

Draft Environmental Impact Report
Proposed Wal-Mart Regional Distribution Center



State Clearinghouse Number 2006071029

Prepared for:
City of Merced Planning and Permitting
678 West 18th Street
Merced, CA 95340

Prepared by:
EDAW
2022 J Street
Sacramento, CA 95811

February 2009

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ABBREVIATIONS AND ACRONYMS

AB	Assembly Bill
ADA	Americans with Disabilities Act
AEP)	annual exceedance probability
afy	acre-feet per year
ANSI	American National Standards Institute
APCO	Air Pollution Control Officer
APNs	Assessor's Parcel Numbers
ARB	California Air Resources Board
Basin Plans	State or Regional Water Quality Control Boards adopt water quality control plans
BMP)	best management practices
BP	Before Present
CAC	Citizens' Advisory Committee for Regional Transportation Planning
Cal/OES	California Office of Emergency Services
Cal/OSHA	California Occupational Safety and Health Administration
CalEPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CBC	California Building Standards Code
CCAR	California Climate Action Registry
CCAT	California Climate Action Team
CCR	California Code of Regulations
CDF	California Department of Forestry and Fire Protection
CDMG	California Division of Mines and Geology
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CH ₄	methane
CHABA	Committee of Hearing, Bio Acoustics, and Bio Mechanics
CHP	California Highway Patrol
City	City of Merced
City General Plan	City of Merced General Plan
CIWMA	California Integrated Waste Management Act
CIWMB	California Integrated Waste Management Board
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	CO ₂ equivalent
CNEL	Community Noise Equivalent Level
County	Merced County
County General Plan	Merced County General Plan
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
dB	decibels
dBA	A-weighted dB
dBA/DD	A-weighted dB per doubling of distance

DDT	dichlorodiphenyltrichloroethane
DEIR	Draft Environmental Impact Report
DFG	California Department of Fish and Game
DOC	California Department of Conservation
DOT	U.S. Department of Transportation
DTSC	California Department of Toxic Substance Control
DWR	California Department of Water Resources
EB	Eastbound
EMFs	Electric and magnetic fields
ENGEO	ENGEO, Inc.
EPA	U.S. Environmental Protection Agency
ESA	federal Endangered Species Act
ESA	environmental site assessment
FAR	floor area ratio
FEIR	Final EIR
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
FPMP	Fire Protection Master Plan
FTA	Federal Transit Administration
FTIP	Federal Transportation Improvement Program
GAMAQI	Guide for Assessing and Mitigation Air Quality Impact
GE	General Electric Company
GPA	General Plan Amendment
gpd	gallons per day
gpm	gallons per minute
GVW	gross vehicle weight
GWP	global warming potential
HAPs	hazardous air pollutants
HCM	<i>Highway Capacity Manual</i>
HCS	Highway Capacity Software
HI	Hazard Index
HRAs	health risk assessments
Hz	Hertz
I-5	Interstate 5
in/sec	inches per second
IND	Industrial
ITE	Institute of Transportation Engineers
IWMP	Integrated Waste Management Plan
kV	kilovolt
kWh	kilowatt-hours
L _{dn}	Day-Night Noise Level
L _{eq}	Equivalent Noise Level
LESA	California Land Evaluation and Site Assessment
L _{max}	Maximum Noise Level
L _{min}	Minimum Noise Level
LOS	level of service
L _x	Statistical Descriptor
MBTA	Migratory Bird Treaty Act
MCAG	Merced County Association of Governments
MCDEH	Merced County Division of Environmental Health
MEI	Maximally Exposed Individual
MEIW	Maximum Exposed Individual Worker

mgd	million gallons per day
MHz	megahertz
MID	Merced Irrigation District
MLD	Most Likely Descendent
MOE	Measures of Effectiveness
mph	miles per hour
MRZ	Mineral Resource Zone
msl	mean sea level
MSWG	Merced Storm Water Group
MWMA	Merced Wildlife Management Area
NAHC	Native American Heritage Commission
NB	Northbound
NEHRP	National Earthquake Hazards Reduction Program
NEHRPA	National Earthquake Hazards Reduction Program Act
NESHAP	national emissions standards for HAPs
NO	nitric oxide
NO ₂	nitrogen dioxide
NOP	Notice of Preparation
NO _x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
OSHA	Occupational Safety and Health Administration
PCE's	passenger-car-equivalents
PG&E	Pacific Gas and Electric Company
PM ₁₀	respirable particulate matter with an aerodynamic diameter of 10 micrometers or less
PM _{2.5}	respirable particulate matter with an aerodynamic diameter of 2.5 micrometers or less
Porter-Cologne	Porter-Cologne Water Quality Control Act
ppb	parts per billion
ppm	parts per million
PPV	peak particle velocity
PRC	Public Resources Code
psi	per square inch
PUC	California Public Utilities Commission
RCRA	Resource Conservation and Recovery Act
RECs	recognized environmental concerns
RMS	root mean squared
ROG	reactive organic gases
RWQCB	Regional Water Quality control Board
SARA	Superfund Amendments and Reauthorization Act
SB	Southbound
SDMP	Storm Drain Master Plan
SENL	Single Event [Impulsive] Noise Level
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SMARA	California Surface Mining and Reclamation Act
SO ₂	sulfur dioxide
SPCC	federal Spill Prevention Control and Countermeasure
SR	State Route
SRA	State Responsibility Area
STAