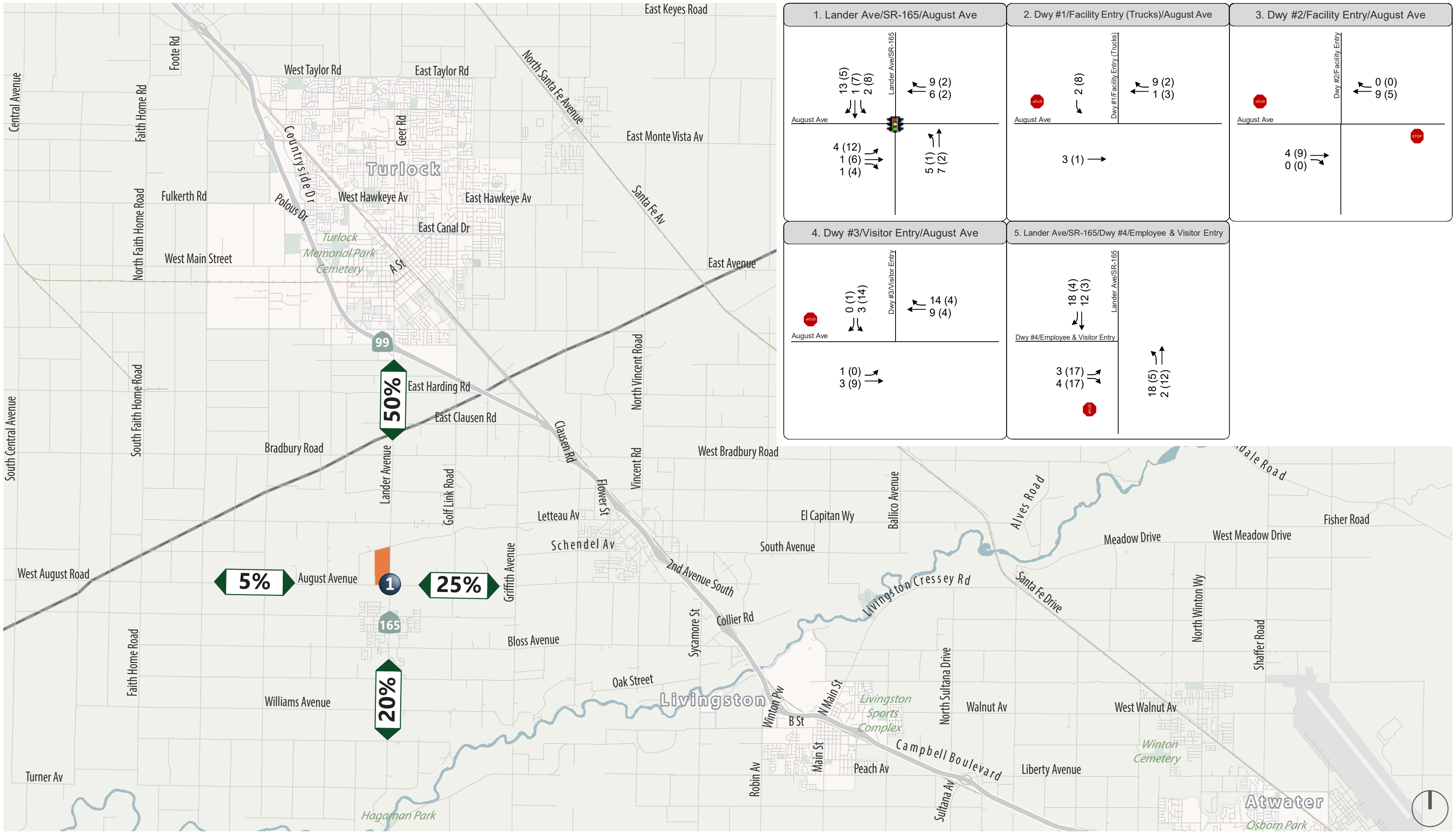
Table 8: Approved Project Trip Generation Estimates

Phase	Land Use	Size	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Approved CUP 08-011	R & D	6,200	70	2	1	3	0	3	3
	Storage/ Warehouse/ Utility	52,400	90	7	2	9	3	7	10
	Dryer Building	22,000	110	13	2	15	2	12	14
Approved MM 11-014	Office	53,000	420	72	10	82	13	66	79
	Cold Storage (warehouse)	60,000	100	8	2	10	3	8	11
	Cream Processing (light industrial)	4,000	20	3	0	3	0	3	3
		Total	***810***	***105***	***17***	***122***	***21***	***99***	***120***

Source: Fehr & Peers, 2018.

Trip Distribution and Assignment

Preliminary trip distribution percentages were developed based on the location of the site, the surrounding land uses, and existing travel patterns in the area as presented on **Figure 4** in conjunction with the project trip assignment. Trip assignment for the approved project uses are shown on **Figure 5.**

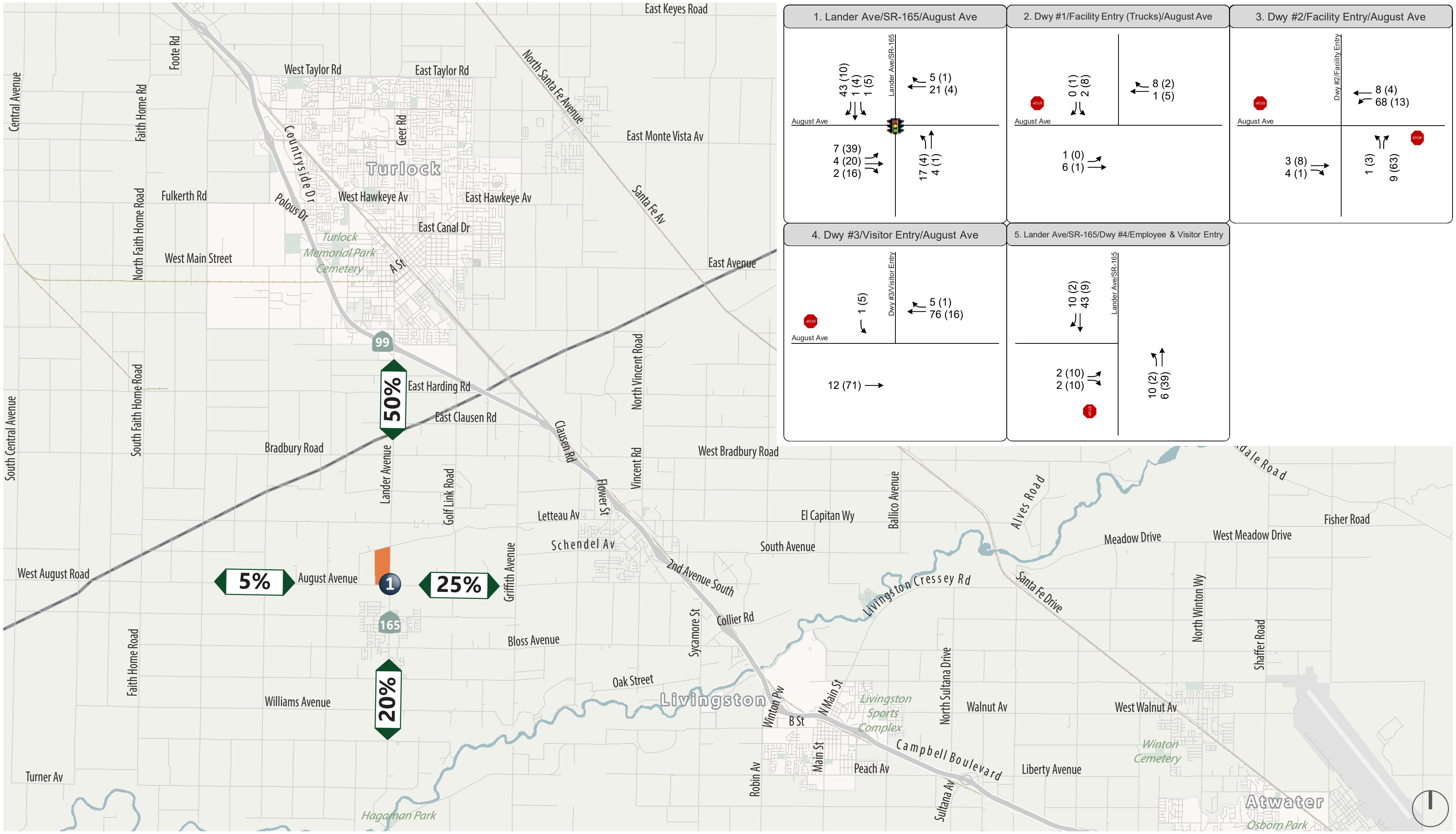


Project Site
Study Intersection
XX% Project Trip Distribution

XX (YY) AM (PM) Peak Hour Traffic Volumes
Signalized Intersection
Stop Sign

Figure 4

Project Trip Distribution Percentages and Assignment



Project Site | 1 Study Intersection | XX% Project Trip Distribution

XX (YY) AM (PM) Peak Hour Traffic Volumes | Signalized Intersection | Stop Sign

Figure 5

Approved Project Trip Distribution Percentages and Assignment

WC18-3539_4-5_TripDistroAssign

4. EXISTING WITH PROJECT CONDITIONS

This chapter evaluates potential off-site traffic impacts under Existing with Project conditions.

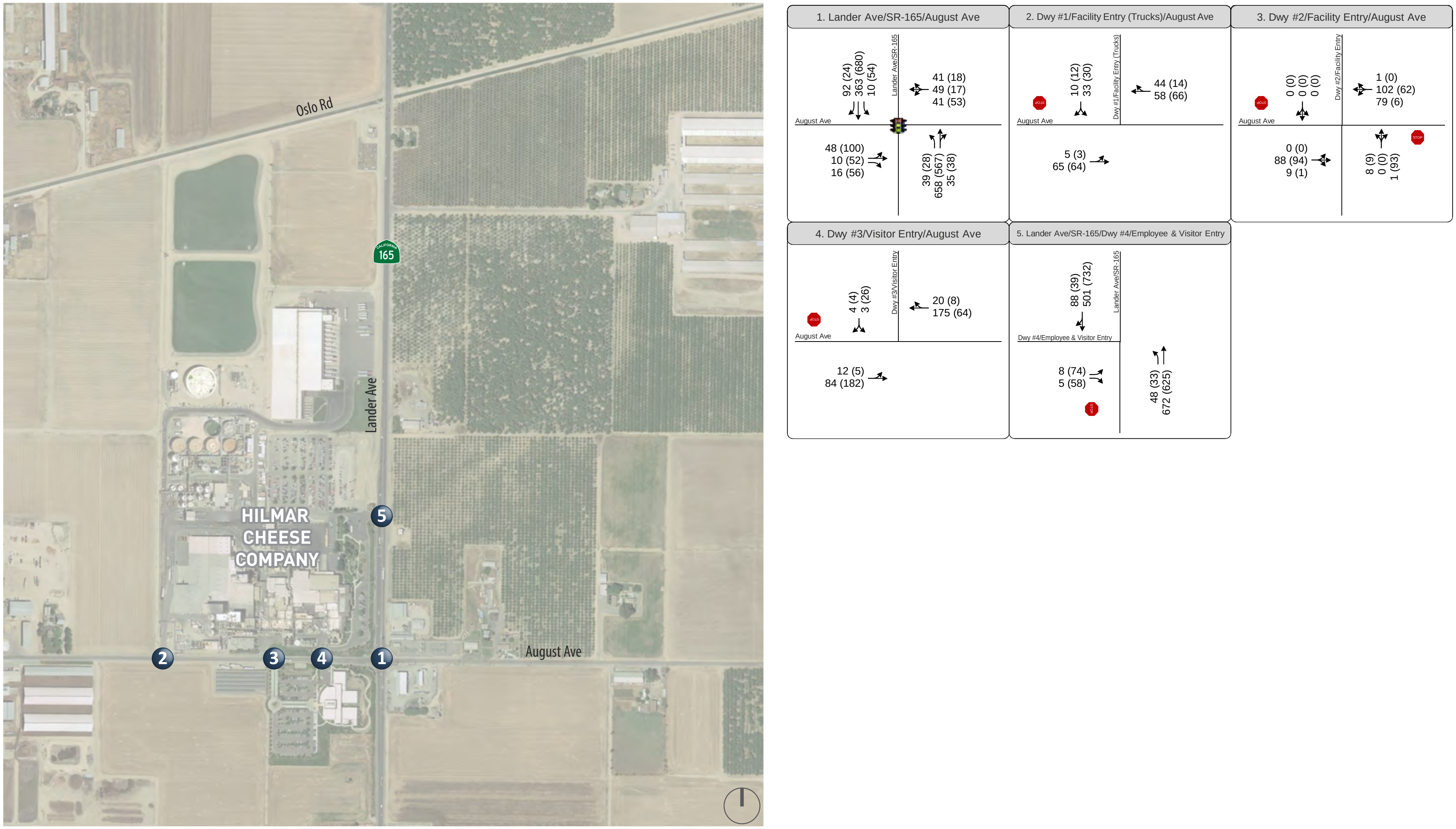
Existing With Project Traffic Volumes and Roadway Improvements

Project traffic volumes (Figure 4) were added to the existing peak hour traffic volumes (Figure 3) to estimate the Existing with Project peak hour traffic volumes, as shown on **Figure 6.** No roadway improvements were assumed from Existing conditions.

Analysis of Existing With Project Conditions

The Existing with Project conditions analysis results are presented in **Table 9.** The addition of project traffic would result in increased delay at the Lander Avenue (SR 165)/August Avenue intersection during the morning and evening peak hours, but the intersection would continue to operate at acceptable service levels. The project driveways would also continue to operate at an overall LOS A with the addition of project traffic although some vehicles waiting to turn from the site to the major roadways may experience increased delay.

Existing with Project daily roadway segment operations were evaluated, as summarized in **Table 10.** Lander Avenue south of August Avenue currently operates at a deficient LOS E. The project would add traffic to this roadway segment.



XX (YY) AM (PM) Peak Hour Traffic Volumes Signalized Intersection Stop Sign # Study Intersection

WC18-3539_X_Volumes

Figure 6

Existing with Project Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

Table 9: Existing and Existing With Project Peak Hour Intersection Levels of Service

Intersection	Control[1]	Peak Hour	Existing		Existing With Project	
			Delay[2]	LOS[3]	Delay[2]	LOS[3]
1. Lander Avenue (SR 165)/August Avenue	Signal	AM PM	11 12	B B	12 12	B B
2. Driveway 1/August Avenue	SSSC	AM PM	2 (11) 2 (11)	A (B) A (B)	2 (11) 2 (11)	A (B) A (B)
3. Driveway 2/ August Avenue/ Project Driveway	SSSC	AM PM	3 (12) 4 (9)	A (A) A (A)	2 (12) 4 (9)	A (B) A (B)
4. Driveway 4/ August Avenue	SSSC	AM PM	1 (10) 1 (11)	A (A) A (B)	1 (11) 1 (11)	A (B) A (B)
5. Driveway 5/ Lander Avenue	SSSC	AM PM	0 (19) 2 (23)	A (C) A (C)	1 (20) 2 (26)	A (C) A (D)

Notes:
1. Signal = signalized intersection, SSSC = side street stop-controlled intersection
2. Delay presented as seconds per vehicle; for side-street stop-controlled intersections, delay presented as Intersection average (worst approach).
3. LOS = Level of Service

Source: Fehr & Peers, 2018.

Table 10: Existing Plus Project Roadway Segment Level of Service

Roadway	Location	Travel Lanes	Existing		Existing Plus Project		Percent Increase
			ADT[1]	LOS[2]	ADT[1]	LOS[2]	
August Avenue	Along Project Site	2	2,170	C	2,966	C	9%
Lander Avenue	North of August Avenue	3	18,140	D	18,452	D	2%
Lander Avenue	South of August Avenue	2	**17,880**	**E**	**18,004**	**E**	1%

Notes: **Bold** indicates deficient operations
1. ADT = Average Daily Traffic
2. LOS = Level of Service

Source: Fehr & Peers, 2018

Impact 1 – Lander Avenue (SR 165), south of August Avenue – Lander Avenue (SR 165), south of August Avenue currently operates at LOS E. The project would increase traffic volumes on this roadway segment by 1 percent, which is less than the 5 percent increase which triggers a project specific significant impact. Therefore, the project impact is ***less-than-significant***.

Mitigation Measure 1 – Although the project specific impact is less than significant, the project applicant will be required to pay all applicable local and regional traffic impact fees that will fund the construction of future roadway improvements in Merced County.

Construction Analysis

This assessment of construction activity considered two aspects:

- If construction vehicles (including vehicles removing or delivering fill material, bull dozers, and other heavy machinery) associated with site construction would generate any additional project impacts; and
- If workers required for the construction of the new facilities would generate additional traffic-related impacts.

A construction-related impact would occur if:

- The number of construction vehicles required to prepare the site would equal or exceed the number of automobile trips generated by the project site during the existing scenario; or
- The number of workers employed on-site would generate more peak hour trips than those associated with the project.

Construction Vehicles

Given the topography of the site, significant import or export of fill material would not be required. Therefore, the number of construction vehicles accessing the site would be minimal during the grading phase. Additionally, project construction would likely stage any large vehicles (i.e., earth-moving equipment, cranes, etc.) on the site prior to beginning site work and remove these vehicles at project completion. As such, a daily influx of construction equipment is unlikely.

For these reasons, the project is judged to have no significant impacts due to heavy vehicles involved in construction of the site.

Construction Worker Traffic

While there is not expected to be a large number of construction vehicles accessing the site on a daily basis, there will be a number of workers involved in construction of facilities. Based on the initial construction phasing plan, an average of 30-construction workers are expected to be on-site during the building construction phase, with lower levels of workers needed during site preparation and wrap-up.

To assess the impact of these workers, vehicle trips per employee were estimated based on an average of 30-construction workers. This estimate was developed by applying a vehicle occupancy rate of 1.25 persons per vehicle. After applying this factor, it is anticipated that 30 construction workers would generate no more than 24 peak hour vehicle trips (assuming all workers arrive or depart during the same peak hour). Given that 24 vehicle trips is less than the projected AM or PM peak hour trip generation for the project, traffic from construction workers is not anticipated to generate additional impacts beyond those addressed in the Existing conditions analysis. This is a conservative analysis and assumes that all the on-site workers enter and depart the site during peak traffic periods (i.e., 7:00 to 9:00 AM and 4:00 to 6:00 PM). Because workers are likely to arrive and depart at different times depending on their schedules, the actual construction-related traffic would be less than the project-related traffic.

Construction Impacts

Although construction impacts are expected to be temporary and less-than-significant, the following is recommended to minimize the effects of construction related activity:

- Prepare a construction management plan, including:
    - A set of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak hours; lane closure proceedings; signs, cones, and other warning devices for drivers; and designation of construction access routes
    - Permitted construction hours
    - Location of construction staging
    - Provision of on-site parking for all construction employees, site visitors, and inspectors
    - Provisions for street sweeping to remove construction related debris on public streets

5. CUMULATIVE TRAFFIC CONDITIONS

This chapter discusses Cumulative traffic conditions both without and with the Project. The future traffic conditions analysis considers the build out of Phase 1 and 2 of the project as well as the remaining approved development on the site.

Cumulative Roadway Assumptions

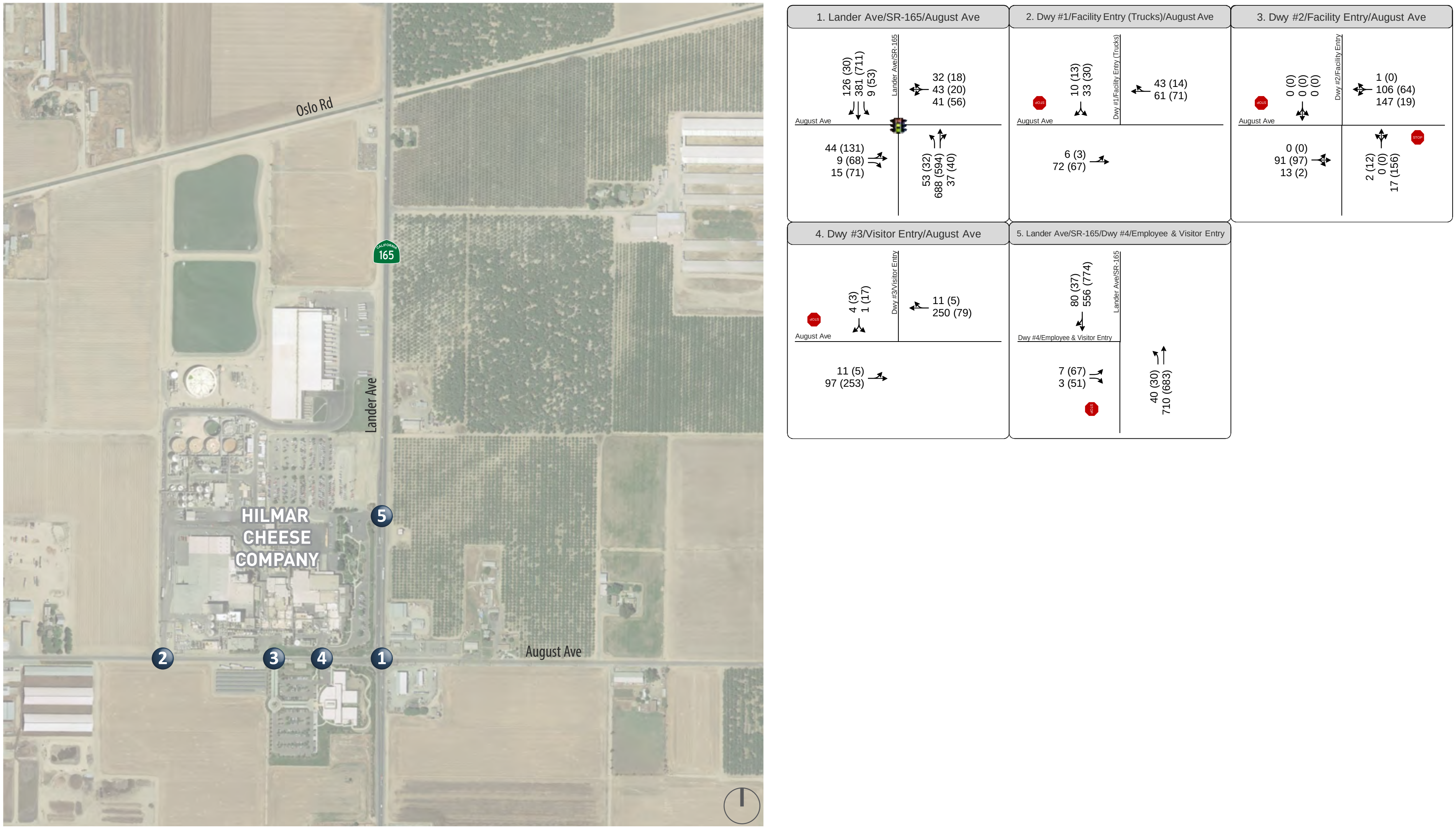
There are a number of potential roadway improvements planned within Merced County, such as SR 165 bypass project, which would realign SR 165 from the Merced/Stanislaus County line to the south of Hilmar and widening of SR 99. Full funding of these projects has not been identified; no roadway improvements over existing conditions were included in the analysis of Cumulative conditions.

Cumulative Traffic Forecasts

Several sources of data were reviewed during the development of cumulative traffic forecasts for the study locations, including a computerized travel demand model and historic growth rates. The *2018 MCAG Regional Transportation Plan/Sustainable Communities Strategy for Merced County* (2018 RTP/SCS) documents expected levels of traffic growth on Lander Avenue (SR 165) through 2042 under a number of different land use and roadway network scenarios. Under the 2018 RTP/SCS scenario, traffic volumes on Lander Avenue in the project vicinity are expected to remain largely the same through 2042, with a total of 1 percent growth between now and 2042. Other land use and roadway network scenarios documented in the 2018 RTP/SCS projected negative traffic growth along the Lander Avenue corridor.

For the purpose of this analysis, existing through traffic on Lander Avenue and August Avenue was increased by 5 percent. Additionally, traffic that could be generated by the approved development on the site was added to the resulting volumes to represent Cumulative without Project forecasts, as presented on **Figure 7** for intersections and **Table 12** for roadway segments.

The peak hour project volumes from Figure 4 were added to the Cumulative without Project traffic volumes to determine cumulative traffic volumes with the proposed project, as presented on **Figure 8.**



XX (YY) AM (PM) Peak Hour Traffic Volumes

Signalized Intersection

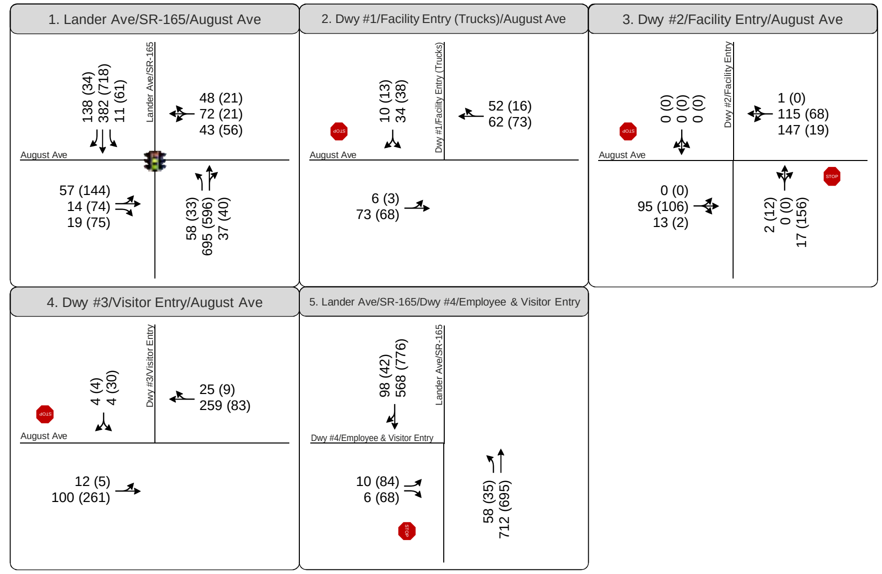
Stop Sign

Study Intersection

Figure 7

Cumulative Peak Hour
Intersection Traffic Volumes, Lane Configurations and Traffic Controls

WC18-3539_X_Volumes



XX (YY) AM (PM) Peak Hour Traffic Volumes — Signalized Intersection — Stop Sign — # Study Intersection

Figure 8

Cumulative with Project Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

WC18-3539_X_Volumes

Analysis of Cumulative Conditions

The Cumulative Without and With Project analysis results are presented in **Table 11.** In the Cumulative without Project condition, the study intersection and driveways are projected to operate at an average LOS B or better during both peak hours. The addition of Project traffic would slightly increase delay at the Lander Avenue (SR 165)/ August Avenue during both peak hours, although the intersection would continue to operate at LOS B. The driveways would continue to operate at overall acceptable service levels.

Table 11: Cumulative Without and With Project Peak Hour Intersection Levels of Service

Intersection	Control[1]	Peak Hour	Without Project		With Project	
			Delay[2]	LOS[3]	Delay[2]	LOS[3]
1. Lander Avenue (SR 165)/August Avenue	Signal	AM PM	12 15	B B	14 16	B B
2. Driveway 1/ August Avenue	SSSC	AM PM	2 (11) 2 (11)	A (B) A (B)	2 (11) 3 (11)	A (B) A (B)
3. Driveway 2/ August Avenue	SSSC	AM PM	4 (10) 5 (10)	A (A) A (A)	3 (10) 5 (11)	A (A) A (B)
4. Driveway 3/ August Avenue	SSSC	AM PM	0 (11) 1 (11)	A (B) A (B)	1 (11) 1 (11)	A (B) A (B)
5. Driveway 4/ Lander Avenue	SSSC	AM PM	0 (21) 2 (27)	A (C) A (D)	1 (23) 3 (31)	A (C) A (D)

Notes:
1. Signal = signalized intersection, SSSC = side street stop controlled intersection
2. Delay presented as seconds per vehicle; for side-street stop-controlled intersections, delay presented as Intersection average (worst approach).
3. LOS = Level of Service

Source: Fehr & Peers, 2018.

Roadway segment forecasts were developed based on the method described previously and accounts for regional growth and the approved development on the site. Project traffic was added to the Without Project forecast. Daily levels of service are presented in **Table 12.** August Avenue is projected to operate at LOS C without and with the Project. The three-lane segment of Lander Avenue is projected to operate at LOS D without and with the Project. Lander Avenue, south of August Avenue, is projected to degrade to LOS E in the Cumulative without Project scenario. The project would increase traffic on this roadway segment.

Table 12: Cumulative Roadway Segment Level of Service

Roadway	Location	Travel Lanes	Existing		Existing Plus Project		Percent Increase
			ADT[1]	LOS[2]	ADT[1]	LOS[2]	
August Avenue	Along Project Site	2	3,410	B	3,666	B	8%
Lander Avenue	North of August Avenue	3	19,450	D	19,762	D	2%
Lander Avenue	South of August Avenue	2	**18,940**	**E**	**19,064**	**E**	1%

Notes: **Bold** indicates deficient operations
1. ADT = Average Daily Traffic
2. LOS = Level of Service

Source: Fehr & Peers, 2018

Impact 2 – Lander Avenue (SR 165), south of August Avenue – Lander Avenue (SR 165), south of August Avenue is projected to continue operating at to LOS E in the cumulative condition. The project would increase traffic volumes on this roadway segment by 1 percent, which is less than the 5 percent increase which triggers a project specific significant impact. Therefore, the project impact is ***less-than-significant***.

Mitigation Measure 2 – Although the project specific impact is less than significant, the project applicant will be required to pay all applicable local and regional traffic impact fees that will fund the construction of future roadway improvements in Merced County.

6. SITE ACCESS AND ON-SITE CIRCULATION

This chapter analyzes site access and internal circulation for vehicles, pedestrians, bicycles, and emergency vehicles.

Vehicles

The level of service results for the site driveways presented previously indicates that they are projected to operate at acceptable service levels with the addition of project traffic, previously approved site development that has not been completed, and regional traffic growth. No changes to site access are proposed as part of the project and based on the results of the assessment, no changes are recommended.

Emergency Vehicles

Factors such as number of access points, roadway width, and proximity to fire stations determine whether a project provides sufficient emergency access. The closest fire station to the Project site is located 1.1 miles to the south at Falke Street in Hilmar-Irwin. The portion of the site north of August Avenue has multiple points of entry from two roadways. If one entrance is blocked or obstructed, there are other entry points.

Pedestrians

Pedestrian access is provided through a system of existing and proposed pathways and crossings, as shown on the site plan. Pathways on the north campus connect to the south campus via a mid-block crossing on August Avenue. On the southern portion of the site, a pathway from the mid-block crossing connects to the main entrance of the Phase 1 Administrative Building.

Fehr & Peers completed a pedestrian crossing assessment for August Avenue pedestrian crossing to determine if the existing crossing treatment is appropriate for the actual level of activity that is occurring as well as projected levels of activity under project and future conditions. The crosswalk treatment identification tool combines academic research on crosswalk treatment effectiveness with national best practices. Key inputs for the tool include:

- speed limit
- pedestrian volume

- roadway volumes
- crossing distance
- number of lanes
- presence of bicyclists
- presence of transit
- presence of a median
- presence of on-street parking
- expected motorist compliance (yielding)

Pedestrian count data was collected at the crosswalk on August Avenue during the morning, late-morning to early afternoon (11:00 to 1:00 PM), and evening peak periods. Additionally, 72-hours of count data was collected in the vicinity of the crossing to document the level of vehicular activity during the times of peak pedestrian activity.

The analysis of existing conditions indicates that the existing crossing treatments are appropriate given the vehicle volumes, pedestrian volumes, and other roadway characteristics. Addition of project traffic in the existing condition does not trigger the need for additional crossing treatments, which currently include a high visibility crosswalk and pedestrian actuated warning lights.

In the cumulative conditions, pedestrian activity is expected to increase with development of the Phase 2 office building, and traffic volumes on August Avenue are expected to further increase considering the vehicle traffic generated by approved by not yet constructed uses on the site, as well as from the proposed project. With the potential increases in pedestrian activity and vehicular activity, additional crossing treatments may be required upon completion of the Phase 2 office. Additional treatments that could be considered include advance yield lines, overhead flashing beacons or a pedestrian signal, or other treatment.

> ***Recommendation 1:*** Monitor operations of the midblock crossing on August Avenue after completion of the currently proposed project and the Phase 2 office, and install additional crossing treatments, if necessary, based on field conditions.

Bicycles

Currently, off-site bicycle facilities do not exist in the Project vicinity. Bicycles are currently used on the northern portion of the site for employee circulation and Class II bicycle lanes are planned on Lander Avenue (SR 165). No bicycle activity was noted at the mid-block crosswalk on August Avenue and minimal bicycle activity was observed on either August Avenue or Lander Avenue during the data collection period.

Transit Vehicles

Transit is not provided within the study area; therefore transit access was not evaluated.

Prepared by

FEHR & PEERS

100 Pringle Avenue
Suite 600
Walnut Creek, CA 94596

November 2018

Transportation Assessment

Hilmar Cheese Company

Prepared for:
Hilmar Cheese Company, Inc.

HilmaR CHEESE COMPANY

Appendix A:

Traffic Count Sheets

Traffic Data Service

San Jose, CA
(408) 622-4787
tdsbay@cs.com

File Name : 1AM FINAL
Site Code : 00000001
Start Date : 10/23/2018
Page No : 1

Groups Printed- Lights - Buses - Trucks

	LANDER AVE Southbound					AUGUST AVE Westbound					LANDER AVE Northbound					AUGUST AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	17	108	5	0	130	6	9	6	0	21	6	130	4	0	140	4	4	5	0	13	304
07:15 AM	11	90	2	0	103	7	8	10	0	25	4	149	5	0	158	3	2	10	0	15	301
07:30 AM	20	94	0	0	114	8	8	10	0	26	12	197	8	0	217	6	1	6	0	13	370
07:45 AM	27	108	4	0	139	11	16	17	0	44	5	156	14	0	175	3	1	14	0	18	376
Total	75	400	11	0	486	32	41	43	0	116	27	632	31	0	690	16	8	35	0	59	1351
08:00 AM	21	70	2	0	93	6	11	4	0	21	14	149	7	0	170	3	5	14	0	22	306
08:15 AM	17	73	2	0	92	7	9	7	0	23	9	129	11	0	149	6	5	18	0	29	293
08:30 AM	8	85	1	0	94	2	4	12	0	18	11	155	8	0	174	4	2	11	0	17	303
08:45 AM	11	79	4	0	94	4	5	10	0	19	3	112	4	0	119	2	2	7	0	11	243
Total	57	307	9	0	373	19	29	33	0	81	37	545	30	0	612	15	14	50	0	79	1145
Grand Total	132	707	20	0	859	51	70	76	0	197	64	1177	61	0	1302	31	22	85	0	138	2496
Apprch %	15.4	82.3	2.3	0		25.9	35.5	38.6	0		4.9	90.4	4.7	0		22.5	15.9	61.6	0		
Total %	5.3	28.3	0.8	0	34.4	2	2.8	3	0	7.9	2.6	47.2	2.4	0	52.2	1.2	0.9	3.4	0	5.5	
Lights	100	601	13	0	714	40	57	73	0	170	60	1088	50	0	1198	23	17	52	0	92	2174
% Lights	75.8	85	65	0	83.1	78.4	81.4	96.1	0	86.3	93.8	92.4	82	0	92	74.2	77.3	61.2	0	66.7	87.1
Buses	0	0	0	0	0	0	0	1	0	1	1	0	2	0	3	1	1	0	0	2	6
% Buses	0	0	0	0	0	0	0	1.3	0	0.5	1.6	0	3.3	0	0.2	3.2	4.5	0	0	1.4	0.2
Trucks	32	106	7	0	145	11	13	2	0	26	3	89	9	0	101	7	4	33	0	44	316
% Trucks	24.2	15	35	0	16.9	21.6	18.6	2.6	0	13.2	4.7	7.6	14.8	0	7.8	22.6	18.2	38.8	0	31.9	12.7

	LANDER AVE Southbound				AUGUST AVE Westbound				LANDER AVE Northbound				AUGUST AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	11	90	2	103	7	8	10	25	4	149	5	158	3	2	10	15	301
07:30 AM	20	94	0	114	8	8	10	26	12	**197**	8	**217**	**6**	1	6	13	370
07:45 AM	**27**	**108**	**4**	**139**	**11**	**16**	**17**	**44**	5	156	**14**	175	3	1	**14**	18	**376**
08:00 AM	21	70	2	93	6	11	4	21	**14**	149	7	170	3	**5**	14	**22**	306
Total Volume	79	362	8	449	32	43	41	116	35	651	34	720	15	9	44	68	1353
% App. Total	17.6	80.6	1.8		27.6	37.1	35.3		4.9	90.4	4.7		22.1	13.2	64.7		
PHF	.731	.838	.500	.808	.727	.672	.603	.659	.625	.826	.607	.829	.625	.450	.786	.773	.900

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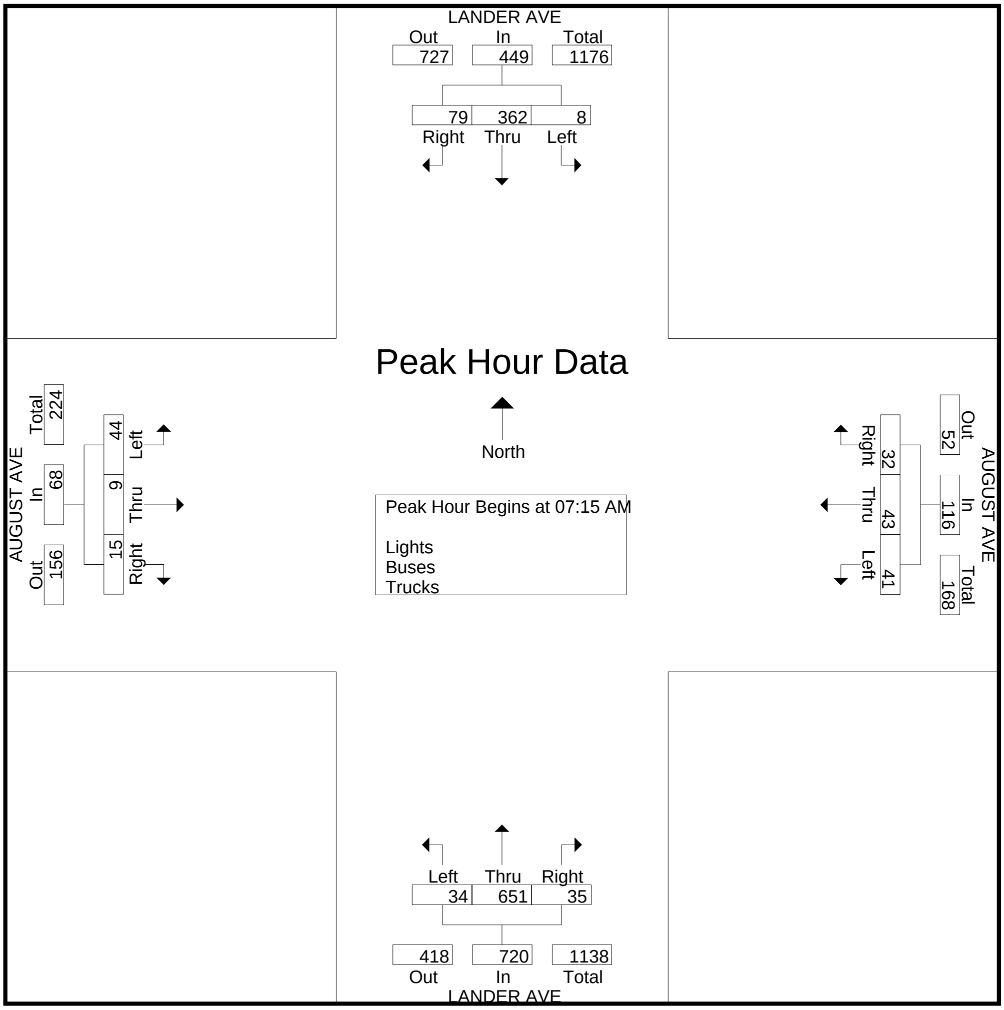

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Groups Printed- Bikes

	LANDER AVE Southbound					AUGUST AVE Westbound					LANDER AVE Northbound					AUGUST AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Apprch %	0	100	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %	0	100	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

	LANDER AVE Southbound				AUGUST AVE Westbound				LANDER AVE Northbound				AUGUST AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	**1**
Total Volume	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
% App. Total	0	100	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250

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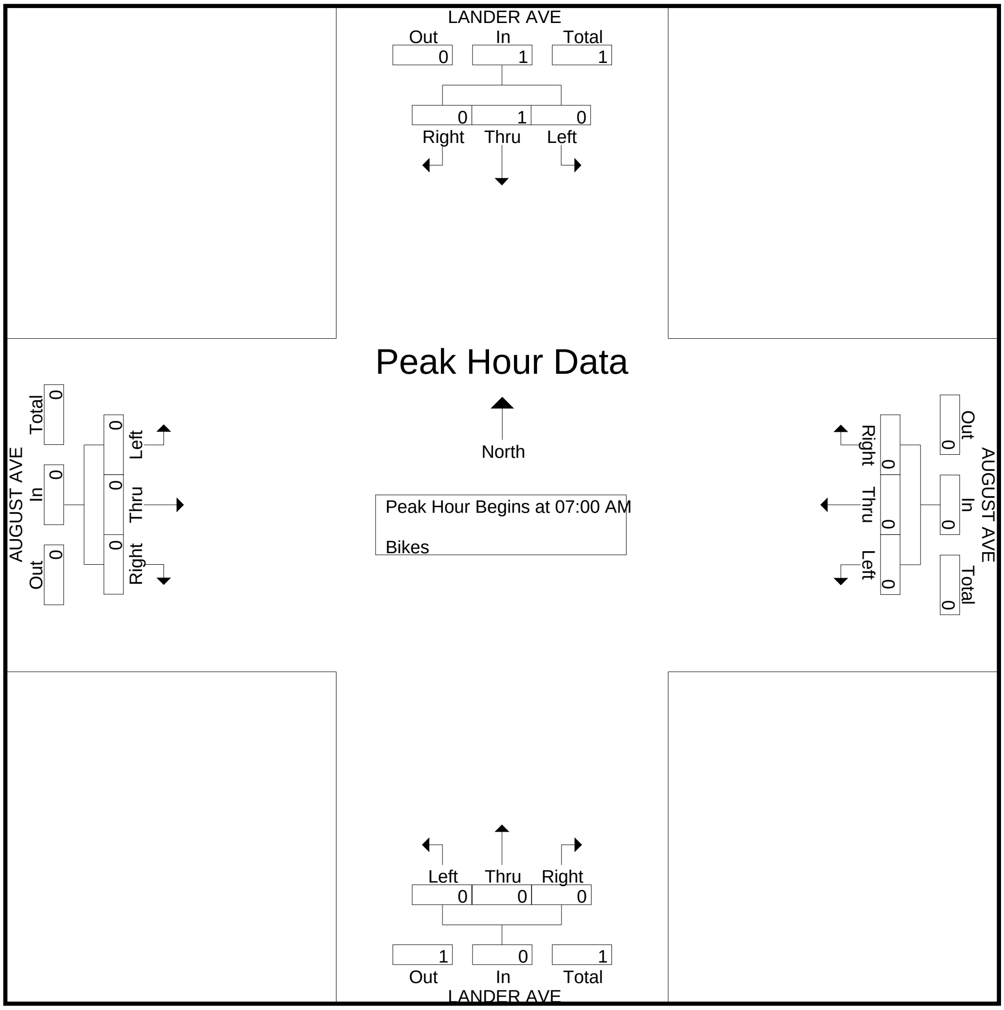

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File Name : 1PM FINAL
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Groups Printed- Lights - Buses - Trucks

	LANDER AVE Southbound					AUGUST AVE Westbound					LANDER AVE Northbound					AUGUST AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	4	167	6	0	177	6	2	15	0	23	11	125	5	0	141	4	4	16	0	24	365
04:15 PM	9	166	3	0	178	8	4	23	0	35	11	132	9	0	152	4	6	10	0	20	385
04:30 PM	3	153	14	0	170	3	6	7	0	16	8	154	10	0	172	21	9	17	0	47	405
04:45 PM	9	152	6	0	167	4	0	12	0	16	9	163	6	0	178	12	12	17	0	41	402
Total	25	638	29	0	692	21	12	57	0	90	39	574	30	0	643	41	31	60	0	132	1557
05:00 PM	4	172	10	0	186	4	4	16	0	24	10	136	7	0	153	9	13	30	0	52	415
05:15 PM	3	196	16	0	215	5	5	18	0	28	11	112	4	0	127	10	12	24	0	46	416
05:30 PM	3	183	7	0	193	9	1	19	0	29	17	126	6	0	149	7	8	11	0	26	397
05:45 PM	2	140	7	0	149	2	2	10	0	14	10	120	3	0	133	7	6	7	0	20	316
Total	12	691	40	0	743	20	12	63	0	95	48	494	20	0	562	33	39	72	0	144	1544
Grand Total	37	1329	69	0	1435	41	24	120	0	185	87	1068	50	0	1205	74	70	132	0	276	3101
Apprch %	2.6	92.6	4.8	0		22.2	13	64.9	0		7.2	88.6	4.1	0		26.8	25.4	47.8	0		
Total %	1.2	42.9	2.2	0	46.3	1.3	0.8	3.9	0	6	2.8	34.4	1.6	0	38.9	2.4	2.3	4.3	0	8.9	
Lights	25	1276	64	0	1365	38	19	117	0	174	86	1004	41	0	1131	65	66	109	0	240	2910
% Lights	67.6	96	92.8	0	95.1	92.7	79.2	97.5	0	94.1	98.9	94	82	0	93.9	87.8	94.3	82.6	0	87	93.8
Buses	0	2	0	0	2	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	4
% Buses	0	0.2	0	0	0.1	0	0	1.7	0	1.1	0	0	0	0	0	0	0	0	0	0	0.1
Trucks	12	51	5	0	68	3	5	1	0	9	1	64	9	0	74	9	4	23	0	36	187
% Trucks	32.4	3.8	7.2	0	4.7	7.3	20.8	0.8	0	4.9	1.1	6	18	0	6.1	12.2	5.7	17.4	0	13	6

	LANDER AVE Southbound				AUGUST AVE Westbound				LANDER AVE Northbound				AUGUST AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	3	153	14	170	3	**6**	7	16	8	154	**10**	172	**21**	9	17	47	405
04:45 PM	**9**	152	6	167	4	0	12	16	9	**163**	6	**178**	12	12	17	41	402
05:00 PM	4	172	10	186	4	4	16	24	10	136	7	153	9	**13**	**30**	**52**	415
05:15 PM	3	**196**	**16**	**215**	**5**	5	**18**	**28**	**11**	112	4	127	10	12	24	46	**416**
Total Volume	19	673	46	738	16	15	53	84	38	565	27	630	52	46	88	186	1638
% App. Total	2.6	91.2	6.2		19	17.9	63.1		6	89.7	4.3		28	24.7	47.3		
PHF	.528	.858	.719	.858	.800	.625	.736	.750	.864	.867	.675	.885	.619	.885	.733	.894	.984

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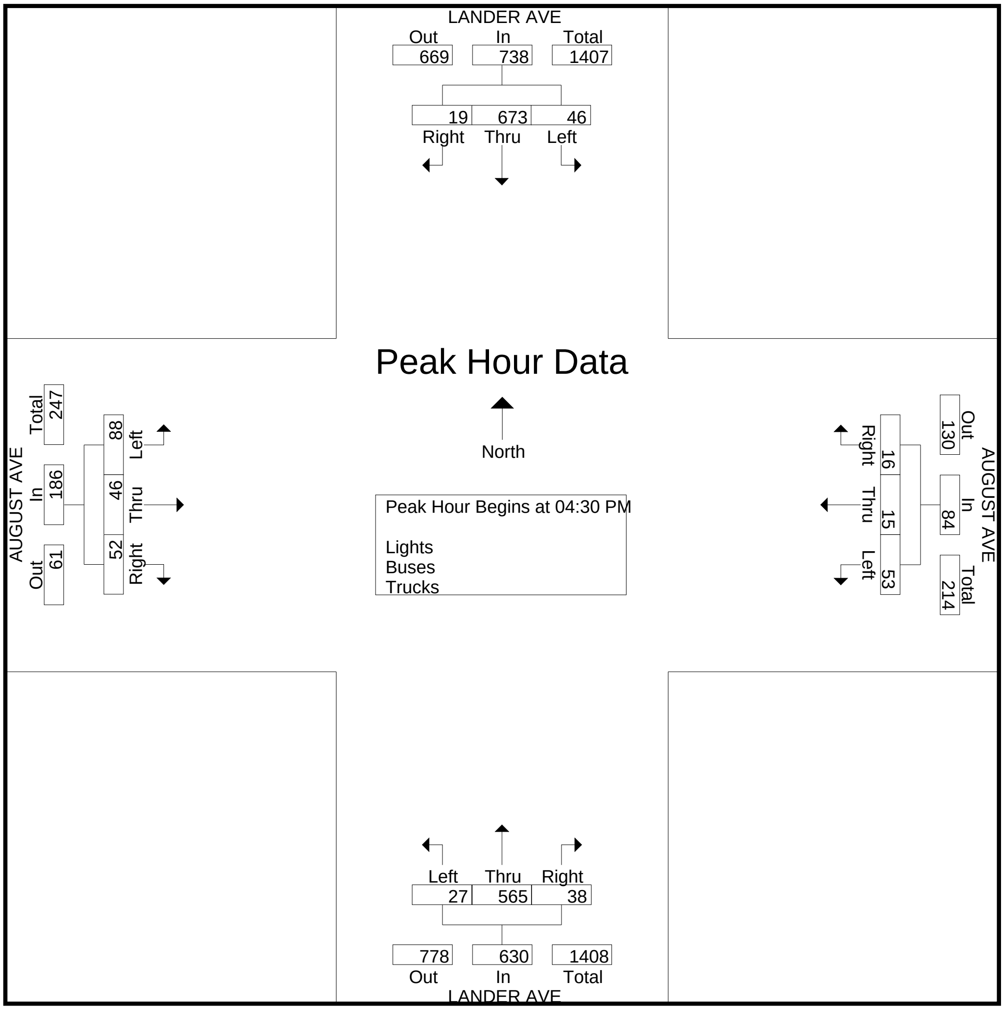

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Site Code : 00000001
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Groups Printed- Bikes

	LANDER AVE Southbound					AUGUST AVE Westbound					LANDER AVE Northbound					AUGUST AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					

	LANDER AVE Southbound				AUGUST AVE Westbound				LANDER AVE Northbound				AUGUST AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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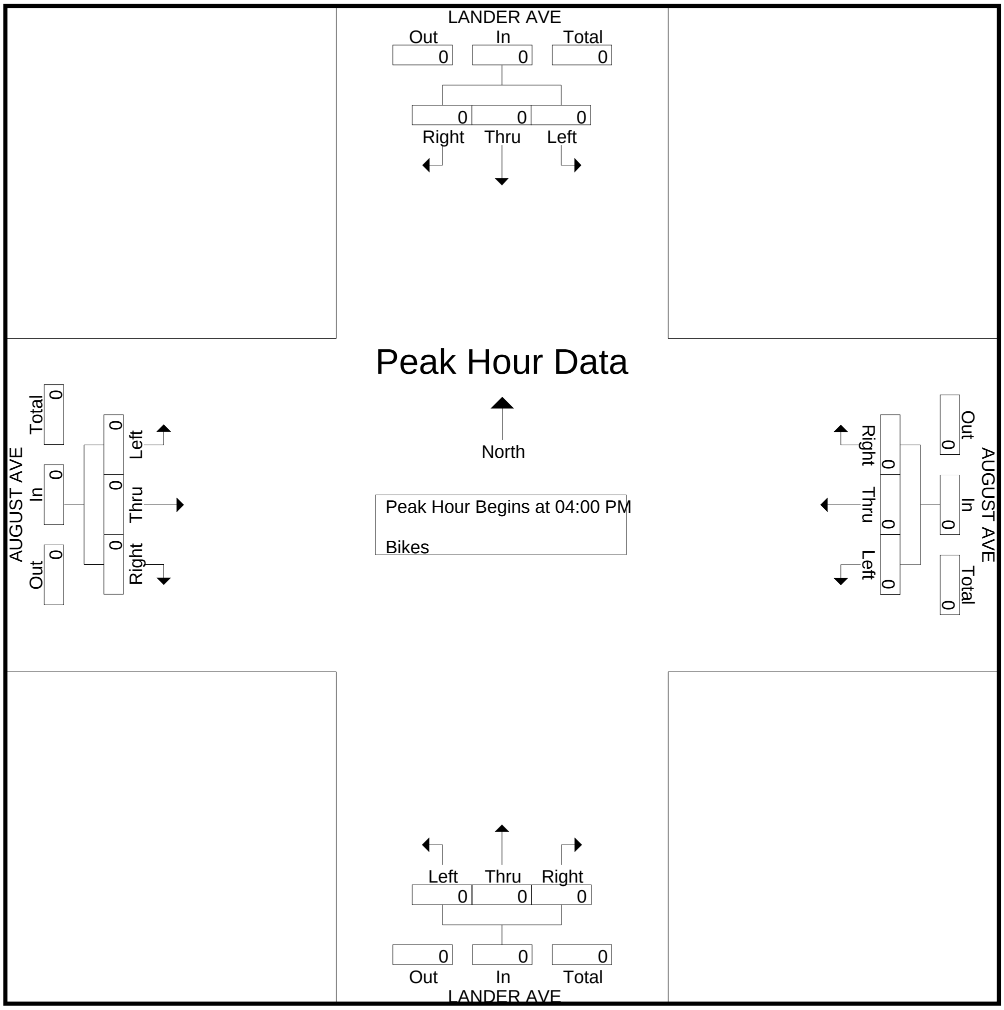

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File Name : 2AM FINAL
Site Code : 00000002
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Groups Printed- Lights - Buses - Trucks

	SOUTHEAST DRIVEWAY Southbound					AUGUST AVE Westbound					Northbound					AUGUST AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	2	0	2	1	30	0	2	33	0	0	0	0	0	0	10	1	0	11	46
07:15 AM	0	0	0	0	0	1	23	0	3	27	0	0	0	0	0	0	15	0	0	15	42
07:30 AM	1	0	0	0	1	1	34	0	5	40	0	0	0	0	0	0	12	2	0	14	55
07:45 AM	0	0	0	0	0	3	54	0	8	65	0	0	0	0	0	0	20	2	0	22	87
Total	1	0	2	0	3	6	141	0	18	165	0	0	0	0	0	0	57	5	0	62	230
08:00 AM	3	0	0	0	3	0	45	0	7	52	0	0	0	0	0	0	21	3	0	24	79
08:15 AM	0	0	0	0	0	2	33	0	2	37	0	0	0	0	0	0	28	4	0	32	69
08:30 AM	0	0	0	0	0	0	22	0	2	24	0	0	0	0	0	0	19	2	0	21	45
08:45 AM	1	0	1	0	2	1	19	0	5	25	0	0	0	0	0	0	10	1	0	11	38
Total	4	0	1	0	5	3	119	0	16	138	0	0	0	0	0	0	78	10	0	88	231
Grand Total	5	0	3	0	8	9	260	0	34	303	0	0	0	0	0	0	135	15	0	150	461
Apprch %	62.5	0	37.5	0		3	85.8	0	11.2		0	0	0	0		0	90	10	0		
Total %	1.1	0	0.7	0	1.7	2	56.4	0	7.4	65.7	0	0	0	0	0	0	29.3	3.3	0	32.5	
Lights	5	0	3	0	8	9	202	0	34	245	0	0	0	0	0	0	86	13	0	99	352
% Lights	100	0	100	0	100	100	77.7	0	100	80.9	0	0	0	0	0	0	63.7	86.7	0	66	76.4
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.7	0	0	0.7	0.2
Trucks	0	0	0	0	0	0	58	0	0	58	0	0	0	0	0	0	48	2	0	50	108
% Trucks	0	0	0	0	0	0	22.3	0	0	19.1	0	0	0	0	0	0	35.6	13.3	0	33.3	23.4

	SOUTHEAST DRIVEWAY Southbound				AUGUST AVE Westbound				Northbound				AUGUST AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	1	0	0	1	1	34	0	35	0	0	0	0	0	12	2	14	50
07:45 AM	0	0	0	0	**3**	**54**	0	**57**	0	0	0	0	0	20	2	22	**79**
08:00 AM	**3**	0	0	**3**	0	45	0	45	0	0	0	0	0	21	3	24	72
08:15 AM	0	0	0	0	2	33	0	35	0	0	0	0	0	**28**	**4**	**32**	67
Total Volume	4	0	0	4	6	166	0	172	0	0	0	0	0	81	11	92	268
% App. Total	100	0	0		3.5	96.5	0		0	0	0		0	88	12		
PHF	.333	.000	.000	.333	.500	.769	.000	.754	.000	.000	.000	.000	.000	.723	.688	.719	.848

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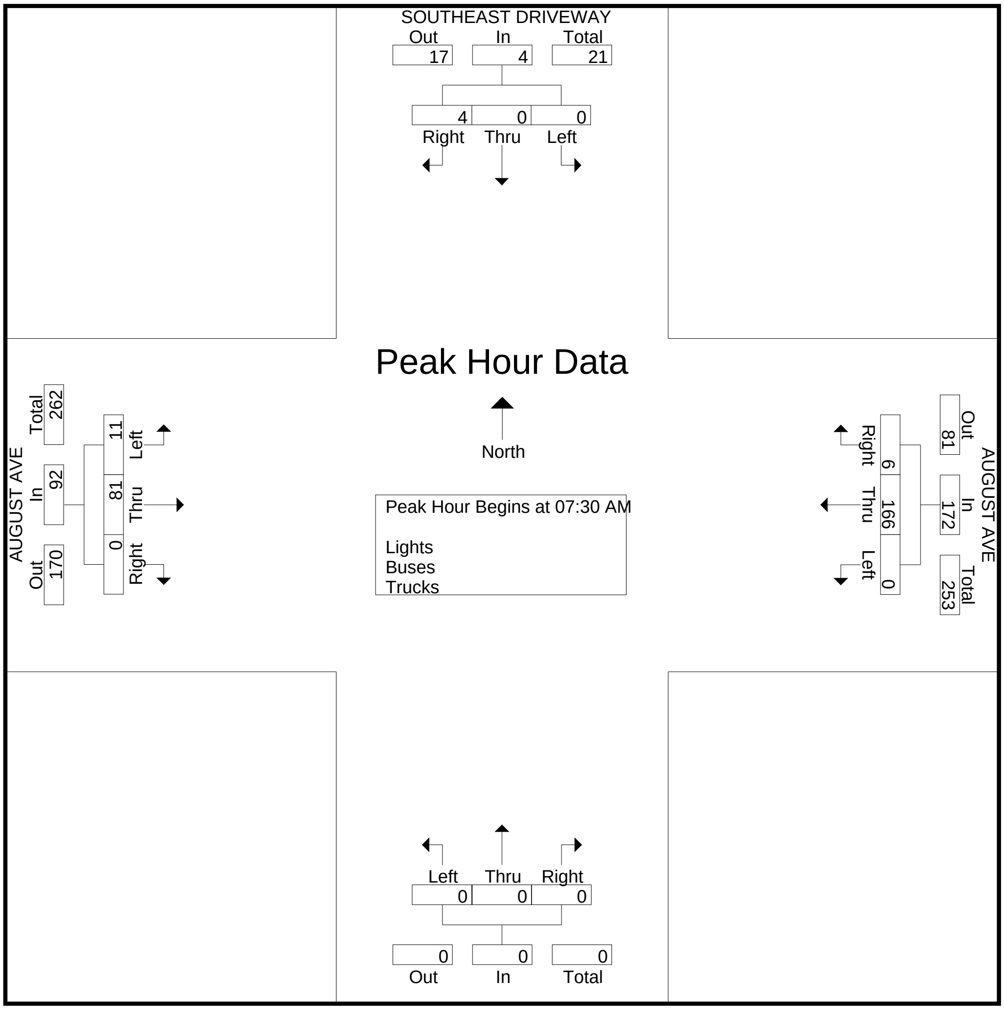

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Groups Printed- Bikes

	SOUTHEAST DRIVEWAY Southbound					AUGUST AVE Westbound					Northbound					AUGUST AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					

	SOUTHEAST DRIVEWAY Southbound				AUGUST AVE Westbound				Northbound				AUGUST AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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File Name : 2AM FINAL
Site Code : 00000002
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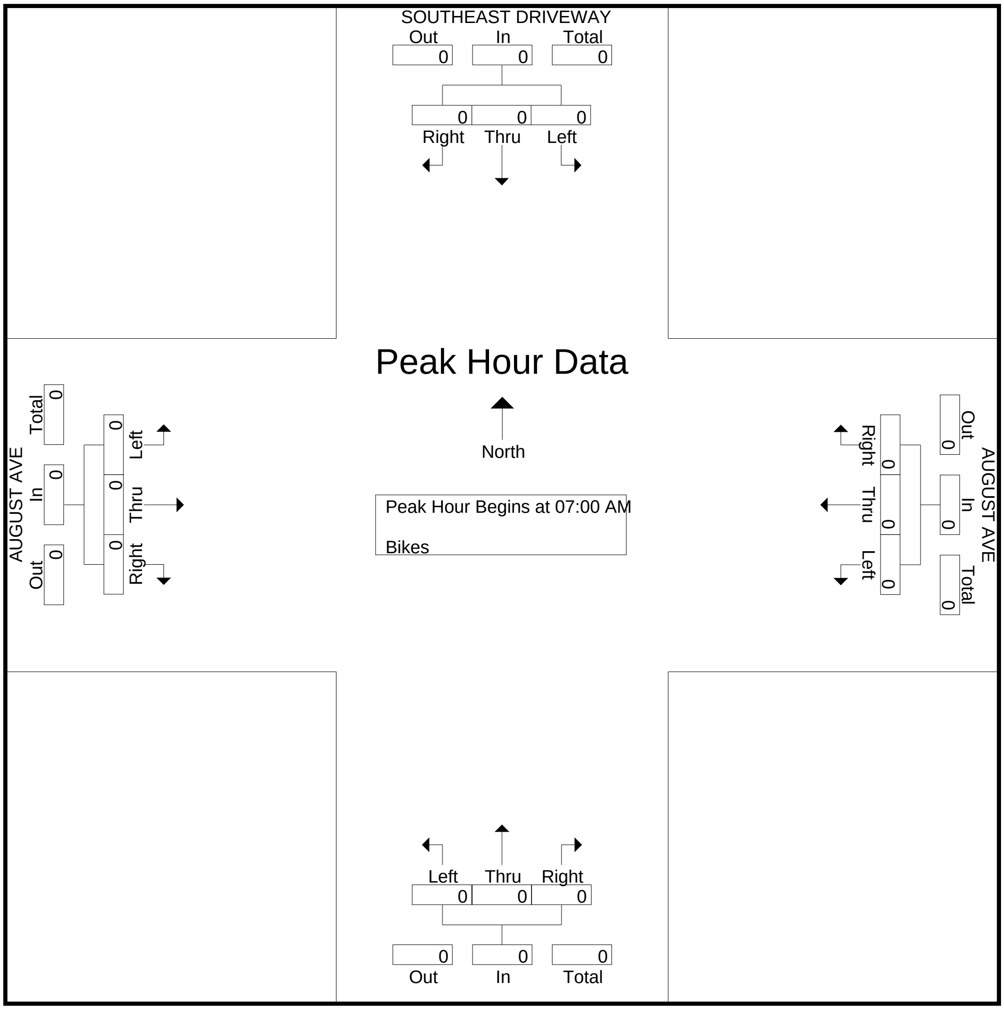

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File Name : 2PM FINAL
Site Code : 00000002
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Groups Printed- Lights - Buses - Trucks

	SOUTHEAST DRIVEWAY Southbound					AUGUST AVE Westbound					Northbound					AUGUST AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	0	2	0	2	0	11	0	5	16	0	0	0	0	0	0	22	2	0	24	42
04:15 PM	2	0	2	0	4	7	16	0	2	25	0	0	0	0	0	0	20	2	0	22	51
04:30 PM	1	0	5	0	6	1	17	0	2	20	0	0	0	0	0	0	40	2	0	42	68
04:45 PM	0	0	2	0	2	1	14	0	3	18	0	0	0	0	0	0	41	0	0	41	61
Total	3	0	11	0	14	9	58	0	12	79	0	0	0	0	0	0	123	6	0	129	222
05:00 PM	1	0	3	0	4	0	18	0	2	20	0	0	0	0	0	0	49	2	0	51	75
05:15 PM	1	0	2	0	3	2	11	0	1	14	0	0	0	0	0	0	43	1	0	44	61
05:30 PM	1	0	3	0	4	2	8	0	0	10	0	0	0	0	0	0	25	2	0	27	41
05:45 PM	1	0	5	0	6	0	9	0	0	9	0	0	0	0	0	0	12	0	0	12	27
Total	4	0	13	0	17	4	46	0	3	53	0	0	0	0	0	0	129	5	0	134	204
Grand Total	7	0	24	0	31	13	104	0	15	132	0	0	0	0	0	0	252	11	0	263	426
Apprch %	22.6	0	77.4	0		9.8	78.8	0	11.4		0	0	0	0		0	95.8	4.2	0		
Total %	1.6	0	5.6	0	7.3	3.1	24.4	0	3.5	31	0	0	0	0	0	0	59.2	2.6	0	61.7	
Lights	7	0	22	0	29	13	80	0	15	108	0	0	0	0	0	0	219	9	0	228	365
% Lights	100	0	91.7	0	93.5	100	76.9	0	100	81.8	0	0	0	0	0	0	86.9	81.8	0	86.7	85.7
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.1	0	0.4	0.2
Trucks	0	0	2	0	2	0	24	0	0	24	0	0	0	0	0	0	33	1	0	34	60
% Trucks	0	0	8.3	0	6.5	0	23.1	0	0	18.2	0	0	0	0	0	0	13.1	9.1	0	12.9	14.1

	SOUTHEAST DRIVEWAY Southbound				AUGUST AVE Westbound				Northbound				AUGUST AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	**1**	0	**5**	**6**	1	17	0	**18**	0	0	0	0	0	40	**2**	42	66
04:45 PM	0	0	2	2	1	14	0	15	0	0	0	0	0	41	0	41	58
05:00 PM	1	0	3	4	0	**18**	0	18	0	0	0	0	0	**49**	2	**51**	**73**
05:15 PM	1	0	2	3	**2**	11	0	13	0	0	0	0	0	43	1	44	60
Total Volume	3	0	12	15	4	60	0	64	0	0	0	0	0	173	5	178	257
% App. Total	20	0	80		6.2	93.8	0		0	0	0		0	97.2	2.8		
PHF	.750	.000	.600	.625	.500	.833	.000	.889	.000	.000	.000	.000	.000	.883	.625	.873	.880

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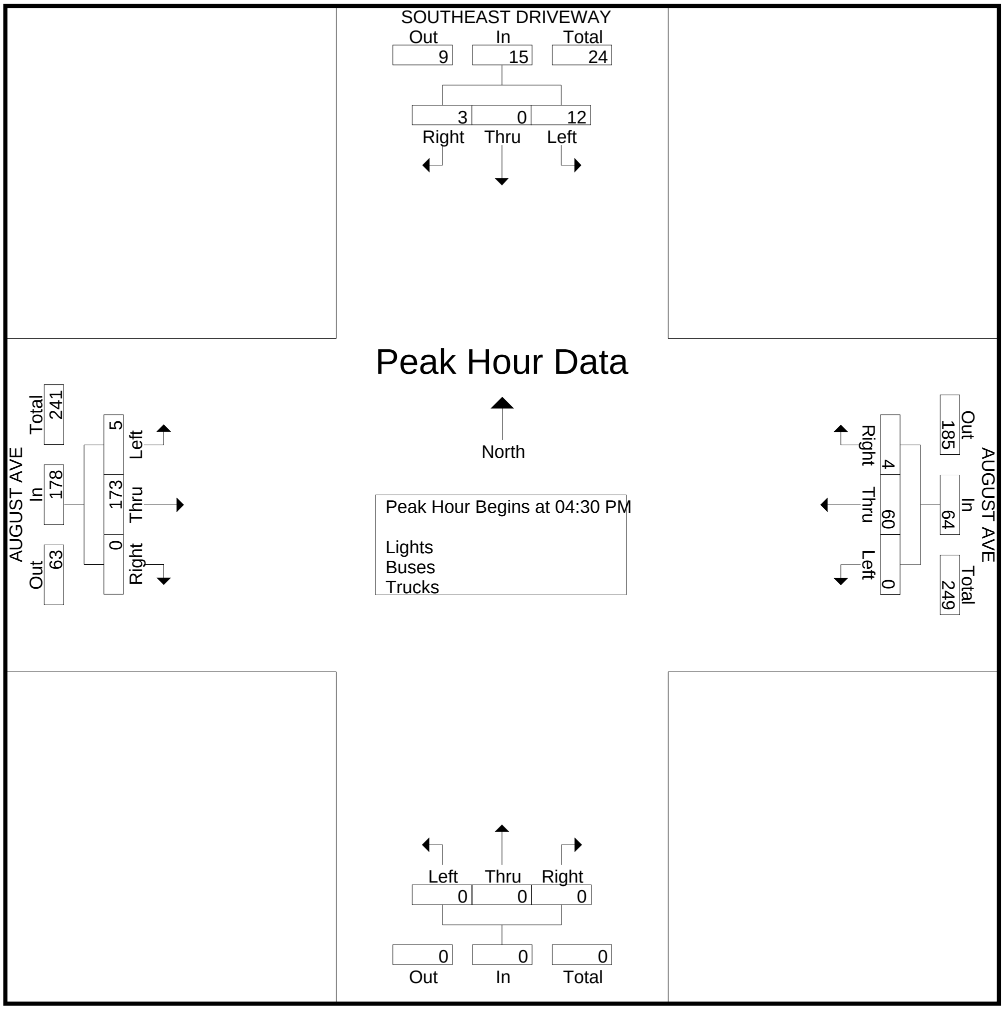

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Groups Printed- Bikes

	SOUTHEAST DRIVEWAY Southbound					AUGUST AVE Westbound					Northbound					AUGUST AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					

	SOUTHEAST DRIVEWAY Southbound				AUGUST AVE Westbound				Northbound				AUGUST AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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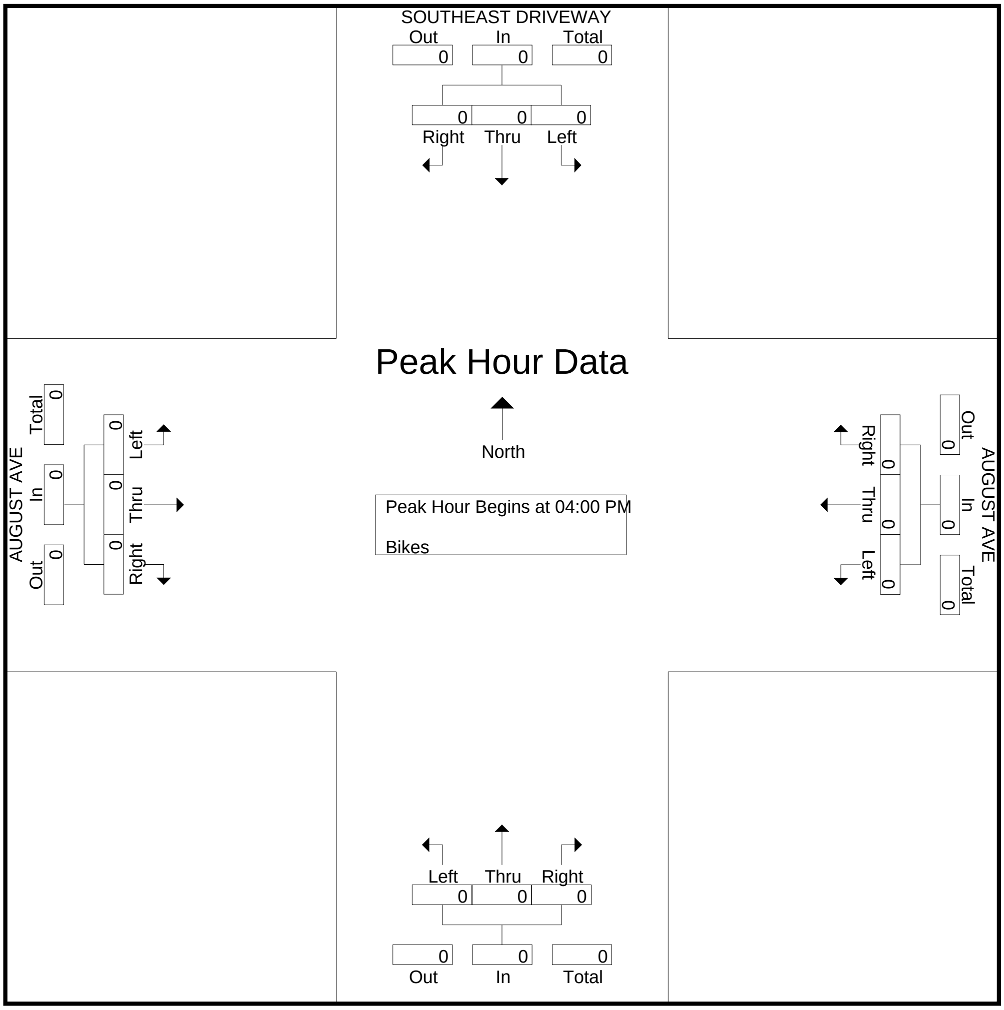

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File Name : 3AM FINAL
Site Code : 00000003
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Groups Printed- Lights - Buses - Trucks

	SOUTH MIDDLE DRIVEWAY Southbound					AUGUST AVE Westbound					DRIVEWAY Northbound					AUGUST AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	21	7	0	28	0	0	0	0	0	0	11	0	0	11	39
07:15 AM	0	0	0	0	0	0	17	7	0	24	0	0	0	0	0	0	14	0	0	14	38
07:30 AM	0	0	0	0	0	0	24	11	0	35	1	0	0	0	1	0	13	0	0	13	49
07:45 AM	0	0	0	0	0	0	27	28	0	55	0	0	0	0	0	4	21	0	0	25	80
Total	0	0	0	0	0	0	89	53	0	142	1	0	0	0	1	4	59	0	0	63	206
08:00 AM	0	0	0	0	0	0	20	28	0	48	3	0	1	0	4	3	23	0	0	26	78
08:15 AM	0	0	0	0	0	1	22	12	0	35	4	0	0	0	4	2	27	0	0	29	68
08:30 AM	0	0	0	2	2	0	12	9	0	21	2	0	0	0	2	2	20	0	0	22	47
08:45 AM	0	0	0	7	7	0	13	5	0	18	1	0	1	0	2	2	9	0	0	11	38
Total	0	0	0	9	9	1	67	54	0	122	10	0	2	0	12	9	79	0	0	88	231
Grand Total	0	0	0	9	9	1	156	107	0	264	11	0	2	0	13	13	138	0	0	151	437
Apprch %	0	0	0	100		0.4	59.1	40.5	0		84.6	0	15.4	0		8.6	91.4	0	0		
Total %	0	0	0	2.1	2.1	0.2	35.7	24.5	0	60.4	2.5	0	0.5	0	3	3	31.6	0	0	34.6	
Lights	0	0	0	9	9	0	97	107	0	204	10	0	2	0	12	12	91	0	0	103	328
% Lights	0	0	0	100	100	0	62.2	100	0	77.3	90.9	0	100	0	92.3	92.3	65.9	0	0	68.2	75.1
Buses	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
% Buses	0	0	0	0	0	0	0.6	0	0	0.4	0	0	0	0	0	0	0.7	0	0	0.7	0.5
Trucks	0	0	0	0	0	1	58	0	0	59	1	0	0	0	1	1	46	0	0	47	107
% Trucks	0	0	0	0	0	100	37.2	0	0	22.3	9.1	0	0	0	7.7	7.7	33.3	0	0	31.1	24.5

	SOUTH MIDDLE DRIVEWAY Southbound				AUGUST AVE Westbound				DRIVEWAY Northbound				AUGUST AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	24	11	35	1	0	0	1	0	13	0	13	49
07:45 AM	0	0	0	0	0	**27**	**28**	**55**	0	0	0	0	**4**	21	0	25	**80**
08:00 AM	0	0	0	0	0	20	28	48	3	0	**1**	**4**	3	23	0	26	78
08:15 AM	0	0	0	0	**1**	22	12	35	**4**	0	0	4	2	**27**	0	**29**	68
Total Volume	0	0	0	0	1	93	79	173	8	0	1	9	9	84	0	93	275
% App. Total	0	0	0		0.6	53.8	45.7		88.9	0	11.1		9.7	90.3	0		
PHF	.000	.000	.000	.000	.250	.861	.705	.786	.500	.000	.250	.563	.563	.778	.000	.802	.859

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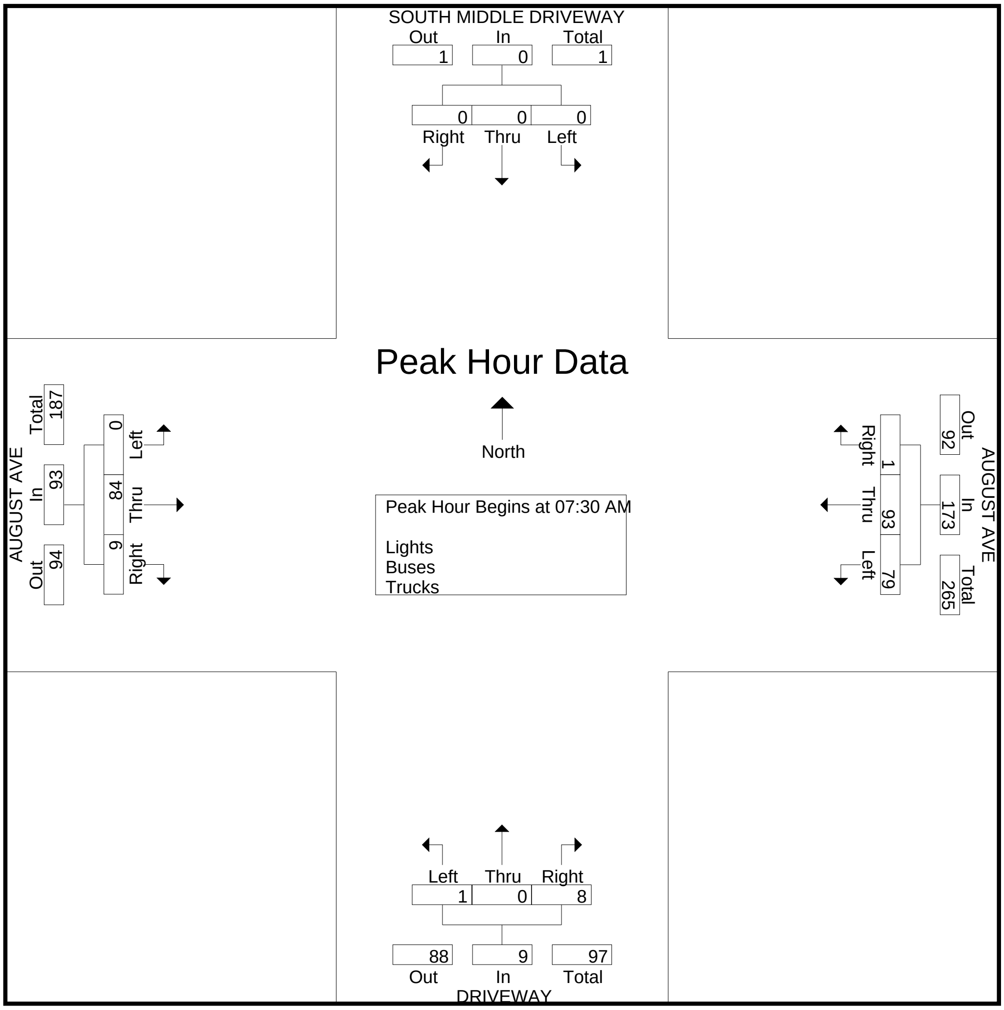

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Groups Printed- Bikes

	SOUTH MIDDLE DRIVEWAY Southbound					AUGUST AVE Westbound					DRIVEWAY Northbound					AUGUST AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					

	SOUTH MIDDLE DRIVEWAY Southbound				AUGUST AVE Westbound				DRIVEWAY Northbound				AUGUST AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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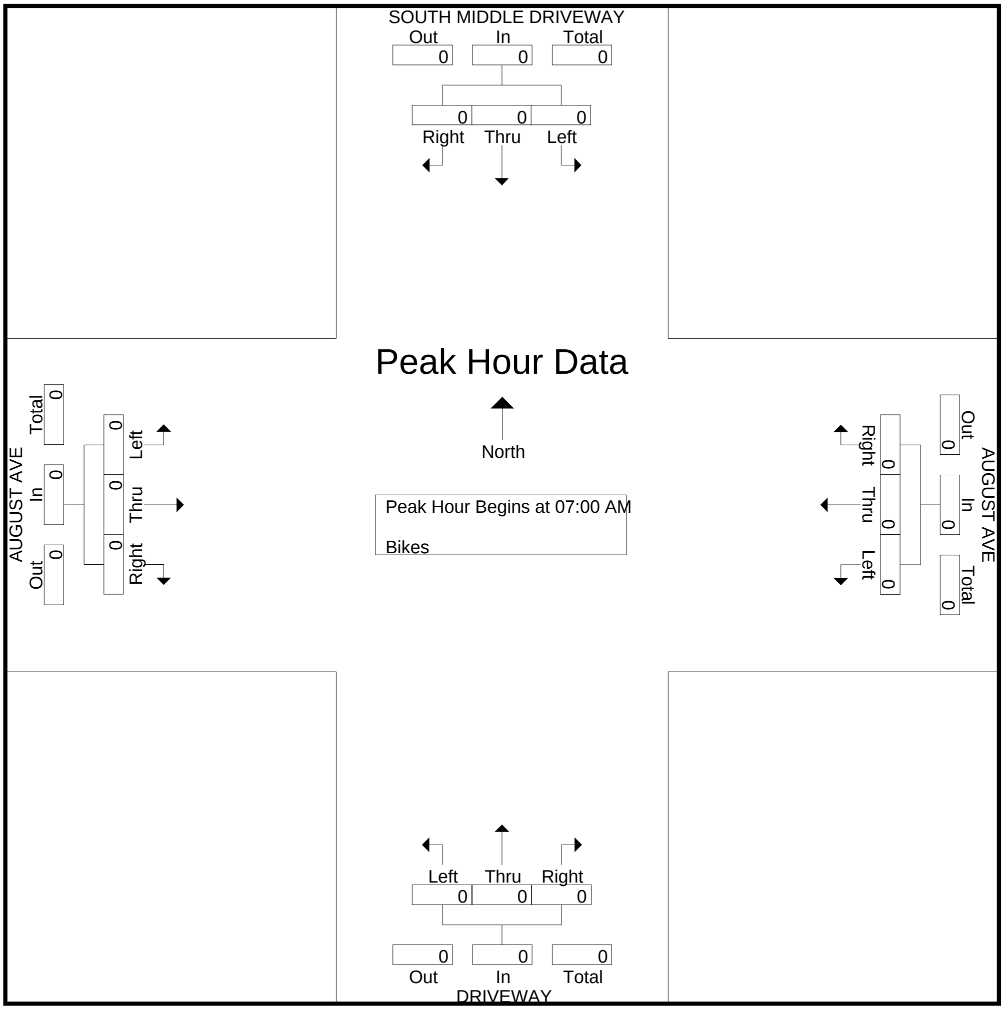

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File Name : 3PM FINAL
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Groups Printed- Lights - Buses - Trucks

	SOUTH MIDDLE DRIVEWAY Southbound					AUGUST AVE Westbound					DRIVEWAY Northbound					AUGUST AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	0	0	9	9	0	10	1	0	11	10	0	0	0	10	0	14	0	0	14	44
04:15 PM	0	0	0	10	10	0	17	1	0	18	3	0	1	0	4	0	19	0	0	19	51
04:30 PM	0	0	0	8	8	0	17	0	0	17	15	0	4	0	19	0	27	0	0	27	71
04:45 PM	0	0	0	5	5	0	12	2	0	14	18	0	1	0	19	1	22	0	0	23	61
Total	0	0	0	32	32	0	56	4	0	60	46	0	6	0	52	1	82	0	0	83	227
05:00 PM	0	0	0	8	8	0	18	2	0	20	37	0	2	0	39	0	13	0	0	13	80
05:15 PM	0	0	0	3	3	0	10	2	0	12	23	0	2	0	25	0	23	0	0	23	63
05:30 PM	0	0	0	2	2	0	7	0	0	7	8	0	1	0	9	0	17	0	0	17	35
05:45 PM	0	0	0	1	1	0	9	0	0	9	1	0	1	0	2	0	11	0	0	11	23
Total	0	0	0	14	14	0	44	4	0	48	69	0	6	0	75	0	64	0	0	64	201
Grand Total	0	0	0	46	46	0	100	8	0	108	115	0	12	0	127	1	146	0	0	147	428
Apprch %	0	0	0	100		0	92.6	7.4	0		90.6	0	9.4	0		0.7	99.3	0	0		
Total %	0	0	0	10.7	10.7	0	23.4	1.9	0	25.2	26.9	0	2.8	0	29.7	0.2	34.1	0	0	34.3	
Lights	0	0	0	46	46	0	75	8	0	83	115	0	12	0	127	1	111	0	0	112	368
% Lights	0	0	0	100	100	0	75	100	0	76.9	100	0	100	0	100	100	76	0	0	76.2	86
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trucks	0	0	0	0	0	0	25	0	0	25	0	0	0	0	0	0	35	0	0	35	60
% Trucks	0	0	0	0	0	0	25	0	0	23.1	0	0	0	0	0	0	24	0	0	23.8	14

	SOUTH MIDDLE DRIVEWAY Southbound				AUGUST AVE Westbound				DRIVEWAY Northbound				AUGUST AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	0	17	0	17	15	0	**4**	19	0	**27**	0	**27**	63
04:45 PM	0	0	0	0	0	12	**2**	14	18	0	1	19	**1**	22	0	23	56
05:00 PM	0	0	0	0	0	**18**	2	**20**	**37**	0	2	**39**	0	13	0	13	**72**
05:15 PM	0	0	0	0	0	10	2	12	23	0	2	25	0	23	0	23	60
Total Volume	0	0	0	0	0	57	6	63	93	0	9	102	1	85	0	86	251
% App. Total	0	0	0		0	90.5	9.5		91.2	0	8.8		1.2	98.8	0		
PHF	.000	.000	.000	.000	.000	.792	.750	.788	.628	.000	.563	.654	.250	.787	.000	.796	.872

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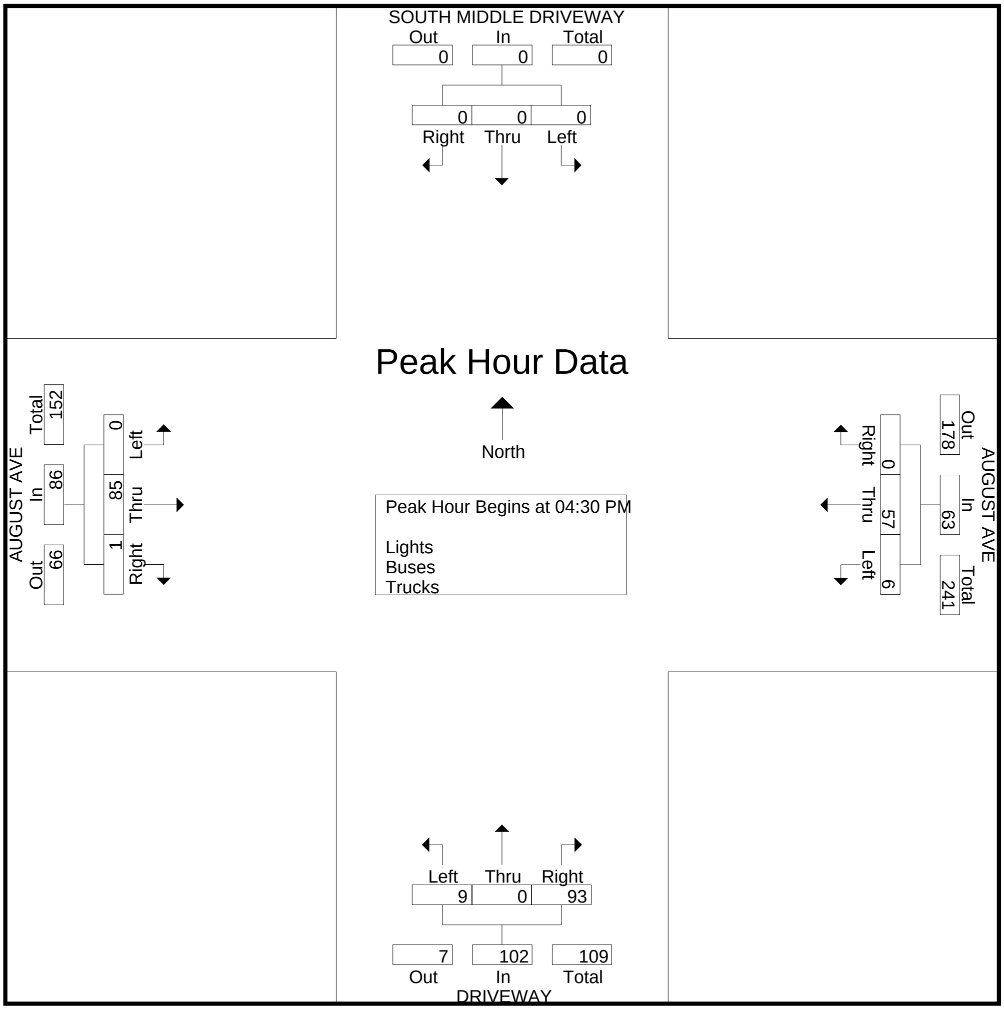

Traffic Data Service

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File Name : 3PM FINAL
Site Code : 00000003
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Groups Printed- Bikes

	SOUTH MIDDLE DRIVEWAY Southbound					AUGUST AVE Westbound					DRIVEWAY Northbound					AUGUST AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					

	SOUTH MIDDLE DRIVEWAY Southbound				AUGUST AVE Westbound				DRIVEWAY Northbound				AUGUST AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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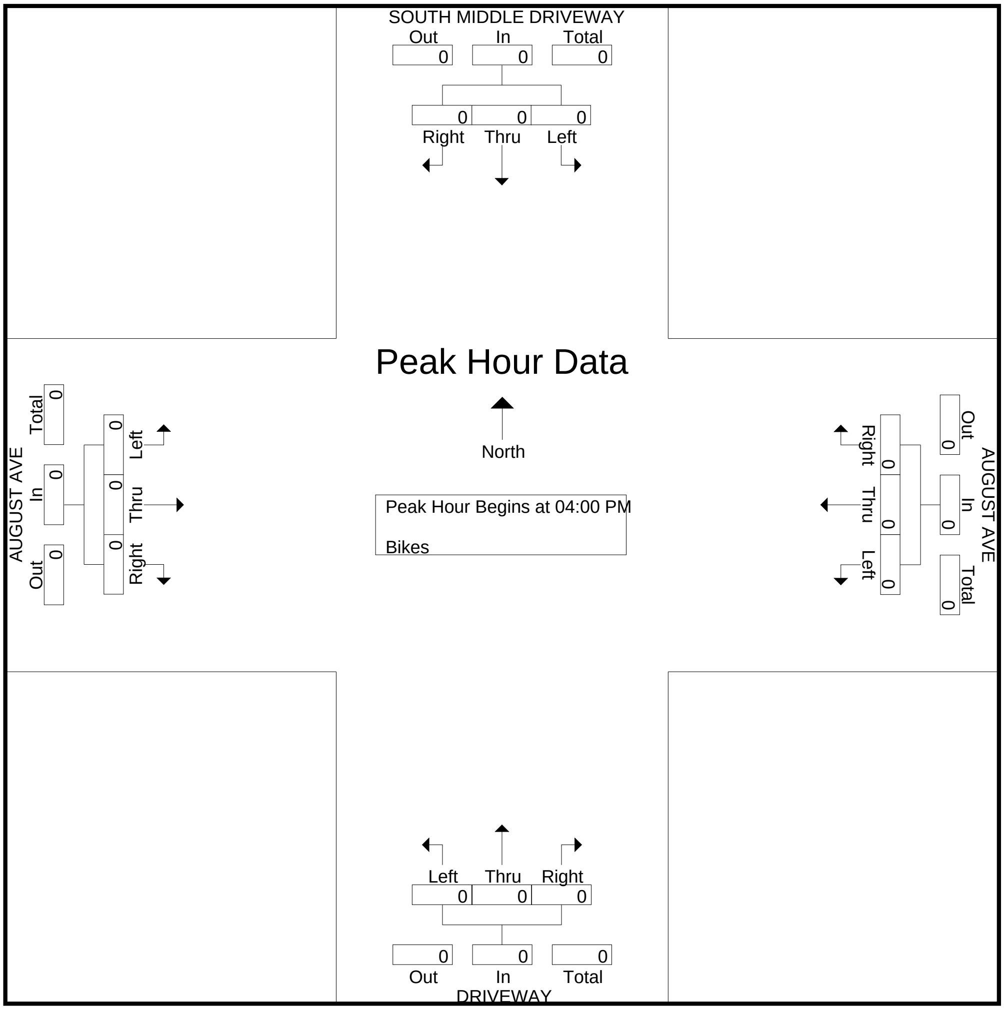

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File Name : 4AM FINAL
Site Code : 00000004
Start Date : 10/23/2018
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Groups Printed- Lights - Buses - Trucks

	SOUTHWEST DRIVEWAY Southbound					AUGUST AVE Westbound					Northbound					AUGUST AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	2	0	3	0	5	13	7	0	0	20	0	0	0	0	0	0	9	2	0	11	36
07:15 AM	3	0	5	0	8	12	6	0	0	18	0	0	0	0	0	0	10	0	0	10	36
07:30 AM	4	0	5	0	9	12	12	0	0	24	0	0	0	0	0	0	8	1	0	9	42
07:45 AM	3	0	7	0	10	8	18	0	0	26	0	0	0	0	0	0	19	1	0	20	56
Total	12	0	20	0	32	45	43	0	0	88	0	0	0	0	0	0	46	4	0	50	170
08:00 AM	1	0	5	0	6	8	13	0	0	21	0	0	0	0	0	0	21	0	0	21	48
08:15 AM	2	0	14	0	16	7	14	0	0	21	0	0	0	0	0	0	14	3	0	17	54
08:30 AM	2	0	8	0	10	7	6	0	0	13	0	0	0	0	0	0	15	2	0	17	40
08:45 AM	3	0	5	0	8	8	7	0	0	15	0	0	0	0	0	0	6	0	0	6	29
Total	8	0	32	0	40	30	40	0	0	70	0	0	0	0	0	0	56	5	0	61	171
Grand Total	20	0	52	0	72	75	83	0	0	158	0	0	0	0	0	0	102	9	0	111	341
Apprch %	27.8	0	72.2	0		47.5	52.5	0	0		0	0	0	0		0	91.9	8.1	0		
Total %	5.9	0	15.2	0	21.1	22	24.3	0	0	46.3	0	0	0	0	0	0	29.9	2.6	0	32.6	
Lights	3	0	11	0	14	21	79	0	0	100	0	0	0	0	0	0	94	1	0	95	209
% Lights	15	0	21.2	0	19.4	28	95.2	0	0	63.3	0	0	0	0	0	0	92.2	11.1	0	85.6	61.3
Buses	1	0	0	0	1	2	0	0	0	2	0	0	0	0	0	0	1	0	0	1	4
% Buses	5	0	0	0	1.4	2.7	0	0	0	1.3	0	0	0	0	0	0	1	0	0	0.9	1.2
Trucks	16	0	41	0	57	52	4	0	0	56	0	0	0	0	0	0	7	8	0	15	128
% Trucks	80	0	78.8	0	79.2	69.3	4.8	0	0	35.4	0	0	0	0	0	0	6.9	88.9	0	13.5	37.5

	SOUTHWEST DRIVEWAY Southbound				AUGUST AVE Westbound				Northbound				AUGUST AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**4**	0	5	9	**12**	12	0	24	0	0	0	0	0	8	1	9	42
07:45 AM	3	0	7	10	8	**18**	0	**26**	0	0	0	0	0	19	1	20	**56**
08:00 AM	1	0	5	6	8	13	0	21	0	0	0	0	0	**21**	0	**21**	48
08:15 AM	2	0	**14**	**16**	7	14	0	21	0	0	0	0	0	14	**3**	17	54
Total Volume	10	0	31	41	35	57	0	92	0	0	0	0	0	62	5	67	200
% App. Total	24.4	0	75.6		38	62	0		0	0	0		0	92.5	7.5		
PHF	.625	.000	.554	.641	.729	.792	.000	.885	.000	.000	.000	.000	.000	.738	.417	.798	.893

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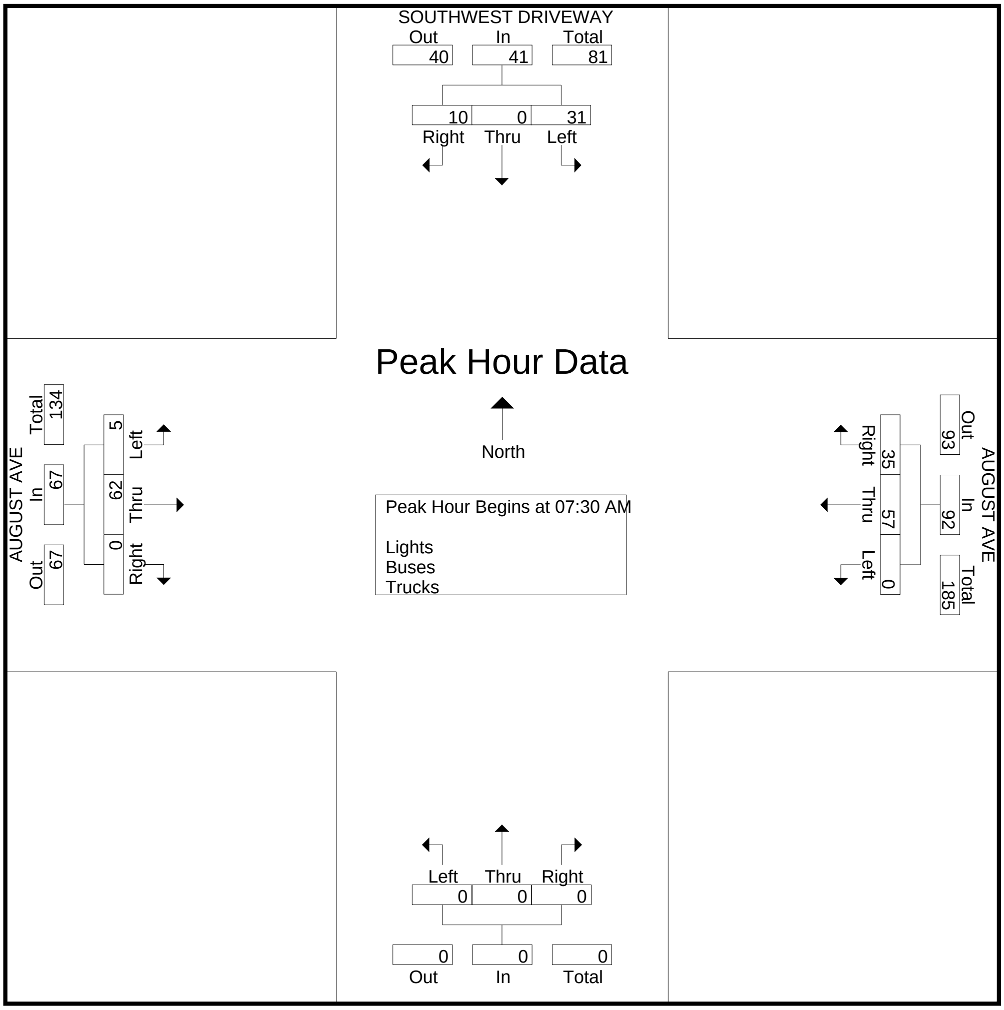

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File Name : 4AM FINAL
Site Code : 00000004
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Groups Printed- Bikes

	SOUTHWEST DRIVEWAY Southbound					AUGUST AVE Westbound					Northbound					AUGUST AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					

	SOUTHWEST DRIVEWAY Southbound				AUGUST AVE Westbound				Northbound				AUGUST AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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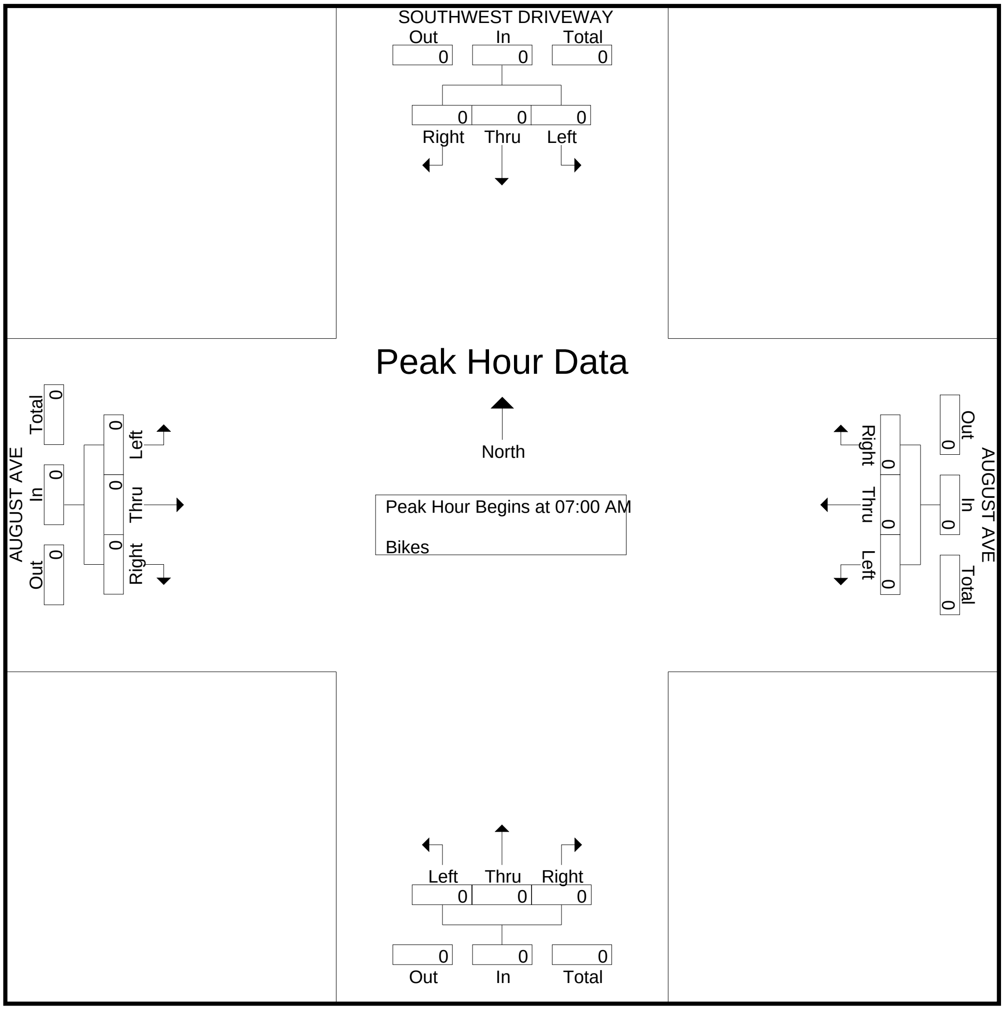

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File Name : 4PM FINAL
Site Code : 00000004
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Groups Printed- Lights - Buses - Trucks

	SOUTHWEST DRIVEWAY Southbound					AUGUST AVE Westbound					Northbound					AUGUST AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	1	0	3	0	4	4	6	0	0	10	0	0	0	0	0	0	11	2	0	13	27
04:15 PM	2	0	8	0	10	1	20	0	0	21	0	0	0	0	0	0	13	1	0	14	45
04:30 PM	4	0	5	0	9	4	16	0	0	20	0	0	0	0	0	0	20	1	0	21	50
04:45 PM	3	0	5	0	8	3	11	0	0	14	0	0	0	0	0	0	19	1	0	20	42
Total	10	0	21	0	31	12	53	0	0	65	0	0	0	0	0	0	63	5	0	68	164
05:00 PM	3	0	4	0	7	4	16	0	0	20	0	0	0	0	0	0	11	0	0	11	38
05:15 PM	3	0	4	0	7	0	12	0	0	12	0	0	0	0	0	0	18	2	0	20	39
05:30 PM	2	0	4	0	6	1	9	0	0	10	0	0	0	0	0	0	12	2	0	14	30
05:45 PM	1	0	3	0	4	2	9	0	0	11	0	0	0	0	0	0	6	0	0	6	21
Total	9	0	15	0	24	7	46	0	0	53	0	0	0	0	0	0	47	4	0	51	128
Grand Total	19	0	36	0	55	19	99	0	0	118	0	0	0	0	0	0	110	9	0	119	292
Apprch %	34.5	0	65.5	0		16.1	83.9	0	0		0	0	0	0		0	92.4	7.6	0		
Total %	6.5	0	12.3	0	18.8	6.5	33.9	0	0	40.4	0	0	0	0	0	0	37.7	3.1	0	40.8	
Lights	6	0	9	0	15	2	92	0	0	94	0	0	0	0	0	0	103	5	0	108	217
% Lights	31.6	0	25	0	27.3	10.5	92.9	0	0	79.7	0	0	0	0	0	0	93.6	55.6	0	90.8	74.3
Buses	1	0	0	0	1	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	4
% Buses	5.3	0	0	0	1.8	5.3	2	0	0	2.5	0	0	0	0	0	0	0	0	0	0	1.4
Trucks	12	0	27	0	39	16	5	0	0	21	0	0	0	0	0	0	7	4	0	11	71
% Trucks	63.2	0	75	0	70.9	84.2	5.1	0	0	17.8	0	0	0	0	0	0	6.4	44.4	0	9.2	24.3

	SOUTHWEST DRIVEWAY Southbound				AUGUST AVE Westbound				Northbound				AUGUST AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	2	0	**8**	**10**	1	**20**	0	**21**	0	0	0	0	0	13	**1**	14	45
04:30 PM	**4**	0	5	9	**4**	16	0	20	0	0	0	0	0	**20**	1	**21**	**50**
04:45 PM	3	0	5	8	3	11	0	14	0	0	0	0	0	19	1	20	42
05:00 PM	3	0	4	7	4	16	0	20	0	0	0	0	0	11	0	11	38
Total Volume	12	0	22	34	12	63	0	75	0	0	0	0	0	63	3	66	175
% App. Total	35.3	0	64.7		16	84	0		0	0	0		0	95.5	4.5		
PHF	.750	.000	.688	.850	.750	.788	.000	.893	.000	.000	.000	.000	.000	.788	.750	.786	.875

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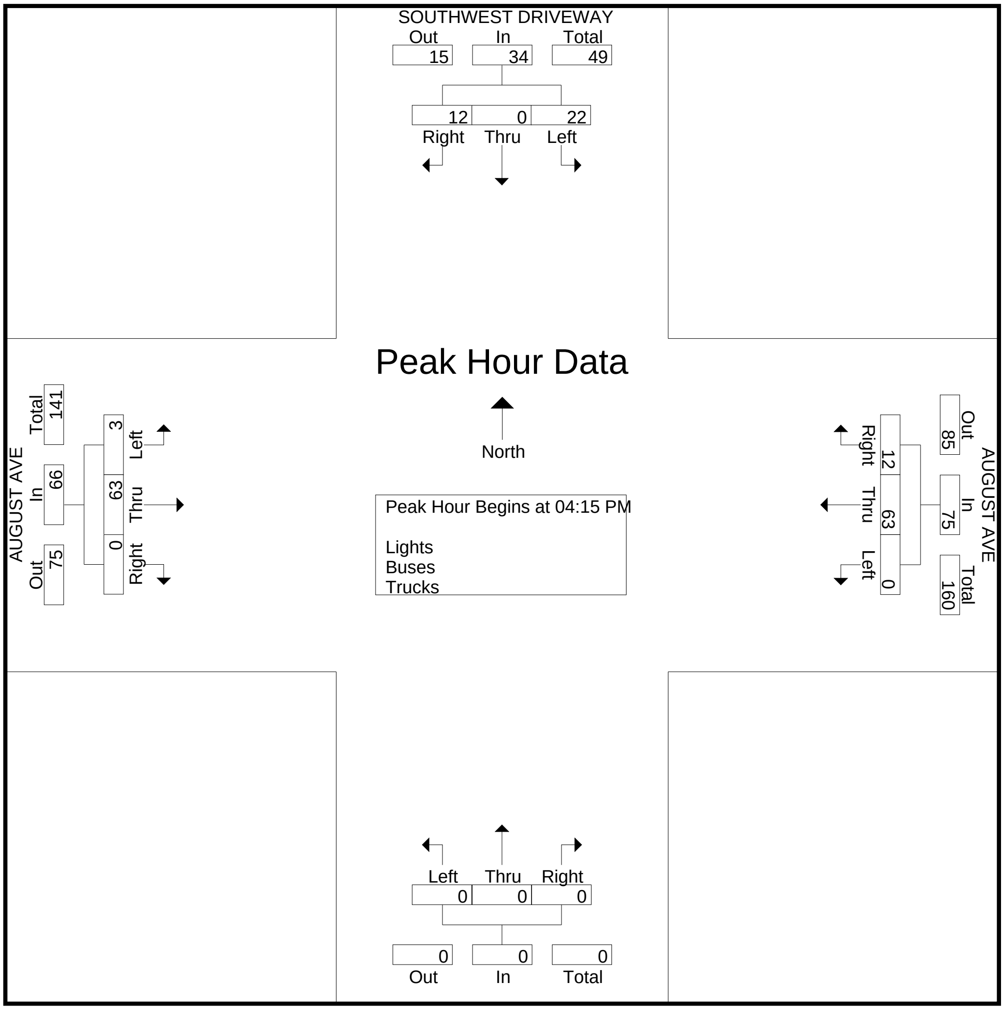

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File Name : 4PM FINAL
Site Code : 00000004
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Groups Printed- Bikes

	SOUTHWEST DRIVEWAY Southbound					AUGUST AVE Westbound					Northbound					AUGUST AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Apprch %	0	0	100	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %	0	0	100	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

	SOUTHWEST DRIVEWAY Southbound				AUGUST AVE Westbound				Northbound				AUGUST AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	**1**	**1**	0	0	0	0	0	0	0	0	0	0	0	0	**1**
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
% App. Total	0	0	100		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.250	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250

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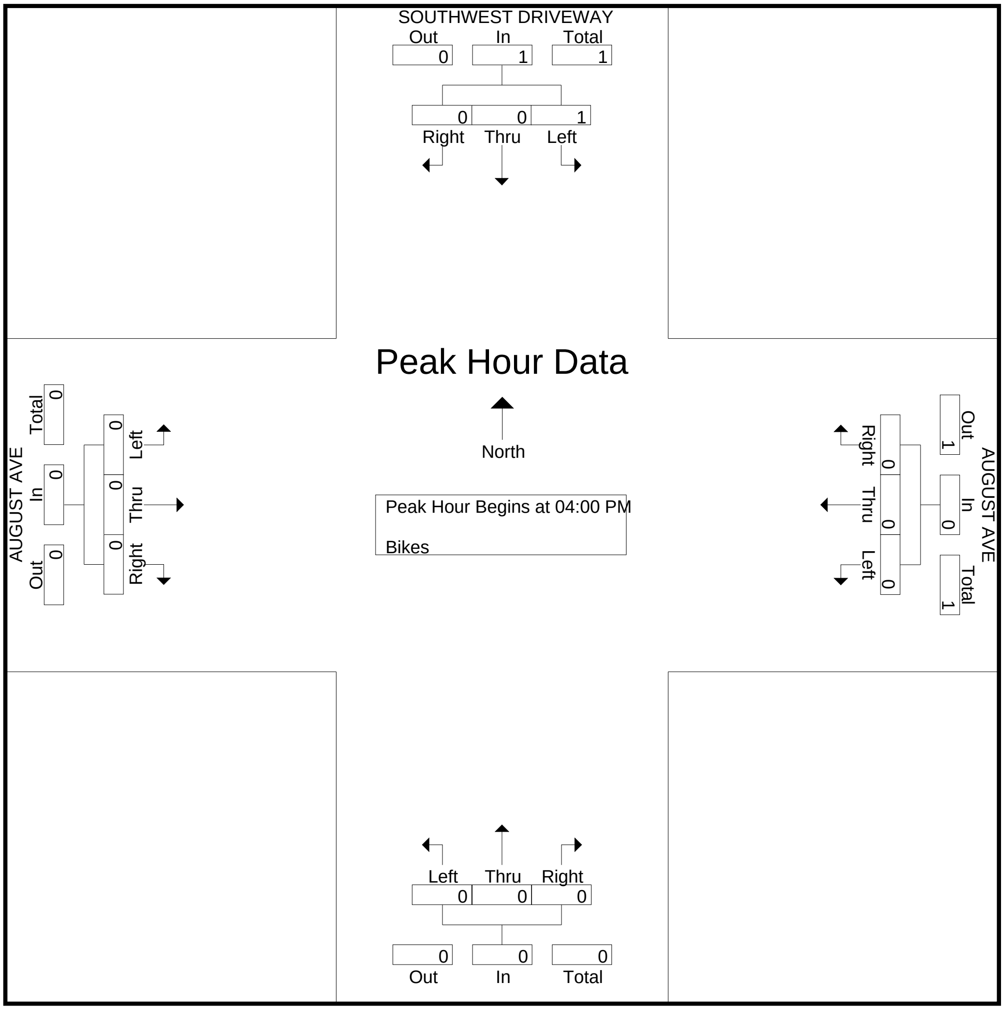

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File Name : 5AM FINAL
Site Code : 00000005
Start Date : 10/23/2018
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Groups Printed- Lights - Buses - Trucks

	LANDER AVE Southbound					Westbound					LANDER AVE Northbound					NORTHEAST DRIVEWAY Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	15	130	0	0	145	0	0	0	0	0	0	137	6	0	143	1	0	4	0	5	293
07:15 AM	12	102	0	0	114	0	0	0	0	0	0	160	4	0	164	0	0	0	0	0	278
07:30 AM	13	113	0	0	126	0	0	0	0	0	0	196	14	0	210	0	0	0	0	0	336
07:45 AM	30	144	0	0	174	0	0	0	0	0	0	177	6	0	183	0	0	1	0	1	358
Total	70	489	0	0	559	0	0	0	0	0	0	670	30	0	700	1	0	5	0	6	1265
08:00 AM	13	93	0	0	106	0	0	0	0	0	0	169	3	0	172	0	0	1	0	1	279
08:15 AM	6	100	0	0	106	0	0	0	0	0	0	143	14	0	157	0	0	0	0	0	263
08:30 AM	1	82	0	0	83	0	0	0	0	0	0	161	6	0	167	3	0	2	0	5	255
08:45 AM	6	95	0	0	101	0	0	0	0	0	0	119	4	0	123	0	0	9	0	9	233
Total	26	370	0	0	396	0	0	0	0	0	0	592	27	0	619	3	0	12	0	15	1030
Grand Total	96	859	0	0	955	0	0	0	0	0	0	1262	57	0	1319	4	0	17	0	21	2295
Apprch %	10.1	89.9	0	0		0	0	0	0		0	95.7	4.3	0		19	0	81	0		
Total %	4.2	37.4	0	0	41.6	0	0	0	0	0	0	55	2.5	0	57.5	0.2	0	0.7	0	0.9	
Lights	96	712	0	0	808	0	0	0	0	0	0	1133	57	0	1190	4	0	17	0	21	2019
% Lights	100	82.9	0	0	84.6	0	0	0	0	0	0	89.8	100	0	90.2	100	0	100	0	100	88
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trucks	0	147	0	0	147	0	0	0	0	0	0	129	0	0	129	0	0	0	0	0	276
% Trucks	0	17.1	0	0	15.4	0	0	0	0	0	0	10.2	0	0	9.8	0	0	0	0	0	12

	LANDER AVE Southbound				Westbound				LANDER AVE Northbound				NORTHEAST DRIVEWAY Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	15	130	0	145	0	0	0	0	0	137	6	143	**1**	0	**4**	**5**	293
07:15 AM	12	102	0	114	0	0	0	0	0	160	4	164	0	0	0	0	278
07:30 AM	13	113	0	126	0	0	0	0	0	**196**	**14**	**210**	0	0	0	0	336
07:45 AM	**30**	**144**	0	**174**	0	0	0	0	0	177	6	183	0	0	1	1	**358**
Total Volume	70	489	0	559	0	0	0	0	0	670	30	700	1	0	5	6	1265
% App. Total	12.5	87.5	0		0	0	0		0	95.7	4.3		16.7	0	83.3		
PHF	.583	.849	.000	.803	.000	.000	.000	.000	.000	.855	.536	.833	.250	.000	.313	.300	.883

Traffic Data Service

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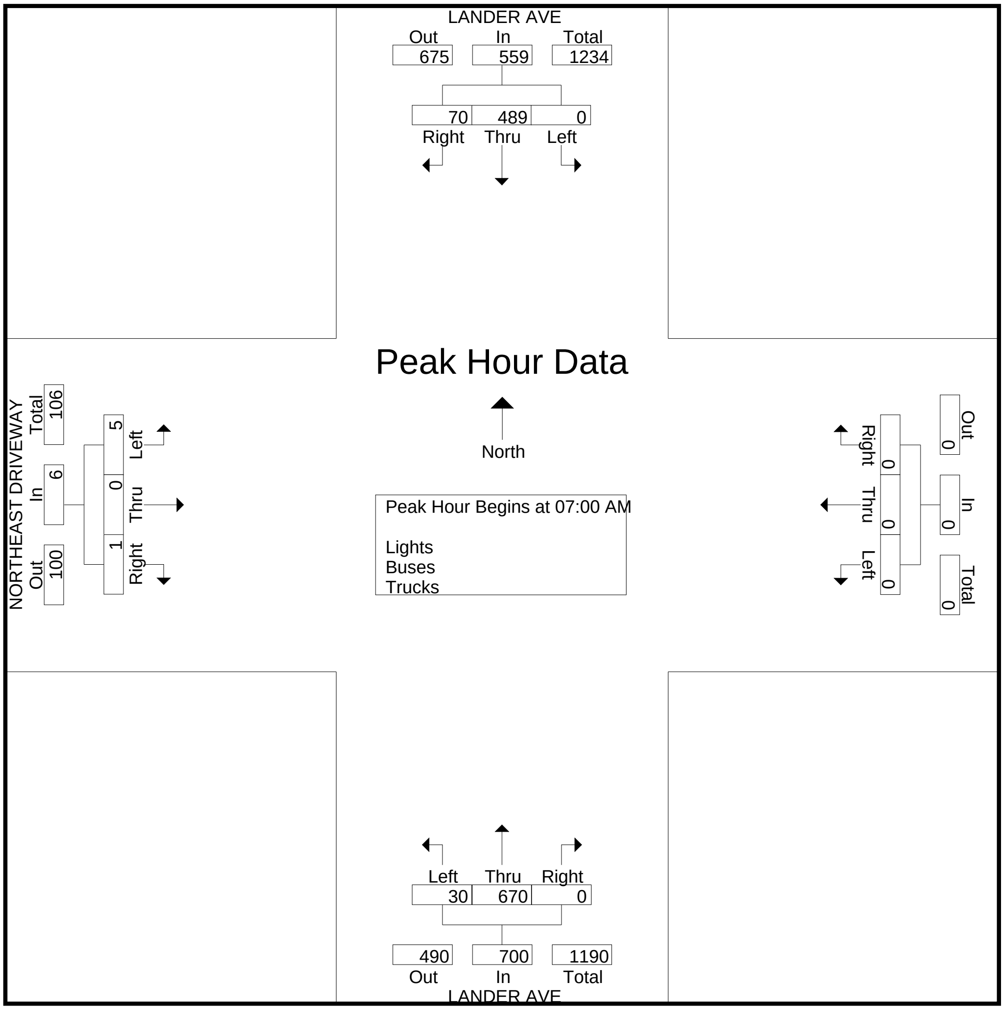

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Groups Printed- Bikes

	LANDER AVE Southbound					Westbound					LANDER AVE Northbound					NORTHEAST DRIVEWAY Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Apprch %	0	100	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %	0	100	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

	LANDER AVE Southbound				Westbound				LANDER AVE Northbound				NORTHEAST DRIVEWAY Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	**1**
Total Volume	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
% App. Total	0	100	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250

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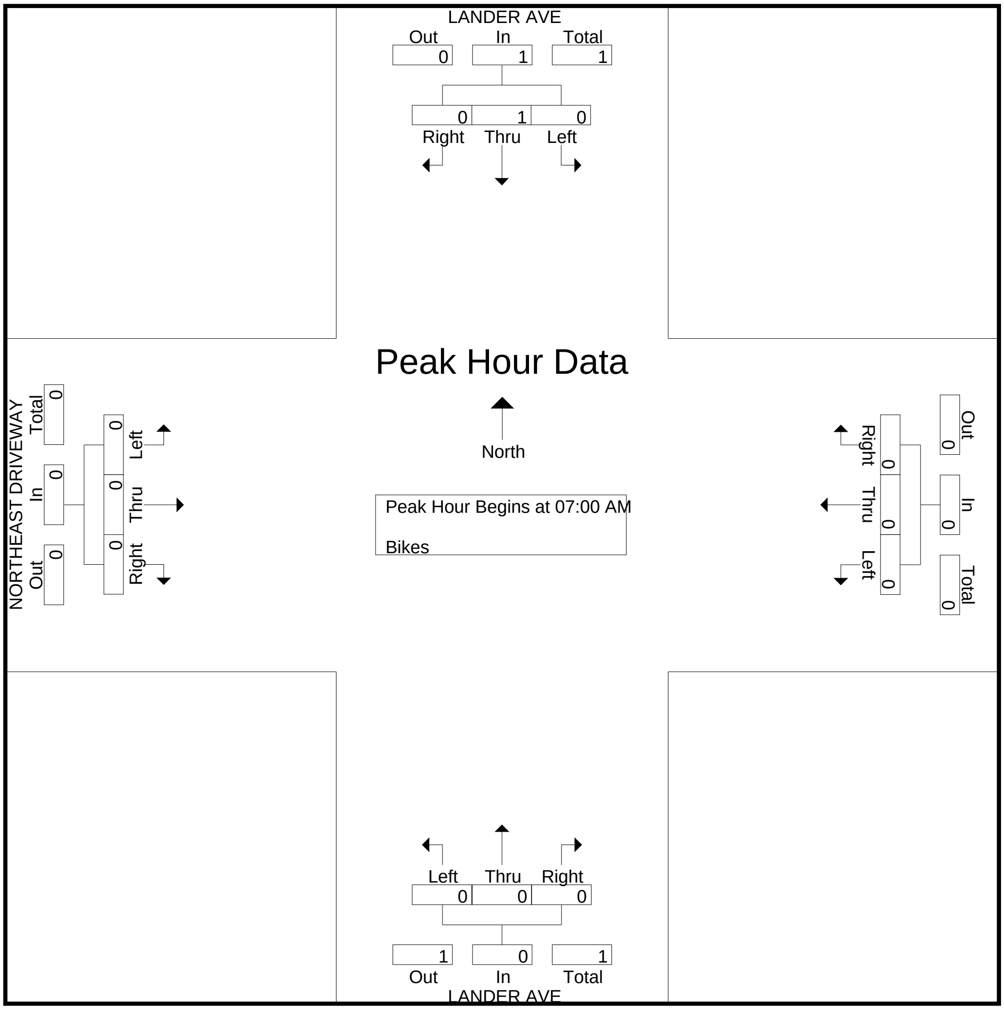

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Groups Printed- Lights - Buses - Trucks

	LANDER AVE Southbound					Westbound					LANDER AVE Northbound					NORTHEAST DRIVEWAY Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	4	163	0	0	167	0	0	0	0	0	0	146	2	0	148	9	0	14	0	23	338
04:15 PM	11	180	0	0	191	0	0	0	0	0	0	143	6	0	149	7	0	7	0	14	354
04:30 PM	6	153	0	0	159	0	0	0	0	0	0	169	4	0	173	10	0	7	0	17	349
04:45 PM	6	160	0	0	166	0	0	0	0	0	0	178	4	0	182	7	0	3	0	10	358
Total	27	656	0	0	683	0	0	0	0	0	0	636	16	0	652	33	0	31	0	64	1399
05:00 PM	1	173	0	0	174	0	0	0	0	0	0	166	5	0	171	10	0	21	0	31	376
05:15 PM	11	212	0	0	223	0	0	0	0	0	0	137	7	0	144	17	0	22	0	39	406
05:30 PM	17	184	0	0	201	0	0	0	0	0	0	132	12	0	144	7	0	11	0	18	363
05:45 PM	7	142	0	0	149	0	0	0	0	0	0	127	4	0	131	3	0	7	0	10	290
Total	36	711	0	0	747	0	0	0	0	0	0	562	28	0	590	37	0	61	0	98	1435
Grand Total	63	1367	0	0	1430	0	0	0	0	0	0	1198	44	0	1242	70	0	92	0	162	2834
Apprch %	4.4	95.6	0	0		0	0	0	0		0	96.5	3.5	0		43.2	0	56.8	0		
Total %	2.2	48.2	0	0	50.5	0	0	0	0	0	0	42.3	1.6	0	43.8	2.5	0	3.2	0	5.7	
Lights	63	1301	0	0	1364	0	0	0	0	0	0	1115	43	0	1158	70	0	92	0	162	2684
% Lights	100	95.2	0	0	95.4	0	0	0	0	0	0	93.1	97.7	0	93.2	100	0	100	0	100	94.7
Buses	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
% Buses	0	0.1	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Trucks	0	64	0	0	64	0	0	0	0	0	0	83	1	0	84	0	0	0	0	0	148
% Trucks	0	4.7	0	0	4.5	0	0	0	0	0	0	6.9	2.3	0	6.8	0	0	0	0	0	5.2

	LANDER AVE Southbound				Westbound				LANDER AVE Northbound				NORTHEAST DRIVEWAY Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	6	160	0	166	0	0	0	0	0	**178**	4	**182**	7	0	3	10	358
05:00 PM	1	173	0	174	0	0	0	0	0	166	5	171	10	0	21	31	376
05:15 PM	11	**212**	0	**223**	0	0	0	0	0	137	7	144	**17**	0	**22**	**39**	**406**
05:30 PM	**17**	184	0	201	0	0	0	0	0	132	**12**	144	7	0	11	18	363
Total Volume	35	729	0	764	0	0	0	0	0	613	28	641	41	0	57	98	1503
% App. Total	4.6	95.4	0		0	0	0		0	95.6	4.4		41.8	0	58.2		
PHF	.515	.860	.000	.857	.000	.000	.000	.000	.000	.861	.583	.880	.603	.000	.648	.628	.925

Traffic Data Service

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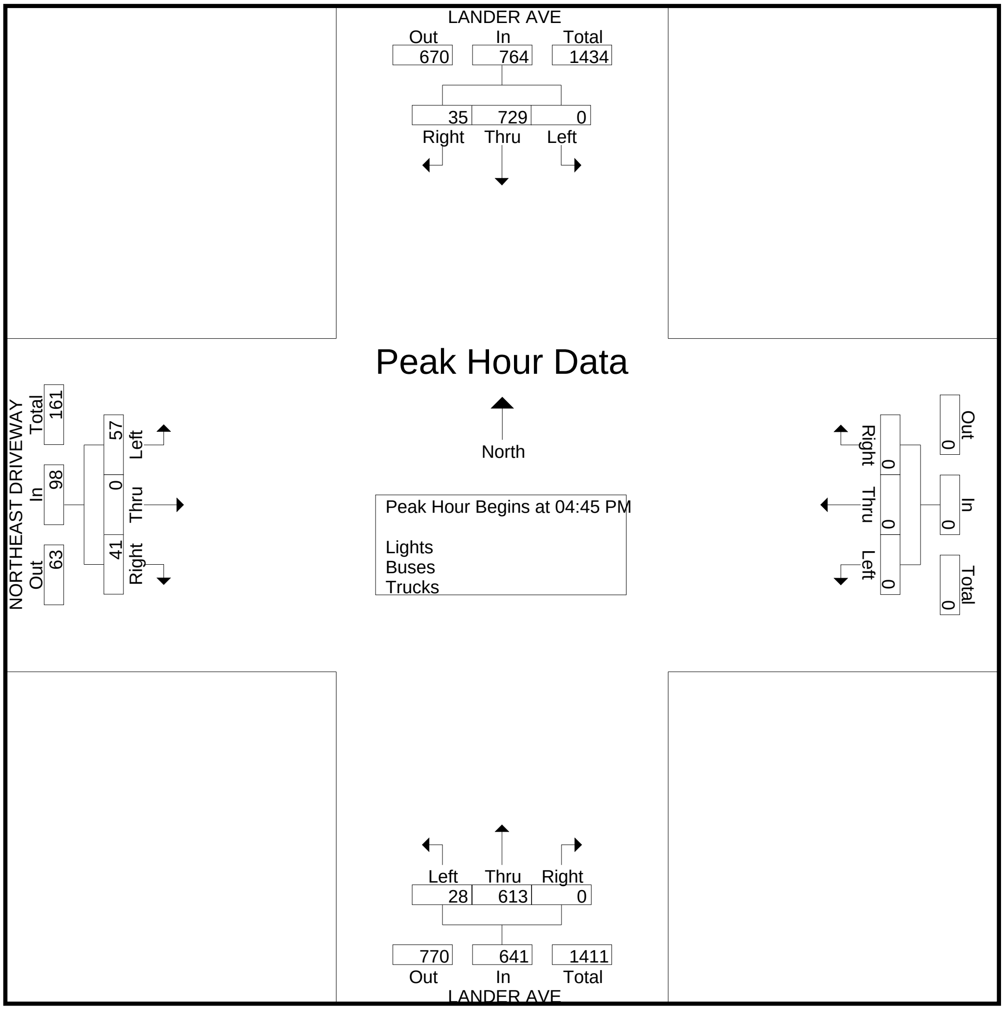

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Groups Printed- Bikes

	LANDER AVE Southbound					Westbound					LANDER AVE Northbound					NORTHEAST DRIVEWAY Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					

	LANDER AVE Southbound				Westbound				LANDER AVE Northbound				NORTHEAST DRIVEWAY Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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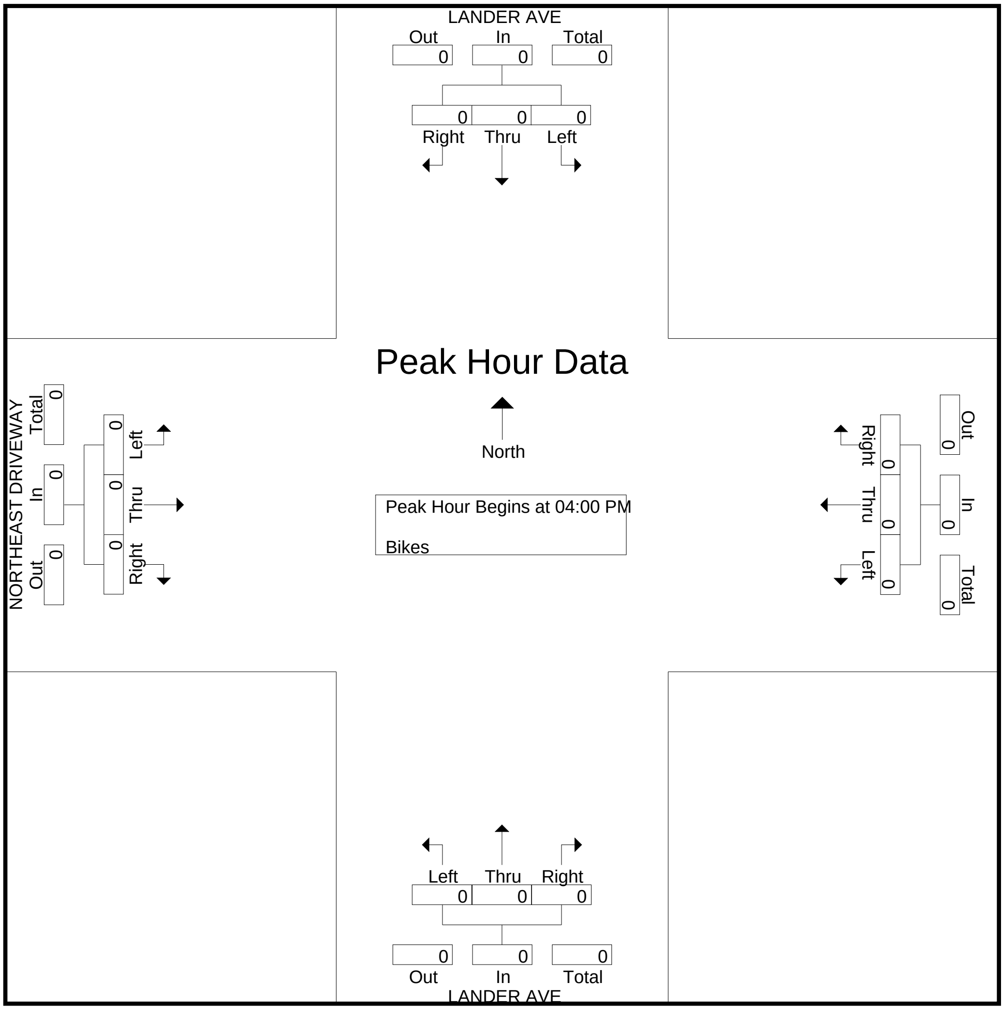

Traffic Data Service -- San Jose, CA
Class Report

CustomList-2181 -- English (ENU)

Datasets:
Site: **[7] AUGUST AVE E OF LANDER AVE**
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 0 - 100 mph.
Direction: East (bound), P = East, Lane = 0-16
Name: Default Profile
Scheme: Vehicle classification (Scheme F)
Units: Non metric (ft, mi, ft/s, mph, lb, ton)

Column Legend:
0 [Time] 24-hour time (0000 - 2359)
1 [Total] Number in time step
2 [Cls] Class totals

*** Tuesday, October 23, 2018**

Time <--	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Cls 13
0000	8	0	2	1	0	0	0	0	0	5	0	0	0	0
0100	8	0	3	2	0	0	0	0	0	3	0	0	0	0
0200	15	0	5	1	0	0	0	0	0	9	0	0	0	0
0300	23	0	9	2	0	0	1	0	0	10	1	0	0	0
0400	39	0	10	6	0	0	0	0	0	23	0	0	0	0
0500	42	2	11	7	0	0	0	0	1	21	0	0	0	0
0600	42	1	14	10	0	0	3	0	1	13	0	0	0	0
0700	65	2	25	19	1	0	4	0	1	11	1	1	0	0
0800	94	2	39	29	0	2	3	0	1	17	0	0	0	1
0900	55	1	18	20	1	2	0	0	0	13	0	0	0	0
1000	70	2	20	23	1	1	3	0	0	19	0	0	0	1
1100	94	1	44	25	0	1	1	0	0	22	0	0	0	0
1200	96	1	44	29	0	2	0	0	0	18	1	0	0	1
1300	76	0	26	28	1	1	3	0	2	15	0	0	0	0
1400	84	1	33	25	3	0	2	0	1	19	0	0	0	0
1500	105	2	45	43	0	1	4	0	0	10	0	0	0	0
1600	131	1	79	34	1	1	0	0	2	13	0	0	0	0
1700	138	2	88	29	0	0	4	0	0	14	0	0	0	1
1800	63	0	38	13	0	0	0	0	0	12	0	0	0	0
1900	43	0	22	9	0	0	1	0	0	11	0	0	0	0
2000	19	0	11	4	0	0	1	0	0	3	0	0	0	0
2100	15	0	7	1	0	0	0	0	1	6	0	0	0	0
2200	20	0	8	3	0	0	0	0	0	9	0	0	0	0
2300	8	0	2	0	0	0	0	0	0	6	0	0	0	0
07-19	**1071**	**15**	**499**	**317**	**8**	**11**	**24**	**0**	**7**	**183**	**2**	**1**	**0**	**4**
06-22	**1190**	**16**	**553**	**341**	**8**	**11**	**29**	**0**	**9**	**216**	**2**	**1**	**0**	**4**
06-00	**1218**	**16**	**563**	**344**	**8**	**11**	**29**	**0**	**9**	**231**	**2**	**1**	**0**	**4**
00-00	**1353**	**18**	**603**	**363**	**8**	**11**	**30**	**0**	**10**	**302**	**3**	**1**	**0**	**4**

Peak step 17:00 (138) **AM Peak step** 8:00 (94) **PM Peak step** 17:00 (138)

*** Wednesday, October 24, 2018**

Time <--	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Cls 13
0000	6	0	2	0	0	0	0	0	0	4	0	0	0	0
0100	8	0	1	1	0	0	0	0	0	6	0	0	0	0
0200	15	1	4	1	2	0	0	0	0	7	0	0	0	0
0300	24	0	10	2	0	0	0	0	0	12	0	0	0	0
0400	43	0	11	6	0	0	0	0	0	25	0	0	0	1
0500	42	0	13	5	0	1	3	0	2	18	0	0	0	0
0600	40	2	13	10	0	1	0	0	2	11	1	0	0	0
0700	73	0	36	18	1	0	1	0	1	14	0	1	0	1
0800	95	0	43	27	1	1	4	0	0	19	0	0	0	0
0900	55	2	18	19	0	0	2	0	1	12	0	1	0	0
1000	74	0	25	21	0	2	1	0	0	24	0	1	0	0
1100	98	3	43	30	1	2	4	0	0	13	0	2	0	0
1200	101	1	39	31	1	3	1	0	2	21	0	1	0	1
1300	69	1	22	23	2	1	2	0	0	17	0	1	0	0
1400	87	2	41	24	2	2	0	1	1	14	0	0	0	0
1500	106	4	35	45	3	0	2	0	0	15	0	1	0	1
1600	138	1	75	39	0	0	3	0	0	19	0	0	0	1
1700	125	1	81	35	0	0	0	0	2	6	0	0	0	0
1800	39	0	25	8	0	0	0	0	0	6	0	0	0	0
1900	33	0	17	9	0	0	0	0	0	6	0	1	0	0
2000	11	0	6	2	0	0	0	0	0	3	0	0	0	0
2100	19	0	3	4	0	0	0	0	0	12	0	0	0	0
2200	17	0	7	1	0	1	1	0	0	7	0	0	0	0
2300	5	0	1	0	0	0	0	0	0	4	0	0	0	0
07-19	**1060**	**15**	**483**	**320**	**11**	**11**	**20**	**1**	**7**	**180**	**0**	**8**	**0**	**4**
06-22	**1163**	**17**	**522**	**345**	**11**	**12**	**20**	**1**	**9**	**212**	**1**	**9**	**0**	**4**
06-00	**1185**	**17**	**530**	**346**	**11**	**13**	**21**	**1**	**9**	**223**	**1**	**9**	**0**	**4**
00-00	**1323**	**18**	**571**	**361**	**13**	**14**	**24**	**1**	**11**	**295**	**1**	**9**	**0**	**5**

Peak step 16:00 (138) **AM Peak step** 11:00 (98) **PM Peak step** 16:00 (138)

*** Thursday, October 25, 2018**

Time <--	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Cls 13
0000	9	0	1	2	0	0	0	0	0	5	1	0	0	0
0100	2	0	1	0	0	0	0	0	0	1	0	0	0	0
0200	21	0	7	2	0	0	0	0	0	12	0	0	0	0
0300	25	0	8	3	0	0	0	0	0	14	0	0	0	0
0400	29	0	9	2	0	0	0	0	0	18	0	0	0	0
0500	41	0	9	8	0	1	0	0	1	21	0	1	0	0
0600	38	1	12	12	0	1	0	0	2	9	0	1	0	0
0700	54	0	22	13	1	0	0	0	0	16	0	2	0	0
0800	74	0	30	17	0	1	2	0	0	24	0	0	0	0
0900	67	1	22	19	3	1	1	0	1	19	0	0	0	0
1000	73	3	22	24	1	2	3	0	0	17	0	1	0	0
1100	114	2	54	29	3	2	2	0	0	19	1	1	0	1
1200	99	4	46	28	0	0	3	0	1	17	0	0	0	0
1300	85	5	38	22	0	0	6	0	1	13	0	0	0	0
1400	94	5	39	24	2	1	2	0	0	20	0	0	0	1
1500	114	5	54	39	1	1	5	0	0	9	0	0	0	0
1600	123	1	68	35	0	1	1	0	1	16	0	0	0	0
1700	144	1	90	37	1	0	2	0	0	13	0	0	0	0
1800	64	0	40	14	0	1	0	0	0	9	0	0	0	0
1900	28	0	10	11	0	0	0	0	0	7	0	0	0	0
2000	19	0	9	4	0	0	1	0	0	5	0	0	0	0
2100	11	0	5	2	0	0	0	0	0	4	0	0	0	0
2200	20	0	8	5	0	0	2	0	1	4	0	0	0	0
2300	13	1	4	1	0	0	1	0	0	6	0	0	0	0
07-19	**1105**	**27**	**525**	**301**	**12**	**10**	**27**	**0**	**4**	**192**	**1**	**4**	**0**	**2**
06-22	**1201**	**28**	**561**	**330**	**12**	**11**	**28**	**0**	**6**	**217**	**1**	**5**	**0**	**2**
06-00	**1234**	**29**	**573**	**336**	**12**	**11**	**31**	**0**	**7**	**227**	**1**	**5**	**0**	**2**
00-00	**1361**	**29**	**608**	**353**	**12**	**12**	**31**	**0**	**8**	**298**	**2**	**6**	**0**	**2**

Peak step 17:00 (144) **AM Peak step** 11:00 (114) **PM Peak step** 17:00 (144)

Traffic Data Service -- San Jose, CA
Class Report

CustomList-2180 -- English (ENU)

Datasets:
Site: **[7] AUGUST AVE E OF LANDER AVE**
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 0 - 100 mph.
Direction: West (bound), P = East, Lane = 0-16
Name: Default Profile
Scheme: Vehicle classification (Scheme F)
Units: Non metric (ft, mi, ft/s, mph, lb, ton)

Column Legend:
0 [Time] 24-hour time (0000 - 2359)
1 [Total] Number in time step
2 [Cls] Class totals

*** Tuesday, October 23, 2018**

Time <--	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Cls 13
0000	11	0	0	3	0	0	0	0	0	8	0	0	0	0
0100	14	0	3	3	0	0	0	0	0	8	0	0	0	0
0200	19	0	7	6	0	0	0	0	0	6	0	0	0	0
0300	32	0	12	6	1	0	0	0	0	13	0	0	0	0
0400	48	0	13	15	0	0	0	0	0	20	0	0	0	0
0500	56	1	15	18	0	0	1	0	0	20	0	1	0	0
0600	79	0	28	34	0	2	0	0	0	15	0	0	0	0
0700	143	0	59	47	1	4	1	0	0	30	0	0	0	1
0800	127	1	67	35	0	3	2	0	2	16	0	0	0	1
0900	69	2	17	22	6	2	4	0	0	16	0	0	0	0
1000	73	2	20	22	3	0	1	0	2	23	0	0	0	0
1100	63	0	21	30	0	0	0	0	0	10	0	1	0	1
1200	103	3	38	43	0	2	2	0	0	15	0	0	0	0
1300	96	0	33	30	3	0	0	1	1	27	0	0	0	1
1400	94	0	34	36	0	3	1	0	1	18	0	1	0	0
1500	89	3	35	28	1	0	2	0	1	19	0	0	0	0
1600	65	0	30	24	0	0	1	0	2	8	0	0	0	0
1700	50	0	24	17	0	1	0	0	1	7	0	0	0	0
1800	44	1	15	17	0	0	0	0	0	11	0	0	0	0
1900	29	0	15	11	0	0	0	0	0	3	0	0	0	0
2000	27	0	13	7	0	0	1	0	0	6	0	0	0	0
2100	29	2	8	11	0	0	1	0	0	7	0	0	0	0
2200	14	0	2	4	0	0	0	0	0	8	0	0	0	0
2300	8	0	0	2	0	0	0	0	0	6	0	0	0	0
07-19	**1016**	**12**	**393**	**351**	**14**	**15**	**14**	**1**	**10**	**200**	**0**	**2**	**0**	**4**
06-22	**1180**	**14**	**457**	**414**	**14**	**17**	**16**	**1**	**10**	**231**	**0**	**2**	**0**	**4**
06-00	**1202**	**14**	**459**	**420**	**14**	**17**	**16**	**1**	**10**	**245**	**0**	**2**	**0**	**4**
00-00	**1382**	**15**	**509**	**471**	**15**	**17**	**17**	**1**	**10**	**320**	**0**	**3**	**0**	**4**

Peak step 7:00 (143) **AM Peak step** 7:00 (143) **PM Peak step** 12:00 (103)

*** Wednesday, October 24, 2018**

Time <--	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Cls 13
0000	9	0	1	2	0	0	0	0	0	6	0	0	0	0
0100	9	0	2	2	0	0	0	0	0	5	0	0	0	0
0200	24	1	5	10	0	0	0	0	0	8	0	0	0	0
0300	35	0	14	6	0	0	0	0	0	15	0	0	0	0
0400	42	0	9	14	0	0	0	0	0	19	0	0	0	0
0500	59	1	19	16	1	0	2	0	0	19	0	1	0	0
0600	78	0	31	29	0	0	1	0	0	17	0	0	0	0
0700	146	0	70	46	0	3	1	0	1	25	0	0	0	0
0800	131	3	49	56	1	3	4	0	0	15	0	0	0	0
0900	64	1	15	20	2	1	1	0	0	22	0	1	0	1
1000	64	0	16	21	3	3	1	0	0	20	0	0	0	0
1100	74	2	24	25	3	2	2	0	0	15	0	1	0	0
1200	111	2	32	43	2	4	4	1	1	21	0	0	0	1
1300	86	1	28	32	5	3	0	1	1	14	0	1	0	0
1400	89	1	33	29	1	3	1	0	1	19	0	0	0	1
1500	95	0	36	33	0	3	2	0	0	21	0	0	0	0
1600	61	0	31	19	0	0	2	0	1	8	0	0	0	0
1700	35	0	21	10	0	0	0	0	0	3	0	1	0	0
1800	42	0	20	11	0	0	0	0	0	11	0	0	0	0
1900	30	1	14	11	0	0	1	0	0	3	0	0	0	0
2000	17	0	5	6	0	0	0	0	1	5	0	0	0	0
2100	18	0	3	6	0	0	1	0	1	7	0	0	0	0
2200	19	0	6	4	0	0	0	0	0	9	0	0	0	0
2300	9	0	2	2	0	0	0	0	0	5	0	0	0	0
07-19	**998**	**10**	**375**	**345**	**17**	**25**	**18**	**2**	**5**	**194**	**0**	**4**	**0**	**3**
06-22	**1141**	**11**	**428**	**397**	**17**	**25**	**21**	**2**	**7**	**226**	**0**	**4**	**0**	**3**
06-00	**1169**	**11**	**436**	**403**	**17**	**25**	**21**	**2**	**7**	**240**	**0**	**4**	**0**	**3**
00-00	**1347**	**13**	**486**	**453**	**18**	**25**	**23**	**2**	**7**	**312**	**0**	**5**	**0**	**3**

Peak step 7:00 (146) **AM Peak step** 7:00 (146) **PM Peak step** 12:00 (111)

*** Thursday, October 25, 2018**

Time <--	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Cls 13
0000	3	0	0	0	0	0	0	0	0	3	0	0	0	0
0100	7	0	0	3	0	0	0	0	0	4	0	0	0	0
0200	26	1	7	9	0	0	2	0	0	7	0	0	0	0
0300	36	1	10	9	1	0	1	0	0	14	0	0	0	0
0400	50	0	14	16	0	1	0	0	0	19	0	0	0	0
0500	62	0	16	26	0	1	1	0	0	18	0	0	0	0
0600	87	1	25	37	2	4	0	0	0	17	0	1	0	0
0700	150	0	74	48	0	2	1	1	0	23	1	0	0	0
0800	117	1	61	30	0	3	0	0	2	19	0	1	0	0
0900	71	0	20	25	3	2	0	0	1	20	0	0	0	0
1000	64	1	14	21	4	1	1	1	0	20	0	0	0	1
1100	73	0	16	30	3	3	0	0	0	19	0	0	0	2
1200	97	2	43	31	0	2	2	0	1	14	0	0	0	2
1300	95	0	43	28	2	2	0	0	3	17	0	0	0	0
1400	90	1	27	38	0	2	3	0	0	18	0	0	0	1
1500	87	3	43	23	1	4	0	0	0	13	0	0	0	0
1600	62	1	21	20	0	3	0	0	3	14	0	0	0	0
1700	65	0	30	22	1	1	0	0	0	11	0	0	0	0
1800	35	0	15	10	0	3	0	0	0	6	0	0	0	1
1900	20	0	8	5	0	2	0	0	0	5	0	0	0	0
2000	23	0	10	5	0	1	1	0	0	6	0	0	0	0
2100	14	0	3	7	0	0	0	0	0	4	0	0	0	0
2200	20	0	5	7	0	0	0	0	1	6	1	0	0	0
2300	9	0	2	0	0	0	0	0	0	7	0	0	0	0
07-19	**1006**	**9**	**407**	**326**	**14**	**28**	**7**	**2**	**10**	**194**	**1**	**1**	**0**	**7**
06-22	**1150**	**10**	**453**	**380**	**16**	**35**	**8**	**2**	**10**	**226**	**1**	**2**	**0**	**7**
06-00	**1179**	**10**	**460**	**387**	**16**	**35**	**8**	**2**	**11**	**239**	**2**	**2**	**0**	**7**
00-00	**1363**	**12**	**507**	**450**	**17**	**37**	**12**	**2**	**11**	**304**	**2**	**2**	**0**	**7**

Peak step 7:00 (150) **AM Peak step** 7:00 (150) **PM Peak step** 12:00 (97)

Traffic Data Service -- San Jose, CA
Class Report

CustomList-2178 -- English (ENU)

Datasets:
Site: **[6] LANDER AVE N OF AUGUST AVE**
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 0 - 100 mph.
Direction: North (bound), P = North, Lane = 0-16
Name: Default Profile
Scheme: Vehicle classification (Scheme F)
Units: Non metric (ft, mi, ft/s, mph, lb, ton)

Column Legend:
0 [Time] 24-hour time (0000 - 2359)
1 [Total] Number in time step
2 [Cls] Class totals

*** Tuesday, October 23, 2018**

Time <--	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Cls 13
0000	71	0	29	11	0	0	0	0	0	9	0	15	6	1
0100	71	0	29	11	0	0	0	0	0	13	0	13	4	1
0200	76	0	30	14	0	1	0	0	1	15	1	11	3	0
0300	96	0	33	30	0	1	0	0	1	18	0	10	3	0
0400	168	0	78	46	1	2	1	0	0	24	0	12	4	0
0500	325	0	177	97	2	0	1	1	2	28	0	15	1	1
0600	536	3	326	149	4	6	4	0	1	28	0	10	2	3
0700	691	6	459	167	4	3	3	0	3	22	0	17	3	4
0800	618	4	408	162	4	5	2	0	0	22	0	9	0	2
0900	538	0	288	186	8	5	1	1	2	21	0	19	1	6
1000	567	4	330	169	6	6	6	1	1	31	1	7	3	2
1100	525	4	288	170	7	3	4	0	2	30	0	10	0	7
1200	518	5	309	129	6	6	5	0	3	33	1	15	0	6
1300	539	1	342	141	2	9	2	0	2	22	2	11	1	4
1400	571	6	354	162	3	4	4	0	3	26	2	3	2	2
1500	609	4	408	162	1	3	2	0	3	15	0	5	2	4
1600	666	4	474	153	4	3	2	1	4	13	1	4	0	3
1700	619	3	440	147	2	1	6	0	1	15	0	2	0	2
1800	438	3	293	117	2	1	1	0	3	16	0	1	1	0
1900	288	0	201	64	1	0	2	0	0	13	0	4	0	3
2000	250	2	173	55	1	0	2	0	0	10	0	5	2	0
2100	182	1	112	35	0	2	0	0	1	11	0	17	3	0
2200	129	0	88	18	0	1	1	0	1	11	0	7	2	0
2300	71	0	35	12	0	1	0	0	0	11	0	10	2	0
07-19	**6899**	**44**	**4393**	**1865**	**49**	**49**	**38**	**3**	**27**	**266**	**7**	**103**	**13**	**42**
06-22	**8155**	**50**	**5205**	**2168**	**55**	**57**	**46**	**3**	**29**	**328**	**7**	**139**	**20**	**48**
06-00	**8355**	**50**	**5328**	**2198**	**55**	**59**	**47**	**3**	**30**	**350**	**7**	**156**	**24**	**48**
00-00	**9162**	**50**	**5704**	**2407**	**58**	**63**	**49**	**4**	**34**	**457**	**8**	**232**	**45**	**51**

Peak step 7:00 (691) **AM Peak step** 7:00 (691) **PM Peak step** 16:00 (666)

*** Wednesday, October 24, 2018**

Time <--	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Cls 13
0000	70	0	29	12	1	1	0	0	0	12	0	13	2	0
0100	60	0	23	10	0	0	0	0	1	11	0	12	2	1
0200	63	0	24	13	0	0	0	0	0	18	0	6	2	0
0300	94	0	36	17	1	0	0	0	1	23	0	12	4	0
0400	196	0	98	42	1	2	0	0	0	37	0	15	1	0
0500	312	1	176	89	2	2	3	0	0	20	0	13	2	4
0600	516	3	323	137	2	1	3	0	3	27	1	11	1	4
0700	635	3	435	151	0	4	4	0	0	22	0	10	4	2
0800	588	1	358	167	2	5	5	0	4	33	0	9	0	4
0900	513	2	309	139	5	3	2	0	5	28	0	18	1	1
1000	549	6	306	171	6	10	4	0	1	32	0	10	1	2
1100	527	3	314	169	3	3	4	0	1	19	0	8	1	2
1200	505	2	310	129	7	6	2	2	6	23	1	14	0	3
1300	553	5	357	145	3	8	2	0	2	22	0	5	1	3
1400	566	5	357	153	2	10	4	1	4	20	1	8	0	1
1500	675	5	439	170	7	5	2	1	5	24	2	10	0	5
1600	667	7	471	149	4	1	2	0	6	21	1	3	0	2
1700	624	4	455	139	0	1	2	0	1	16	0	3	0	3
1800	429	2	313	95	2	0	0	0	2	7	0	3	1	4
1900	284	0	192	77	0	3	0	0	1	7	0	4	0	0
2000	179	1	116	43	1	0	0	0	1	10	0	3	3	1
2100	152	1	94	27	2	0	0	0	0	14	0	9	3	2
2200	131	1	71	25	1	1	0	0	0	10	0	20	1	1
2300	80	1	44	12	0	0	0	0	1	10	0	10	2	0
07-19	**6831**	**45**	**4424**	**1777**	**41**	**56**	**33**	**4**	**37**	**267**	**5**	**101**	**9**	**32**
06-22	**7962**	**50**	**5149**	**2061**	**46**	**60**	**36**	**4**	**42**	**325**	**6**	**128**	**16**	**39**
06-00	**8173**	**52**	**5264**	**2098**	**47**	**61**	**36**	**4**	**43**	**345**	**6**	**158**	**19**	**40**
00-00	**8968**	**53**	**5650**	**2281**	**52**	**66**	**39**	**4**	**45**	**466**	**6**	**229**	**32**	**45**

Peak step 15:00 (675) **AM Peak step** 7:00 (635) **PM Peak step** 15:00 (675)

*** Thursday, October 25, 2018**

Time <--	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Cls 13
0000	71	0	38	10	0	0	0	0	0	11	0	10	2	0
0100	60	0	28	12	0	0	1	0	0	11	0	7	1	0
0200	95	0	39	11	1	0	0	0	1	26	0	16	1	0
0300	93	2	36	21	2	0	2	0	2	16	0	9	3	0
0400	160	0	85	36	0	2	0	0	1	22	0	13	0	1
0500	311	5	178	84	4	3	0	0	3	17	2	10	0	5
0600	526	2	340	145	2	0	3	0	2	16	0	11	1	4
0700	628	1	434	143	2	2	3	0	2	23	0	8	4	6
0800	606	2	385	166	3	5	2	0	0	27	1	8	2	5
0900	504	4	292	149	5	6	6	1	1	32	0	5	0	3
1000	519	6	299	152	8	11	0	1	4	31	0	7	0	0
1100	584	8	360	163	9	1	0	0	3	27	0	7	3	3
1200	527	3	331	128	0	8	6	0	2	27	1	14	0	7
1300	490	1	282	148	5	7	4	0	3	32	1	4	0	3
1400	561	4	366	136	6	8	3	0	4	23	1	8	0	2
1500	695	5	440	202	1	6	3	1	5	26	0	4	1	1
1600	710	7	494	170	1	2	3	1	2	17	1	4	1	7
1700	646	4	460	151	1	1	3	0	2	15	1	2	0	6
1800	469	2	338	104	3	3	1	0	0	10	0	4	1	3
1900	279	1	193	69	2	0	0	1	1	9	0	2	0	1
2000	257	0	173	56	1	0	2	0	1	9	0	13	1	1
2100	142	0	88	36	0	1	0	0	0	6	0	7	2	2
2200	144	0	89	31	2	0	2	0	1	8	0	9	1	1
2300	106	0	57	19	2	0	2	0	0	11	0	14	1	0
07-19	**6939**	**47**	**4481**	**1812**	**44**	**60**	**34**	**4**	**28**	**290**	**6**	**75**	**12**	**46**
06-22	**8143**	**50**	**5275**	**2118**	**49**	**61**	**39**	**5**	**32**	**330**	**6**	**108**	**16**	**54**
06-00	**8393**	**50**	**5421**	**2168**	**53**	**61**	**43**	**5**	**33**	**349**	**6**	**131**	**18**	**55**
00-00	**9183**	**57**	**5825**	**2342**	**60**	**66**	**46**	**5**	**40**	**452**	**8**	**196**	**25**	**61**

Peak step 16:00 (710) **AM Peak step** 7:00 (628) **PM Peak step** 16:00 (710)

Traffic Data Service -- San Jose, CA
Class Report

CustomList-2179 -- English (ENU)

Datasets:
Site: [6] LANDER AVE N OF AUGUST AVE
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 0 - 100 mph.
Direction: South (bound), P = North, Lane = 0-16
Name: Default Profile
Scheme: Vehicle classification (Scheme F)
Units: Non metric (ft, mi, ft/s, mph, lb, ton)

Column Legend:
0 [Time] 24-hour time (0000 - 2359)
1 [Total] Number in time step
2 [Cls] Class totals

*** Tuesday, October 23, 2018**

Time <--	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Cls 13
0000	123	0	65	32	0	0	0	0	0	10	0	11	5	0
0100	74	0	22	21	0	1	1	0	0	9	0	16	4	0
0200	62	0	20	10	1	0	1	0	1	15	0	11	2	1
0300	102	0	38	13	1	0	0	0	0	25	1	20	4	0
0400	179	0	70	48	1	3	0	0	1	29	1	23	2	1
0500	279	2	143	87	3	5	2	0	1	20	1	10	2	3
0600	389	1	216	114	2	2	3	0	1	25	3	14	3	5
0700	573	6	352	154	4	7	2	0	0	24	1	18	2	3
0800	407	4	219	125	6	7	3	0	1	32	3	6	0	1
0900	415	3	210	146	6	2	2	1	2	25	2	10	3	3
1000	404	2	216	121	6	3	5	0	2	27	1	15	3	3
1100	490	2	265	155	5	1	3	1	2	24	2	19	5	6
1200	524	3	300	161	5	6	1	0	3	27	2	11	4	1
1300	578	5	344	169	2	2	3	0	6	33	2	4	2	6
1400	598	6	352	194	4	10	2	0	5	21	1	1	0	2
1500	664	7	423	188	0	5	3	0	2	23	2	6	2	3
1600	680	5	456	185	0	5	3	2	1	17	2	1	2	1
1700	743	2	527	180	3	1	0	0	4	18	2	1	1	4
1800	561	5	394	137	2	1	1	0	1	13	0	6	0	1
1900	431	1	281	122	2	3	3	0	0	9	0	7	3	0
2000	352	1	237	92	1	0	2	0	1	6	1	9	2	0
2100	230	0	151	49	0	0	0	0	0	13	0	16	1	0
2200	154	0	92	32	1	1	0	0	1	12	1	9	4	1
2300	108	0	65	20	1	0	1	0	1	5	1	9	4	1
07-19	**6637**	**50**	**4058**	**1915**	**43**	**50**	**28**	**4**	**29**	**284**	**20**	**98**	**24**	**34**
06-22	**8039**	**53**	**4943**	**2292**	**48**	**55**	**36**	**4**	**31**	**337**	**24**	**144**	**33**	**39**
06-00	**8301**	**53**	**5100**	**2344**	**50**	**56**	**37**	**4**	**33**	**354**	**26**	**162**	**41**	**41**
00-00	**9120**	**55**	**5458**	**2555**	**56**	**65**	**41**	**4**	**36**	**462**	**29**	**253**	**60**	**46**

Peak step 17:00 (743) **AM Peak step** 7:00 (573) **PM Peak step** 17:00 (743)

*** Wednesday, October 24, 2018**

Time <--	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Cls 13
0000	102	1	53	20	0	1	1	0	0	9	0	15	2	0
0100	52	0	19	10	1	0	0	0	0	8	0	14	0	0
0200	77	1	26	15	0	0	1	0	1	12	0	15	6	0
0300	109	0	36	33	0	0	0	0	0	22	1	16	1	0
0400	184	3	84	49	3	3	2	0	1	27	0	10	2	0
0500	283	1	119	108	2	3	3	0	1	26	2	12	3	3
0600	420	6	223	126	1	1	4	0	2	35	1	14	3	4
0700	547	5	311	165	3	9	0	1	3	29	2	7	5	7
0800	413	1	207	143	3	2	3	1	6	29	1	11	2	4
0900	367	4	164	130	7	5	3	0	1	31	4	12	1	5
1000	372	4	210	100	4	3	4	1	1	24	2	11	2	6
1100	508	2	284	155	6	1	3	1	4	23	3	19	2	5
1200	561	6	332	152	5	7	3	0	2	33	2	14	0	5
1300	528	6	326	138	3	7	1	2	4	25	1	6	3	6
1400	577	6	353	157	3	6	3	0	2	31	2	5	4	5
1500	591	6	394	154	1	3	2	0	4	20	1	3	0	3
1600	679	5	457	185	2	1	2	1	3	12	2	4	0	5
1700	718	1	523	175	2	0	1	0	2	13	0	1	0	0
1800	544	3	393	126	1	0	0	0	0	15	1	3	1	1
1900	471	1	332	119	0	1	0	0	0	8	0	7	2	1
2000	339	0	236	74	2	1	0	0	2	14	1	6	2	1
2100	235	2	154	49	0	1	0	0	1	8	0	16	3	1
2200	182	0	114	43	0	0	0	0	0	7	0	11	5	2
2300	99	2	58	17	0	0	0	0	0	7	0	11	2	2
07-19	**6405**	**49**	**3954**	**1780**	**40**	**44**	**25**	**7**	**32**	**285**	**21**	**96**	**20**	**52**
06-22	**7870**	**58**	**4899**	**2148**	**43**	**48**	**29**	**7**	**37**	**350**	**23**	**139**	**30**	**59**
06-00	**8151**	**60**	**5071**	**2208**	**43**	**48**	**29**	**7**	**37**	**364**	**23**	**161**	**37**	**63**
00-00	**8958**	**66**	**5408**	**2443**	**49**	**55**	**36**	**7**	**40**	**468**	**26**	**243**	**51**	**66**

Peak step 17:00 (718) **AM Peak step** 7:00 (547) **PM Peak step** 17:00 (718)

*** Thursday, October 25, 2018**

Time <--	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Cls 13
0000	81	0	46	16	0	0	1	0	0	3	0	12	2	1
0100	61	0	23	13	0	0	0	0	0	11	0	12	2	0
0200	65	0	19	14	1	1	0	0	2	12	0	14	1	1
0300	91	0	34	22	1	0	1	0	1	16	3	11	1	1
0400	142	2	66	32	2	1	1	0	0	28	0	7	1	2
0500	252	1	131	77	0	2	1	0	3	25	2	9	1	0
0600	415	5	234	126	3	1	2	0	4	25	1	12	1	1
0700	546	8	314	152	5	4	2	1	4	22	5	18	3	8
0800	423	1	241	135	2	2	4	0	3	26	2	3	0	4
0900	416	1	205	135	9	3	2	0	5	32	2	18	2	2
1000	422	2	239	122	6	5	5	1	3	27	0	6	2	4
1100	492	2	288	137	7	5	2	1	1	29	2	13	2	3
1200	488	2	312	125	2	1	4	0	1	27	3	6	2	3
1300	519	3	302	154	3	8	3	0	4	27	2	11	1	1
1400	632	3	380	182	1	5	4	0	3	36	3	8	2	5
1500	612	6	389	175	2	3	4	0	5	18	2	4	2	2
1600	659	6	444	172	4	2	3	0	6	13	1	4	0	4
1700	783	5	576	173	2	5	1	0	0	15	3	2	0	1
1800	590	1	410	154	2	1	1	1	1	14	0	2	1	2
1900	455	1	315	119	0	1	1	0	0	8	0	9	1	0
2000	332	1	221	88	2	0	1	0	1	8	1	6	2	1
2100	253	1	164	62	1	0	2	0	0	8	6	7	2	0
2200	188	1	109	52	0	0	0	0	0	7	3	12	4	0
2300	113	0	66	24	1	1	0	0	0	7	1	8	4	1
07-19	**6582**	**40**	**4100**	**1816**	**45**	**44**	**35**	**4**	**36**	**286**	**25**	**95**	**17**	**39**
06-22	**8037**	**48**	**5034**	**2211**	**51**	**46**	**41**	**4**	**41**	**335**	**33**	**129**	**23**	**41**
06-00	**8338**	**49**	**5209**	**2287**	**52**	**47**	**41**	**4**	**41**	**349**	**37**	**149**	**31**	**42**
00-00	**9030**	**52**	**5528**	**2461**	**56**	**51**	**45**	**4**	**47**	**444**	**42**	**214**	**39**	**47**

Peak step 17:00 (783) **AM Peak step** 7:00 (546) **PM Peak step** 17:00 (783)

Appendix B:

Level of Service Worksheets

Existing Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	9	15	41	43	32	34	651	35	8	362	79
Future Volume (veh/h)	44	9	15	41	43	32	34	651	35	8	362	79
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1403	1545	1900	1664	1900	1652	1762	1900	1407	1652	1532
Adj Flow Rate, veh/h	49	10	17	46	48	36	38	723	39	9	402	88
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	1
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
Percent Heavy Veh, %	18	18	23	19	19	19	15	8	8	35	15	24
Cap, veh/h	320	47	236	184	107	68	53	879	47	16	840	648
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.13	0.03	0.53	0.49	0.01	0.51	0.51
Sat Flow, veh/h	932	264	1313	398	592	379	1573	1657	89	1340	1652	1275
Grp Volume(v), veh/h	59	0	17	130	0	0	38	0	762	9	402	88
Grp Sat Flow(s),veh/h/ln	1195	0	1313	1370	0	0	1573	0	1746	1340	1652	1275
Q Serve(g_s), s	0.0	0.0	0.5	2.3	0.0	0.0	1.0	0.0	15.7	0.3	6.8	1.6
Cycle Q Clear(g_c), s	1.6	0.0	0.5	3.9	0.0	0.0	1.0	0.0	15.7	0.3	6.8	1.6
Prop In Lane	0.83		1.00	0.35		0.28	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	368	0	236	359	0	0	53	0	926	16	840	648
V/C Ratio(X)	0.16	0.00	0.07	0.36	0.00	0.00	0.71	0.00	0.82	0.57	0.48	0.14
Avail Cap(c_a), veh/h	949	0	972	990	0	0	910	0	2411	620	2282	1762
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.2	0.0	14.7	16.4	0.0	0.0	20.7	0.0	8.5	21.2	6.9	5.6
Incr Delay (d2), s/veh	0.2	0.0	0.1	0.6	0.0	0.0	16.1	0.0	1.9	28.0	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.2	1.5	0.0	0.0	0.7	0.0	7.9	0.2	3.1	0.6
LnGrp Delay(d),s/veh	15.4	0.0	14.8	17.0	0.0	0.0	36.7	0.0	10.4	49.3	7.3	5.7
LnGrp LOS	B		B	B			D		B	D	A	A
Approach Vol, veh/h		76			130			800			499	
Approach Delay, s/veh		15.3			17.0			11.7			7.8	
Approach LOS		B			B			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.5	26.9		11.8	5.5	26.0		11.8
Change Period (Y+Rc), s	4.0	5.7		6.0	4.0	5.7		6.0
Max Green Setting (Gmax), s	20.0	58.0		30.0	25.0	58.0		25.0
Max Q Clear Time (g_c+I1), s	2.3	17.7		3.6	3.0	8.8		5.9
Green Ext Time (p_c), s	0.0	3.5		0.3	0.1	1.9		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	11.0
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	62	57	35	31	10
Future Vol, veh/h	5	62	57	35	31	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	89	7	5	69	79	80
Mvmt Flow	6	70	64	39	35	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	103	0	-	0	166	84
Stage 1	-	-	-	-	84	-
Stage 2	-	-	-	-	82	-
Critical Hdwy	4.99	-	-	-	7.19	7
Critical Hdwy Stg 1	-	-	-	-	6.19	-
Critical Hdwy Stg 2	-	-	-	-	6.19	-
Follow-up Hdwy	3.001	-	-	-	4.211	4.02
Pot Cap-1 Maneuver	1085	-	-	-	675	797
Stage 1	-	-	-	-	777	-
Stage 2	-	-	-	-	779	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1085	-	-	-	671	797
Mov Cap-2 Maneuver	-	-	-	-	671	-
Stage 1	-	-	-	-	772	-
Stage 2	-	-	-	-	779	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1085	-	-	-	698
HCM Lane V/C Ratio	0.005	-	-	-	0.066
HCM Control Delay (s)	8.3	0	-	-	10.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	84	9	79	93	1	8	0	1	0	0	0
Future Vol, veh/h	0	84	9	79	93	1	8	0	1	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	33	8	0	37	100	0	0	9	0	0	0
Mvmt Flow	0	98	10	92	108	1	9	0	1	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	109	0	0	108	0	0	396	396	103	397	401	109
Stage 1	-	-	-	-	-	-	103	103	-	293	293	-
Stage 2	-	-	-	-	-	-	293	293	-	104	108	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.29	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.381	3.5	4	3.3
Pot Cap-1 Maneuver	1494	-	-	1495	-	-	568	544	933	567	541	950
Stage 1	-	-	-	-	-	-	908	814	-	719	674	-
Stage 2	-	-	-	-	-	-	719	674	-	907	810	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1494	-	-	1495	-	-	540	508	933	538	505	950
Mov Cap-2 Maneuver	-	-	-	-	-	-	540	508	-	538	505	-
Stage 1	-	-	-	-	-	-	908	814	-	719	630	-
Stage 2	-	-	-	-	-	-	672	630	-	906	810	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	3.5	11.5	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	567	1494	-	-	1495	-	-	-
HCM Lane V/C Ratio	0.018	-	-	-	0.061	-	-	-
HCM Control Delay (s)	11.5	0	-	-	7.6	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.2	-	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	81	166	6	0	4
Future Vol, veh/h	11	81	166	6	0	4
Conflicting Peds, #/hr	0	0	0	0	0	22
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	13	36	22	0	0	0
Mvmt Flow	13	95	195	7	0	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	202	0	-	0	320	221
Stage 1	-	-	-	-	199	-
Stage 2	-	-	-	-	121	-
Critical Hdwy	4.23	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.317	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1307	-	-	-	678	824
Stage 1	-	-	-	-	839	-
Stage 2	-	-	-	-	909	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1307	-	-	-	671	809
Mov Cap-2 Maneuver	-	-	-	-	671	-
Stage 1	-	-	-	-	830	-
Stage 2	-	-	-	-	909	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1307	-	-	-	809
HCM Lane V/C Ratio	0.01	-	-	-	0.006
HCM Control Delay (s)	7.8	0	-	-	9.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	1	30	670	489	70
Future Vol, veh/h	5	1	30	670	489	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	60	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	10	17	0
Mvmt Flow	6	1	34	761	556	80

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1425	596	636	0	-	0
Stage 1	596	-	-	-	-	-
Stage 2	829	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	151	507	957	-	-	-
Stage 1	554	-	-	-	-	-
Stage 2	432	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	146	507	957	-	-	-
Mov Cap-2 Maneuver	273	-	-	-	-	-
Stage 1	534	-	-	-	-	-
Stage 2	432	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.4	0.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	957	-	273	507	-	-
HCM Lane V/C Ratio	0.036	-	0.021	0.002	-	-
HCM Control Delay (s)	8.9	-	18.5	12.1	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	46	52	53	15	16	27	565	38	46	673	19
Future Volume (veh/h)	88	46	52	53	15	16	27	565	38	46	673	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1678	1696	1900	1798	1900	1610	1798	1900	1776	1827	1439
Adj Flow Rate, veh/h	90	47	53	54	15	16	28	577	39	47	687	19
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	1
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, %	6	6	12	21	21	21	18	6	6	7	4	32
Cap, veh/h	328	110	280	251	68	40	41	760	51	86	878	588
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.14	0.03	0.46	0.41	0.05	0.48	0.48
Sat Flow, veh/h	925	568	1442	538	349	206	1533	1665	113	1691	1827	1223
Grp Volume(v), veh/h	137	0	53	85	0	0	28	0	616	47	687	19
Grp Sat Flow(s),veh/h/ln	1492	0	1442	1093	0	0	1533	0	1778	1691	1827	1223
Q Serve(g_s), s	0.0	0.0	1.2	0.9	0.0	0.0	0.7	0.0	11.6	1.1	12.6	0.3
Cycle Q Clear(g_c), s	3.0	0.0	1.2	3.8	0.0	0.0	0.7	0.0	11.6	1.1	12.6	0.3
Prop In Lane	0.66		1.00	0.64		0.19	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	438	0	280	359	0	0	41	0	812	86	878	588
V/C Ratio(X)	0.31	0.00	0.19	0.24	0.00	0.00	0.68	0.00	0.76	0.55	0.78	0.03
Avail Cap(c_a), veh/h	1257	0	1148	1012	0	0	954	0	2642	842	2714	1818
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.2	0.0	13.5	14.5	0.0	0.0	19.4	0.0	9.1	18.6	8.7	5.5
Incr Delay (d2), s/veh	0.4	0.0	0.3	0.3	0.0	0.0	18.2	0.0	1.5	5.3	1.6	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	1.4	0.0	0.5	0.9	0.0	0.0	0.5	0.0	6.0	0.6	6.5	0.1
LnGrp Delay(d),s/veh	14.6	0.0	13.9	14.8	0.0	0.0	37.6	0.0	10.6	23.9	10.3	5.5
LnGrp LOS	B		B	B			D		B	C	B	A
Approach Vol, veh/h		190			85			644			753	
Approach Delay, s/veh		14.4			14.8			11.8			11.0	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.0	22.3		11.8	5.1	23.3		11.8
Change Period (Y+Rc), s	4.0	5.7		6.0	4.0	5.7		6.0
Max Green Setting (Gmax), s	20.0	58.0		30.0	25.0	58.0		25.0
Max Q Clear Time (g_c+I1), s	3.1	13.6		5.0	2.7	14.6		5.8
Green Ext Time (p_c), s	0.1	2.6		0.7	0.0	3.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	11.9
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	63	63	12	22	12
Future Vol, veh/h	3	63	63	12	22	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	44	6	5	84	75	63
Mvmt Flow	3	72	72	14	25	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	86	0	-	0	157	79
Stage 1	-	-	-	-	79	-
Stage 2	-	-	-	-	78	-
Critical Hdwy	4.54	-	-	-	7.15	6.83
Critical Hdwy Stg 1	-	-	-	-	6.15	-
Critical Hdwy Stg 2	-	-	-	-	6.15	-
Follow-up Hdwy	2.596	-	-	-	4.175	3.867
Pot Cap-1 Maneuver	1283	-	-	-	690	836
Stage 1	-	-	-	-	788	-
Stage 2	-	-	-	-	789	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1283	-	-	-	689	836
Mov Cap-2 Maneuver	-	-	-	-	689	-
Stage 1	-	-	-	-	786	-
Stage 2	-	-	-	-	789	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1283	-	-	-	735
HCM Lane V/C Ratio	0.003	-	-	-	0.053
HCM Control Delay (s)	7.8	0	-	-	10.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	85	1	6	57	0	9	0	93	0	0	0
Future Vol, veh/h	0	85	1	6	57	0	9	0	93	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	24	0	0	25	0	0	0	0	0	0	0
Mvmt Flow	0	98	1	7	66	0	10	0	107	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	66	0	0	99	0	0	179	179	99	232	179	66
Stage 1	-	-	-	-	-	-	99	99	-	80	80	-
Stage 2	-	-	-	-	-	-	80	80	-	152	99	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1549	-	-	1507	-	-	787	718	962	727	718	1003
Stage 1	-	-	-	-	-	-	912	817	-	934	832	-
Stage 2	-	-	-	-	-	-	934	832	-	855	817	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1549	-	-	1507	-	-	784	714	962	643	714	1003
Mov Cap-2 Maneuver	-	-	-	-	-	-	784	714	-	643	714	-
Stage 1	-	-	-	-	-	-	912	817	-	934	828	-
Stage 2	-	-	-	-	-	-	929	828	-	760	817	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.7	9.4	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	943	1549	-	-	1507	-	-	-
HCM Lane V/C Ratio	0.124	-	-	-	0.005	-	-	-
HCM Control Delay (s)	9.4	0	-	-	7.4	0	-	0
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	173	60	4	12	3
Future Vol, veh/h	5	173	60	4	12	3
Conflicting Peds, #/hr	0	0	0	0	0	8
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	9	13	23	0	8	0
Mvmt Flow	6	197	68	5	14	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	73	0	-	0	280	79
Stage 1	-	-	-	-	71	-
Stage 2	-	-	-	-	209	-
Critical Hdwy	4.19	-	-	-	6.48	6.2
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	2.281	-	-	-	3.572	3.3
Pot Cap-1 Maneuver	1483	-	-	-	697	987
Stage 1	-	-	-	-	937	-
Stage 2	-	-	-	-	812	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1483	-	-	-	694	980
Mov Cap-2 Maneuver	-	-	-	-	694	-
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	812	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1483	-	-	-	737
HCM Lane V/C Ratio	0.004	-	-	-	0.023
HCM Control Delay (s)	7.4	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	1.5					
Movement	**EBL**	**EBR**	**NBL**	**NBT**	**SBT**	**SBR**
Lane Configurations						
Traffic Vol, veh/h	57	41	28	613	729	35
Future Vol, veh/h	57	41	28	613	729	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	60	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	2	7	5	0
Mvmt Flow	61	44	30	659	784	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1522	803	822	0	-	0
Stage 1	803	-	-	-	-	-
Stage 2	719	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.12	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.218	-	-	-
Pot Cap-1 Maneuver	132	387	807	-	-	-
Stage 1	444	-	-	-	-	-
Stage 2	486	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	127	387	807	-	-	-
Mov Cap-2 Maneuver	259	-	-	-	-	-
Stage 1	428	-	-	-	-	-
Stage 2	486	-	-	-	-	-

Approach	EB		NB		SB	
HCM Control Delay, s	20		0.4		0	
HCM LOS	C					

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	807	-	259	387	-	-
HCM Lane V/C Ratio	0.037	-	0.237	0.114	-	-
HCM Control Delay (s)	9.6	-	23.2	15.5	-	-
HCM Lane LOS	A	-	C	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.9	0.4	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	10	16	41	49	41	39	658	35	10	363	92
Future Volume (veh/h)	48	10	16	41	49	41	39	658	35	10	363	92
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1403	1545	1900	1654	1900	1652	1762	1900	1407	1652	1532
Adj Flow Rate, veh/h	53	11	18	46	54	46	43	731	39	11	403	102
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	1
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
Percent Heavy Veh, %	18	18	23	19	19	19	15	8	8	35	15	24
Cap, veh/h	319	49	247	171	114	83	58	880	47	19	840	648
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.14	0.04	0.53	0.49	0.01	0.51	0.51
Sat Flow, veh/h	918	259	1313	349	604	438	1573	1658	88	1340	1652	1275
Grp Volume(v), veh/h	64	0	18	146	0	0	43	0	770	11	403	102
Grp Sat Flow(s),veh/h/ln	1177	0	1313	1391	0	0	1573	0	1746	1340	1652	1275
Q Serve(g_s), s	0.0	0.0	0.5	2.6	0.0	0.0	1.2	0.0	16.7	0.4	7.1	1.9
Cycle Q Clear(g_c), s	1.8	0.0	0.5	4.4	0.0	0.0	1.2	0.0	16.7	0.4	7.1	1.9
Prop In Lane	0.83		1.00	0.32		0.32	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	368	0	247	367	0	0	58	0	927	19	840	648
V/C Ratio(X)	0.17	0.00	0.07	0.40	0.00	0.00	0.74	0.00	0.83	0.57	0.48	0.16
Avail Cap(c_a), veh/h	903	0	932	949	0	0	873	0	2313	595	2188	1689
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.6	0.0	15.1	16.9	0.0	0.0	21.5	0.0	8.9	22.1	7.2	5.9
Incr Delay (d2), s/veh	0.2	0.0	0.1	0.7	0.0	0.0	16.6	0.0	2.0	24.4	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.2	1.7	0.0	0.0	0.8	0.0	8.4	0.3	3.3	0.7
LnGrp Delay(d),s/veh	15.8	0.0	15.2	17.6	0.0	0.0	38.1	0.0	10.9	46.5	7.6	6.0
LnGrp LOS	B		B	B			D		B	D	A	A
Approach Vol, veh/h		82			146			813			516	
Approach Delay, s/veh		15.7			17.6			12.3			8.1	
Approach LOS		B			B			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.6	27.9		12.5	5.7	26.9		12.5
Change Period (Y+Rc), s	4.0	5.7		6.0	4.0	5.7		6.0
Max Green Setting (Gmax), s	20.0	58.0		30.0	25.0	58.0		25.0
Max Q Clear Time (g_c+I1), s	2.4	18.7		3.8	3.2	9.1		6.4
Green Ext Time (p_c), s	0.0	3.5		0.3	0.1	2.0		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	11.6
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	65	58	44	33	10
Future Vol, veh/h	5	65	58	44	33	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	89	7	5	69	79	80
Mvmt Flow	6	73	65	49	37	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	114	0	-	0	175	90
Stage 1	-	-	-	-	90	-
Stage 2	-	-	-	-	85	-
Critical Hdwy	4.99	-	-	-	7.19	7
Critical Hdwy Stg 1	-	-	-	-	6.19	-
Critical Hdwy Stg 2	-	-	-	-	6.19	-
Follow-up Hdwy	3.001	-	-	-	4.211	4.02
Pot Cap-1 Maneuver	1074	-	-	-	667	790
Stage 1	-	-	-	-	772	-
Stage 2	-	-	-	-	776	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1074	-	-	-	663	790
Mov Cap-2 Maneuver	-	-	-	-	663	-
Stage 1	-	-	-	-	767	-
Stage 2	-	-	-	-	776	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	10.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1074	-	-	-	689
HCM Lane V/C Ratio	0.005	-	-	-	0.07
HCM Control Delay (s)	8.4	0	-	-	10.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	88	9	79	102	1	8	0	1	0	0	0
Future Vol, veh/h	0	88	9	79	102	1	8	0	1	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	33	8	0	37	100	0	0	9	0	0	0
Mvmt Flow	0	102	10	92	119	1	9	0	1	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	120	0	0	112	0	0	411	411	107	412	416	120
Stage 1	-	-	-	-	-	-	107	107	-	304	304	-
Stage 2	-	-	-	-	-	-	304	304	-	108	112	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.29	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.381	3.5	4	3.3
Pot Cap-1 Maneuver	1480	-	-	1490	-	-	555	534	928	554	530	937
Stage 1	-	-	-	-	-	-	903	811	-	710	667	-
Stage 2	-	-	-	-	-	-	710	667	-	902	807	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1480	-	-	1490	-	-	527	499	928	525	495	937
Mov Cap-2 Maneuver	-	-	-	-	-	-	527	499	-	525	495	-
Stage 1	-	-	-	-	-	-	903	811	-	710	623	-
Stage 2	-	-	-	-	-	-	663	623	-	901	807	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	3.3	11.6	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	554	1480	-	-	1490	-	-	-
HCM Lane V/C Ratio	0.019	-	-	-	0.062	-	-	-
HCM Control Delay (s)	11.6	0	-	-	7.6	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.2	-	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	84	175	20	3	4
Future Vol, veh/h	12	84	175	20	3	4
Conflicting Peds, #/hr	0	0	0	0	0	22
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	13	36	22	0	0	0
Mvmt Flow	14	99	206	24	4	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	230	0	-	0	345	240
Stage 1	-	-	-	-	218	-
Stage 2	-	-	-	-	127	-
Critical Hdwy	4.23	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.317	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1276	-	-	-	656	804
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	904	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1276	-	-	-	648	789
Mov Cap-2 Maneuver	-	-	-	-	648	-
Stage 1	-	-	-	-	813	-
Stage 2	-	-	-	-	904	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1276	-	-	-	722
HCM Lane V/C Ratio	0.011	-	-	-	0.011
HCM Control Delay (s)	7.9	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	5	48	672	501	88
Future Vol, veh/h	8	5	48	672	501	88
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	60	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	10	17	0
Mvmt Flow	9	6	55	764	569	100

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1493	619	669	0	-	0
Stage 1	619	-	-	-	-	-
Stage 2	874	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	137	492	931	-	-	-
Stage 1	541	-	-	-	-	-
Stage 2	412	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	129	492	931	-	-	-
Mov Cap-2 Maneuver	248	-	-	-	-	-
Stage 1	509	-	-	-	-	-
Stage 2	412	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.1	0.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	931	-	248	492	-	-
HCM Lane V/C Ratio	0.059	-	0.037	0.012	-	-
HCM Control Delay (s)	9.1	-	20.1	12.4	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	52	56	53	17	18	28	567	38	54	680	24
Future Volume (veh/h)	100	52	56	53	17	18	28	567	38	54	680	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1678	1696	1900	1792	1900	1610	1798	1900	1776	1827	1439
Adj Flow Rate, veh/h	102	53	57	54	17	18	29	579	39	55	694	24
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	1
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, %	6	6	12	21	21	21	18	6	6	7	4	32
Cap, veh/h	332	113	292	237	73	43	42	753	51	96	879	589
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.15	0.03	0.45	0.41	0.06	0.48	0.48
Sat Flow, veh/h	932	560	1442	483	361	214	1533	1666	112	1691	1827	1223
Grp Volume(v), veh/h	155	0	57	89	0	0	29	0	618	55	694	24
Grp Sat Flow(s),veh/h/ln	1492	0	1442	1058	0	0	1533	0	1778	1691	1827	1223
Q Serve(g_s), s	0.0	0.0	1.4	0.8	0.0	0.0	0.8	0.0	12.1	1.3	13.2	0.4
Cycle Q Clear(g_c), s	3.5	0.0	1.4	4.3	0.0	0.0	0.8	0.0	12.1	1.3	13.2	0.4
Prop In Lane	0.66		1.00	0.61		0.20	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	446	0	292	353	0	0	42	0	804	96	879	589
V/C Ratio(X)	0.35	0.00	0.20	0.25	0.00	0.00	0.69	0.00	0.77	0.58	0.79	0.04
Avail Cap(c_a), veh/h	1215	0	1111	964	0	0	923	0	2555	814	2626	1758
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.6	0.0	13.8	14.8	0.0	0.0	20.0	0.0	9.6	19.1	9.0	5.7
Incr Delay (d2), s/veh	0.5	0.0	0.3	0.4	0.0	0.0	18.3	0.0	1.6	5.4	1.6	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	1.6	0.0	0.6	1.0	0.0	0.0	0.5	0.0	6.2	0.8	7.0	0.2
LnGrp Delay(d),s/veh	15.1	0.0	14.1	15.1	0.0	0.0	38.3	0.0	11.2	24.5	10.6	5.7
LnGrp LOS	B		B	B			D		B	C	B	A
Approach Vol, veh/h		212			89			647			773	
Approach Delay, s/veh		14.8			15.1			12.4			11.5	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.3	22.8		12.4	5.1	24.0		12.4
Change Period (Y+Rc), s	4.0	5.7		6.0	4.0	5.7		6.0
Max Green Setting (Gmax), s	20.0	58.0		30.0	25.0	58.0		25.0
Max Q Clear Time (g_c+I1), s	3.3	14.1		5.5	2.8	15.2		6.3
Green Ext Time (p_c), s	0.1	2.6		0.8	0.0	3.1		0.3

Intersection Summary			
HCM 2010 Ctrl Delay			12.4
HCM 2010 LOS			B

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	64	66	14	30	12
Future Vol, veh/h	3	64	66	14	30	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	44	6	5	84	75	63
Mvmt Flow	3	73	75	16	34	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	91	0	-	0	162	83
Stage 1	-	-	-	-	83	-
Stage 2	-	-	-	-	79	-
Critical Hdwy	4.54	-	-	-	7.15	6.83
Critical Hdwy Stg 1	-	-	-	-	6.15	-
Critical Hdwy Stg 2	-	-	-	-	6.15	-
Follow-up Hdwy	2.596	-	-	-	4.175	3.867
Pot Cap-1 Maneuver	1277	-	-	-	686	831
Stage 1	-	-	-	-	785	-
Stage 2	-	-	-	-	788	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1277	-	-	-	685	831
Mov Cap-2 Maneuver	-	-	-	-	685	-
Stage 1	-	-	-	-	783	-
Stage 2	-	-	-	-	788	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1277	-	-	-	721
HCM Lane V/C Ratio	0.003	-	-	-	0.066
HCM Control Delay (s)	7.8	0	-	-	10.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	94	1	6	62	0	9	0	93	0	0	0
Future Vol, veh/h	0	94	1	6	62	0	9	0	93	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	24	0	0	25	0	0	0	0	0	0	0
Mvmt Flow	0	108	1	7	71	0	10	0	107	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	71	0	0	109	0	0	194	194	109	247	194	71
Stage 1	-	-	-	-	-	-	109	109	-	85	85	-
Stage 2	-	-	-	-	-	-	85	85	-	162	109	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1542	-	-	1494	-	-	770	705	950	711	705	997
Stage 1	-	-	-	-	-	-	901	809	-	928	828	-
Stage 2	-	-	-	-	-	-	928	828	-	845	809	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1542	-	-	1494	-	-	767	701	950	629	701	997
Mov Cap-2 Maneuver	-	-	-	-	-	-	767	701	-	629	701	-
Stage 1	-	-	-	-	-	-	901	809	-	928	824	-
Stage 2	-	-	-	-	-	-	923	824	-	750	809	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.7	9.4	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	930	1542	-	-	1494	-	-	-
HCM Lane V/C Ratio	0.126	-	-	-	0.005	-	-	-
HCM Control Delay (s)	9.4	0	-	-	7.4	0	-	0
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	-

Intersection						
Int Delay, s/veh	1.2					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	182	64	8	26	4
Future Vol, veh/h	5	182	64	8	26	4
Conflicting Peds, #/hr	0	0	0	0	0	8
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	9	13	23	0	8	0
Mvmt Flow	6	207	73	9	30	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	82	0	-	0	297	86
Stage 1	-	-	-	-	78	-
Stage 2	-	-	-	-	219	-
Critical Hdwy	4.19	-	-	-	6.48	6.2
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	2.281	-	-	-	3.572	3.3
Pot Cap-1 Maneuver	1472	-	-	-	682	978
Stage 1	-	-	-	-	930	-
Stage 2	-	-	-	-	803	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1472	-	-	-	679	971
Mov Cap-2 Maneuver	-	-	-	-	679	-
Stage 1	-	-	-	-	925	-
Stage 2	-	-	-	-	803	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1472	-	-	-	707
HCM Lane V/C Ratio	0.004	-	-	-	0.048
HCM Control Delay (s)	7.5	0	-	-	10.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection						
Int Delay, s/veh	2					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	74	58	33	625	732	39
Future Vol, veh/h	74	58	33	625	732	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	60	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	2	7	5	0
Mvmt Flow	80	62	35	672	787	42

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1550	808	829	0	-	0
Stage 1	808	-	-	-	-	-
Stage 2	742	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.12	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.218	-	-	-
Pot Cap-1 Maneuver	127	384	803	-	-	-
Stage 1	442	-	-	-	-	-
Stage 2	474	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	121	384	803	-	-	-
Mov Cap-2 Maneuver	252	-	-	-	-	-
Stage 1	423	-	-	-	-	-
Stage 2	474	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21.5	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	803	-	252	384	-	-
HCM Lane V/C Ratio	0.044	-	0.316	0.162	-	-
HCM Control Delay (s)	9.7	-	25.7	16.2	-	-
HCM Lane LOS	A	-	D	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1.3	0.6	-	-

Cumulative Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	9	15	41	43	32	53	688	37	9	381	126
Future Volume (veh/h)	44	9	15	41	43	32	53	688	37	9	381	126
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1403	1545	1900	1664	1900	1652	1762	1900	1407	1652	1532
Adj Flow Rate, veh/h	49	10	17	46	48	36	59	764	41	10	423	140
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	1
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
Percent Heavy Veh, %	18	18	23	19	19	19	15	8	8	35	15	24
Cap, veh/h	309	46	231	176	105	67	72	910	49	17	853	659
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.13	0.05	0.55	0.51	0.01	0.52	0.52
Sat Flow, veh/h	937	262	1313	395	596	380	1573	1657	89	1340	1652	1275
Grp Volume(v), veh/h	59	0	17	130	0	0	59	0	805	10	423	140
Grp Sat Flow(s),veh/h/ln	1199	0	1313	1371	0	0	1573	0	1746	1340	1652	1275
Q Serve(g_s), s	0.0	0.0	0.5	2.4	0.0	0.0	1.7	0.0	17.7	0.3	7.6	2.7
Cycle Q Clear(g_c), s	1.7	0.0	0.5	4.1	0.0	0.0	1.7	0.0	17.7	0.3	7.6	2.7
Prop In Lane	0.83		1.00	0.35		0.28	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	355	0	231	348	0	0	72	0	959	17	853	659
V/C Ratio(X)	0.17	0.00	0.07	0.37	0.00	0.00	0.81	0.00	0.84	0.57	0.50	0.21
Avail Cap(c_a), veh/h	895	0	915	932	0	0	857	0	2271	584	2149	1659
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.3	0.0	15.8	17.5	0.0	0.0	21.7	0.0	8.7	22.5	7.2	6.0
Incr Delay (d2), s/veh	0.2	0.0	0.1	0.7	0.0	0.0	19.1	0.0	2.1	26.2	0.4	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	0.7	0.0	0.2	1.6	0.0	0.0	1.1	0.0	8.8	0.3	3.5	1.0
LnGrp Delay(d),s/veh	16.5	0.0	15.9	18.2	0.0	0.0	40.8	0.0	10.7	48.7	7.7	6.2
LnGrp LOS	B		B	B			D		B	D	A	A
Approach Vol, veh/h		76			130			864			573	
Approach Delay, s/veh		16.4			18.2			12.8			8.0	
Approach LOS		B			B			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.6	29.2		12.1	6.1	27.7		12.1				
Change Period (Y+Rc), s	4.0	5.7		6.0	4.0	5.7		6.0				
Max Green Setting (Gmax), s	20.0	58.0		30.0	25.0	58.0		25.0				
Max Q Clear Time (g_c+I1), s	2.3	19.7		3.7	3.7	9.6		6.1				
Green Ext Time (p_c), s	0.0	3.8		0.3	0.1	2.2		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			11.7									
HCM 2010 LOS			B									

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	72	61	43	33	10
Future Vol, veh/h	6	72	61	43	33	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	89	7	5	69	79	80
Mvmt Flow	7	81	69	48	37	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	117	0	-	0	188	93
Stage 1	-	-	-	-	93	-
Stage 2	-	-	-	-	95	-
Critical Hdwy	4.99	-	-	-	7.19	7
Critical Hdwy Stg 1	-	-	-	-	6.19	-
Critical Hdwy Stg 2	-	-	-	-	6.19	-
Follow-up Hdwy	3.001	-	-	-	4.211	4.02
Pot Cap-1 Maneuver	1071	-	-	-	654	787
Stage 1	-	-	-	-	769	-
Stage 2	-	-	-	-	767	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1071	-	-	-	649	787
Mov Cap-2 Maneuver	-	-	-	-	649	-
Stage 1	-	-	-	-	764	-
Stage 2	-	-	-	-	767	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1071	-	-	-	677
HCM Lane V/C Ratio	0.006	-	-	-	0.071
HCM Control Delay (s)	8.4	0	-	-	10.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	91	13	147	106	1	2	0	17	0	0	0
Future Vol, veh/h	0	91	13	147	106	1	2	0	17	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	33	8	0	37	100	0	0	9	0	0	0
Mvmt Flow	0	106	15	171	123	1	2	0	20	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	124	0	0	121	0	0	580	580	114	590	587	124
Stage 1	-	-	-	-	-	-	114	114	-	466	466	-
Stage 2	-	-	-	-	-	-	466	466	-	124	121	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.29	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.381	3.5	4	3.3
Pot Cap-1 Maneuver	1475	-	-	1479	-	-	429	428	920	422	425	932
Stage 1	-	-	-	-	-	-	896	805	-	581	566	-
Stage 2	-	-	-	-	-	-	581	566	-	885	800	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1475	-	-	1479	-	-	388	375	920	374	372	932
Mov Cap-2 Maneuver	-	-	-	-	-	-	388	375	-	374	372	-
Stage 1	-	-	-	-	-	-	896	805	-	581	496	-
Stage 2	-	-	-	-	-	-	509	496	-	866	800	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	4.5	9.6	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	804	1475	-	-	1479	-	-	-
HCM Lane V/C Ratio	0.027	-	-	-	0.116	-	-	-
HCM Control Delay (s)	9.6	0	-	-	7.8	0	-	0
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.4	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	97	250	11	1	4
Future Vol, veh/h	11	97	250	11	1	4
Conflicting Peds, #/hr	0	0	0	0	0	22
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	13	36	22	0	0	0
Mvmt Flow	13	114	294	13	1	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	307	0	-	0	441	323
Stage 1	-	-	-	-	301	-
Stage 2	-	-	-	-	140	-
Critical Hdwy	4.23	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.317	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1194	-	-	-	577	723
Stage 1	-	-	-	-	755	-
Stage 2	-	-	-	-	892	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1194	-	-	-	570	710
Mov Cap-2 Maneuver	-	-	-	-	570	-
Stage 1	-	-	-	-	746	-
Stage 2	-	-	-	-	892	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1194	-	-	-	677
HCM Lane V/C Ratio	0.011	-	-	-	0.009
HCM Control Delay (s)	8	0	-	-	10.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	3	40	710	556	80
Future Vol, veh/h	7	3	40	710	556	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	60	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	10	17	0
Mvmt Flow	8	3	45	807	632	91

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1575	678	723	0	-	0
Stage 1	678	-	-	-	-	-
Stage 2	897	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	122	456	889	-	-	-
Stage 1	508	-	-	-	-	-
Stage 2	401	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	116	456	889	-	-	-
Mov Cap-2 Maneuver	238	-	-	-	-	-
Stage 1	482	-	-	-	-	-
Stage 2	401	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.3	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	889	-	238	456	-	-
HCM Lane V/C Ratio	0.051	-	0.033	0.007	-	-
HCM Control Delay (s)	9.3	-	20.6	13	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	131	68	71	56	20	18	32	594	40	53	711	30
Future Volume (veh/h)	131	68	71	56	20	18	32	594	40	53	711	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1678	1696	1900	1787	1900	1610	1798	1900	1776	1827	1439
Adj Flow Rate, veh/h	134	69	72	57	20	18	33	606	41	54	726	31
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	1
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, %	6	6	12	21	21	21	18	6	6	7	4	32
Cap, veh/h	326	127	358	208	70	38	45	764	52	89	881	590
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.21	0.03	0.46	0.42	0.05	0.48	0.48
Sat Flow, veh/h	830	513	1442	372	280	152	1533	1665	113	1691	1827	1223
Grp Volume(v), veh/h	203	0	72	95	0	0	33	0	647	54	726	31
Grp Sat Flow(s),veh/h/ln	1343	0	1442	804	0	0	1533	0	1778	1691	1827	1223
Q Serve(g_s), s	0.0	0.0	2.0	1.5	0.0	0.0	1.1	0.0	15.5	1.6	17.1	0.7
Cycle Q Clear(g_c), s	6.7	0.0	2.0	8.2	0.0	0.0	1.1	0.0	15.5	1.6	17.1	0.7
Prop In Lane	0.66		1.00	0.60		0.19	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	453	0	358	315	0	0	45	0	816	89	881	590
V/C Ratio(X)	0.45	0.00	0.20	0.30	0.00	0.00	0.73	0.00	0.79	0.61	0.82	0.05
Avail Cap(c_a), veh/h	982	0	923	706	0	0	767	0	2123	677	2182	1461
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	0.0	14.9	17.2	0.0	0.0	24.1	0.0	11.6	23.2	11.1	6.9
Incr Delay (d2), s/veh	0.7	0.0	0.3	0.5	0.0	0.0	20.1	0.0	1.8	6.4	2.0	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	0.8	1.2	0.0	0.0	0.7	0.0	8.0	0.9	9.0	0.2
LnGrp Delay(d),s/veh	17.3	0.0	15.1	17.7	0.0	0.0	44.2	0.0	13.4	29.6	13.1	6.9
LnGrp LOS	B		B	B			D		B	C	B	A
Approach Vol, veh/h		275			95			680			811	
Approach Delay, s/veh		16.7			17.7			14.9			14.0	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.6	26.9		16.4	5.5	28.1		16.4
Change Period (Y+Rc), s	4.0	5.7		6.0	4.0	5.7		6.0
Max Green Setting (Gmax), s	20.0	58.0		30.0	25.0	58.0		25.0
Max Q Clear Time (g_c+I1), s	3.6	17.5		8.7	3.1	19.1		10.2
Green Ext Time (p_c), s	0.1	2.7		1.1	0.1	3.3		0.3

Intersection Summary			
HCM 2010 Ctrl Delay			14.9
HCM 2010 LOS			B

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	67	71	14	30	13
Future Vol, veh/h	3	67	71	14	30	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	44	6	5	84	75	63
Mvmt Flow	3	76	81	16	34	15

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	97	0	-	0	171	89
Stage 1	-	-	-	-	89	-
Stage 2	-	-	-	-	82	-
Critical Hdwy	4.54	-	-	-	7.15	6.83
Critical Hdwy Stg 1	-	-	-	-	6.15	-
Critical Hdwy Stg 2	-	-	-	-	6.15	-
Follow-up Hdwy	2.596	-	-	-	4.175	3.867
Pot Cap-1 Maneuver	1270	-	-	-	677	824
Stage 1	-	-	-	-	780	-
Stage 2	-	-	-	-	786	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1270	-	-	-	676	824
Mov Cap-2 Maneuver	-	-	-	-	676	-
Stage 1	-	-	-	-	778	-
Stage 2	-	-	-	-	786	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1270	-	-	-	715
HCM Lane V/C Ratio	0.003	-	-	-	0.068
HCM Control Delay (s)	7.8	0	-	-	10.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	97	2	19	64	0	12	0	156	0	0	0
Future Vol, veh/h	0	97	2	19	64	0	12	0	156	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	24	0	0	25	0	0	0	0	0	0	0
Mvmt Flow	0	111	2	22	74	0	14	0	179	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	74	0	0	113	0	0	230	230	112	320	231	74
Stage 1	-	-	-	-	-	-	112	112	-	118	118	-
Stage 2	-	-	-	-	-	-	118	118	-	202	113	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1538	-	-	1489	-	-	729	673	947	637	672	993
Stage 1	-	-	-	-	-	-	898	807	-	891	802	-
Stage 2	-	-	-	-	-	-	891	802	-	805	806	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1538	-	-	1489	-	-	721	663	947	510	662	993
Mov Cap-2 Maneuver	-	-	-	-	-	-	721	663	-	510	662	-
Stage 1	-	-	-	-	-	-	898	807	-	891	790	-
Stage 2	-	-	-	-	-	-	878	790	-	653	806	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.7	9.9	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	926	1538	-	-	1489	-	-	-
HCM Lane V/C Ratio	0.209	-	-	-	0.015	-	-	-
HCM Control Delay (s)	9.9	0	-	-	7.5	0	-	0
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	253	79	5	17	3
Future Vol, veh/h	5	253	79	5	17	3
Conflicting Peds, #/hr	0	0	0	0	0	8
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	9	13	23	0	8	0
Mvmt Flow	6	288	90	6	19	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	96	0	-	0	393	101
Stage 1	-	-	-	-	93	-
Stage 2	-	-	-	-	300	-
Critical Hdwy	4.19	-	-	-	6.48	6.2
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	2.281	-	-	-	3.572	3.3
Pot Cap-1 Maneuver	1455	-	-	-	600	960
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	738	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1455	-	-	-	597	954
Mov Cap-2 Maneuver	-	-	-	-	597	-
Stage 1	-	-	-	-	911	-
Stage 2	-	-	-	-	738	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1455	-	-	-	633
HCM Lane V/C Ratio	0.004	-	-	-	0.036
HCM Control Delay (s)	7.5	0	-	-	10.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	1.8					
Movement	**EBL**	**EBR**	**NBL**	**NBT**	**SBT**	**SBR**
Lane Configurations						
Traffic Vol, veh/h	67	51	30	683	774	37
Future Vol, veh/h	67	51	30	683	774	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	60	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	2	7	5	0
Mvmt Flow	72	55	32	734	832	40

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1650	852	872	0	-	0
Stage 1	852	-	-	-	-	-
Stage 2	798	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.12	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.218	-	-	-
Pot Cap-1 Maneuver	110	362	773	-	-	-
Stage 1	421	-	-	-	-	-
Stage 2	447	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	105	362	773	-	-	-
Mov Cap-2 Maneuver	235	-	-	-	-	-
Stage 1	404	-	-	-	-	-
Stage 2	447	-	-	-	-	-

Approach	EB		NB		SB	
HCM Control Delay, s	22.5		0.4		0	
HCM LOS	C					

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	773	-	235	362	-	-
HCM Lane V/C Ratio	0.042	-	0.307	0.151	-	-
HCM Control Delay (s)	9.9	-	27	16.7	-	-
HCM Lane LOS	A	-	D	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1.2	0.5	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	14	19	43	72	48	58	695	37	11	382	138
Future Volume (veh/h)	57	14	19	43	72	48	58	695	37	11	382	138
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1410	1545	1900	1643	1900	1652	1762	1900	1407	1652	1532
Adj Flow Rate, veh/h	63	16	21	48	80	53	64	772	41	12	424	153
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	1
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
Percent Heavy Veh, %	18	18	23	19	19	19	15	8	8	35	15	24
Cap, veh/h	285	55	278	143	148	84	77	900	48	21	841	649
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.17	0.05	0.54	0.51	0.02	0.51	0.51
Sat Flow, veh/h	761	258	1313	265	698	399	1573	1658	88	1340	1652	1275
Grp Volume(v), veh/h	79	0	21	181	0	0	64	0	813	12	424	153
Grp Sat Flow(s),veh/h/ln	1019	0	1313	1362	0	0	1573	0	1746	1340	1652	1275
Q Serve(g_s), s	0.0	0.0	0.7	3.3	0.0	0.0	2.1	0.0	20.8	0.5	8.8	3.5
Cycle Q Clear(g_c), s	3.3	0.0	0.7	6.6	0.0	0.0	2.1	0.0	20.8	0.5	8.8	3.5
Prop In Lane	0.80		1.00	0.27		0.29	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	340	0	278	376	0	0	77	0	948	21	841	649
V/C Ratio(X)	0.23	0.00	0.08	0.48	0.00	0.00	0.83	0.00	0.86	0.59	0.50	0.24
Avail Cap(c_a), veh/h	747	0	805	813	0	0	754	0	1998	514	1890	1459
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.5	0.0	16.5	19.1	0.0	0.0	24.6	0.0	10.2	25.5	8.5	7.1
Incr Delay (d2), s/veh	0.3	0.0	0.1	1.0	0.0	0.0	19.2	0.0	2.4	23.7	0.5	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	1.0	0.0	0.2	2.5	0.0	0.0	1.3	0.0	10.3	0.3	4.1	1.3
LnGrp Delay(d),s/veh	17.8	0.0	16.6	20.0	0.0	0.0	43.8	0.0	12.6	49.3	8.9	7.3
LnGrp LOS	B		B	C			D		B	D	A	A
Approach Vol, veh/h		100			181			877			589	
Approach Delay, s/veh		17.5			20.0			14.9			9.3	
Approach LOS		B			C			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.8	32.3		15.0	6.6	30.6		15.0
Change Period (Y+Rc), s	4.0	5.7		6.0	4.0	5.7		6.0
Max Green Setting (Gmax), s	20.0	58.0		30.0	25.0	58.0		25.0
Max Q Clear Time (g_c+I1), s	2.5	22.8		5.3	4.1	10.8		8.6
Green Ext Time (p_c), s	0.0	3.8		0.4	0.1	2.3		0.6

Intersection Summary			
HCM 2010 Ctrl Delay			13.7
HCM 2010 LOS			B

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	73	62	52	34	10
Future Vol, veh/h	6	73	62	52	34	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	89	7	5	69	79	80
Mvmt Flow	7	82	70	58	38	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	128	0	-	0	195	99
Stage 1	-	-	-	-	99	-
Stage 2	-	-	-	-	96	-
Critical Hdwy	4.99	-	-	-	7.19	7
Critical Hdwy Stg 1	-	-	-	-	6.19	-
Critical Hdwy Stg 2	-	-	-	-	6.19	-
Follow-up Hdwy	3.001	-	-	-	4.211	4.02
Pot Cap-1 Maneuver	1059	-	-	-	648	780
Stage 1	-	-	-	-	764	-
Stage 2	-	-	-	-	766	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1059	-	-	-	643	780
Mov Cap-2 Maneuver	-	-	-	-	643	-
Stage 1	-	-	-	-	759	-
Stage 2	-	-	-	-	766	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1059	-	-	-	670
HCM Lane V/C Ratio	0.006	-	-	-	0.074
HCM Control Delay (s)	8.4	0	-	-	10.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	95	13	147	115	1	2	0	17	0	0	0
Future Vol, veh/h	0	95	13	147	115	1	2	0	17	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	33	8	0	37	100	0	0	9	0	0	0
Mvmt Flow	0	110	15	171	134	1	2	0	20	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	135	0	0	125	0	0	595	595	118	605	602	135
Stage 1	-	-	-	-	-	-	118	118	-	477	477	-
Stage 2	-	-	-	-	-	-	477	477	-	128	125	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.29	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.381	3.5	4	3.3
Pot Cap-1 Maneuver	1462	-	-	1474	-	-	419	420	915	413	416	919
Stage 1	-	-	-	-	-	-	891	802	-	573	559	-
Stage 2	-	-	-	-	-	-	573	559	-	881	796	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1462	-	-	1474	-	-	379	368	915	366	364	919
Mov Cap-2 Maneuver	-	-	-	-	-	-	379	368	-	366	364	-
Stage 1	-	-	-	-	-	-	891	802	-	573	489	-
Stage 2	-	-	-	-	-	-	501	489	-	862	796	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	4.3	9.7	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	796	1462	-	-	1474	-	-	-
HCM Lane V/C Ratio	0.028	-	-	-	0.116	-	-	-
HCM Control Delay (s)	9.7	0	-	-	7.8	0	-	0
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.4	-	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	100	259	25	4	4
Future Vol, veh/h	12	100	259	25	4	4
Conflicting Peds, #/hr	0	0	0	0	0	22
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	13	36	22	0	0	0
Mvmt Flow	14	118	305	29	5	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	334	0	-	0	466	342
Stage 1	-	-	-	-	320	-
Stage 2	-	-	-	-	146	-
Critical Hdwy	4.23	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.317	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1166	-	-	-	559	705
Stage 1	-	-	-	-	741	-
Stage 2	-	-	-	-	886	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1166	-	-	-	552	692
Mov Cap-2 Maneuver	-	-	-	-	552	-
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	886	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	11
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1166	-	-	-	614
HCM Lane V/C Ratio	0.012	-	-	-	0.015
HCM Control Delay (s)	8.1	0	-	-	11
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	0.6					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	6	58	712	568	98
Future Vol, veh/h	10	6	58	712	568	98
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	60	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	10	17	0
Mvmt Flow	11	7	66	809	645	111

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1642	701	756	0	-	0
Stage 1	701	-	-	-	-	-
Stage 2	941	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	111	442	864	-	-	-
Stage 1	496	-	-	-	-	-
Stage 2	383	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	103	442	864	-	-	-
Mov Cap-2 Maneuver	216	-	-	-	-	-
Stage 1	458	-	-	-	-	-
Stage 2	383	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.1	0.7	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	864	-	216	442	-	-
HCM Lane V/C Ratio	0.076	-	0.053	0.015	-	-
HCM Control Delay (s)	9.5	-	22.6	13.3	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	144	74	75	56	21	21	33	596	40	61	718	34
Future Volume (veh/h)	144	74	75	56	21	21	33	596	40	61	718	34
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1678	1696	1900	1784	1900	1610	1798	1900	1776	1827	1439
Adj Flow Rate, veh/h	147	76	77	57	21	21	34	608	41	62	733	35
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	1
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, %	6	6	12	21	21	21	18	6	6	7	4	32
Cap, veh/h	324	131	388	191	68	42	45	755	51	95	876	587
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.23	0.03	0.45	0.42	0.06	0.48	0.48
Sat Flow, veh/h	794	485	1442	319	254	154	1533	1666	112	1691	1827	1223
Grp Volume(v), veh/h	223	0	77	99	0	0	34	0	649	62	733	35
Grp Sat Flow(s),veh/h/ln	1279	0	1442	728	0	0	1533	0	1778	1691	1827	1223
Q Serve(g_s), s	0.0	0.0	2.2	1.8	0.0	0.0	1.2	0.0	17.0	1.9	18.9	0.8
Cycle Q Clear(g_c), s	8.5	0.0	2.2	10.3	0.0	0.0	1.2	0.0	17.0	1.9	18.9	0.8
Prop In Lane	0.66		1.00	0.58		0.21	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	455	0	388	301	0	0	45	0	806	95	876	587
V/C Ratio(X)	0.49	0.00	0.20	0.33	0.00	0.00	0.75	0.00	0.81	0.65	0.84	0.06
Avail Cap(c_a), veh/h	889	0	853	608	0	0	708	0	1961	625	2015	1350
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.5	0.0	15.3	18.3	0.0	0.0	26.1	0.0	12.8	25.0	12.2	7.5
Incr Delay (d2), s/veh	0.8	0.0	0.2	0.6	0.0	0.0	21.5	0.0	2.0	7.4	2.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.0	0.9	1.4	0.0	0.0	0.8	0.0	8.7	1.1	9.9	0.3
LnGrp Delay(d),s/veh	18.3	0.0	15.5	18.9	0.0	0.0	47.6	0.0	14.7	32.5	14.4	7.6
LnGrp LOS	B		B	B			D		B	C	B	A
Approach Vol, veh/h		300			99			683			830	
Approach Delay, s/veh		17.6			18.9			16.4			15.5	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.0	28.5		18.6	5.6	30.0		18.6
Change Period (Y+Rc), s	4.0	5.7		6.0	4.0	5.7		6.0
Max Green Setting (Gmax), s	20.0	58.0		30.0	25.0	58.0		25.0
Max Q Clear Time (g_c+I1), s	3.9	19.0		10.5	3.2	20.9		12.3
Green Ext Time (p_c), s	0.1	2.7		1.1	0.1	3.4		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	16.3
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	68	73	16	38	13
Future Vol, veh/h	3	68	73	16	38	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	44	6	5	84	75	63
Mvmt Flow	3	77	83	18	43	15

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	101	0	-	0	175	92
Stage 1	-	-	-	-	92	-
Stage 2	-	-	-	-	83	-
Critical Hdwy	4.54	-	-	-	7.15	6.83
Critical Hdwy Stg 1	-	-	-	-	6.15	-
Critical Hdwy Stg 2	-	-	-	-	6.15	-
Follow-up Hdwy	2.596	-	-	-	4.175	3.867
Pot Cap-1 Maneuver	1266	-	-	-	673	821
Stage 1	-	-	-	-	777	-
Stage 2	-	-	-	-	785	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1266	-	-	-	672	821
Mov Cap-2 Maneuver	-	-	-	-	672	-
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	785	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	10.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1266	-	-	-	705
HCM Lane V/C Ratio	0.003	-	-	-	0.082
HCM Control Delay (s)	7.9	0	-	-	10.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	106	2	19	68	0	12	0	156	0	0	0
Future Vol, veh/h	0	106	2	19	68	0	12	0	156	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	24	0	0	25	0	0	0	0	0	0	0
Mvmt Flow	0	122	2	22	78	0	14	0	179	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	78	0	0	124	0	0	245	245	123	335	246	78
Stage 1	-	-	-	-	-	-	123	123	-	122	122	-
Stage 2	-	-	-	-	-	-	122	122	-	213	124	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1533	-	-	1475	-	-	713	661	933	622	660	988
Stage 1	-	-	-	-	-	-	886	798	-	887	799	-
Stage 2	-	-	-	-	-	-	887	799	-	794	797	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1533	-	-	1475	-	-	704	650	933	496	649	988
Mov Cap-2 Maneuver	-	-	-	-	-	-	704	650	-	496	649	-
Stage 1	-	-	-	-	-	-	886	798	-	887	786	-
Stage 2	-	-	-	-	-	-	873	786	-	641	797	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.6	10	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	912	1533	-	-	1475	-	-	-
HCM Lane V/C Ratio	0.212	-	-	-	0.015	-	-	-
HCM Control Delay (s)	10	0	-	-	7.5	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	261	83	9	30	4
Future Vol, veh/h	5	261	83	9	30	4
Conflicting Peds, #/hr	0	0	0	0	0	8
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	9	13	23	0	8	0
Mvmt Flow	6	297	94	10	34	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	104	0	-	0	408	107
Stage 1	-	-	-	-	99	-
Stage 2	-	-	-	-	309	-
Critical Hdwy	4.19	-	-	-	6.48	6.2
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	2.281	-	-	-	3.572	3.3
Pot Cap-1 Maneuver	1445	-	-	-	588	953
Stage 1	-	-	-	-	910	-
Stage 2	-	-	-	-	731	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1445	-	-	-	585	947
Mov Cap-2 Maneuver	-	-	-	-	585	-
Stage 1	-	-	-	-	905	-
Stage 2	-	-	-	-	731	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1445	-	-	-	613
HCM Lane V/C Ratio	0.004	-	-	-	0.063
HCM Control Delay (s)	7.5	0	-	-	11.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection						
Int Delay, s/veh	2.5					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	84	68	35	695	776	42
Future Vol, veh/h	84	68	35	695	776	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	60	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	2	7	5	0
Mvmt Flow	90	73	38	747	834	45

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1680	857	879	0	-	0
Stage 1	857	-	-	-	-	-
Stage 2	823	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.12	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.218	-	-	-
Pot Cap-1 Maneuver	105	360	769	-	-	-
Stage 1	419	-	-	-	-	-
Stage 2	435	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	100	360	769	-	-	-
Mov Cap-2 Maneuver	227	-	-	-	-	-
Stage 1	398	-	-	-	-	-
Stage 2	435	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25	0.5	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	769	-	227	360	-	-
HCM Lane V/C Ratio	0.049	-	0.398	0.203	-	-
HCM Control Delay (s)	9.9	-	31	17.5	-	-
HCM Lane LOS	A	-	D	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.8	0.7	-	-

Appendix C:
Crosswalk Tool Assessment Worksheets

XWalk+

Location August Avenue Mid-Block Crossing; Existing

User Kathrin Tellez

Date : 11-9-2018

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	55	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	35	Bicycle lanes?	○	●
Major Road Peak Hour Volume Total	188	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	74	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	114	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	3	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	30	Downtown area?	○	●
1st Half Crossing Distance	15	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	15	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay	0			
Expected Motorist Compliance	Moderate			

1 of 2 Recommendations

In-pavement flashers

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE: LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	C
Candidate Pedestrian Treatment Identified	**In-pavement flashers**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	2 lane road: In-pavement flashers, overhead flashing beacons; Multi-lane road: RRFB
Paired Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge, High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.

XWalk+

Location August Avenue Mid-Block Crossing; Cumulative without Project

User Kathrin Tellez

Date : 11-9-2018

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	55	Frequent at-grade transit?		●
Peak Hour Pedestrian Vol	70	Bicycle lanes?		●
Major Road Peak Hour Volume Total	320	Heavy bicycle traffic?		●
Major Road Peak Hour Vol Dir 1	110	Major/minor road intersection?		●
Major Road Peak Hour Vol Dir 2	210	Midblock/off-set intersection?	●	
Avg Pedestrian Walking Speed	3	Heavy truck traffic?		●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?		●
Ped start-up/end clearance time	5	On-street parking?		●
Pedestrian Crossing Distance	30	Downtown area?		●
1st Half Crossing Distance	15	Built-up area of an isolated community?		●
2nd Half Crossing Distance	15	Median refuge island?		●
Number of Lanes	2	Sufficient width for a median?		●
Actual Total Pedestrian Delay	0			
Expected Motorist Compliance	Moderate			

1 of 2 Recommendations

In-pavement flashers

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	E
Candidate Pedestrian Treatment Identified	**Overhead Flashing Beacon or In-Pavement Flashers**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	RRFB
Paired Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge, High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.

XWalk+

Location August Avenue Mid-Block Crossing; Cumulative with Project

User Kathrin Tellez

Date : 11-9-2018

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	55	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	70	Bicycle lanes?	○	●
Major Road Peak Hour Volume Total	349	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	133	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	216	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	3	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	30	Downtown area?	○	●
1st Half Crossing Distance	15	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	15	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay	0			
Expected Motorist Compliance	Moderate			

1 of 2 Recommendations

Overhead Flashing Beacon or In-Pavement Flashers

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	E
Candidate Pedestrian Treatment Identified	**Overhead Flashing Beacon or In-Pavement Flashers**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	RRFB
Paired Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge, High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.

XWalk+

Location August Avenue Mid-Block Crossing; Existing With Project
User Kathrin Tellez
Date : 11-9-2018

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	55	Frequent at-grade transit?		●
Peak Hour Pedestrian Vol	35	Bicycle lanes?		●
Major Road Peak Hour Volume Total	217	Heavy bicycle traffic?		●
Major Road Peak Hour Vol Dir 1	97	Major/minor road intersection?		●
Major Road Peak Hour Vol Dir 2	120	Midblock/off-set intersection?	●	
Avg Pedestrian Walking Speed	3	Heavy truck traffic?		●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?		●
Ped start-up/end clearance time	5	On-street parking?		●
Pedestrian Crossing Distance	30	Downtown area?		●
1st Half Crossing Distance	15	Built-up area of an isolated community?		●
2nd Half Crossing Distance	15	Median refuge island?		●
Number of Lanes	2	Sufficient width for a median?		●
Actual Total Pedestrian Delay	0			
Expected Motorist Compliance	Moderate			

1 of 2 Recommendations

In-pavement flashers

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE: LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	C
Candidate Pedestrian Treatment Identified	**In-pavement flashers**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	2 lane road: In-pavement flashers, overhead flashing beacons; Multi-lane road: RRFB
Paired Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge, High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.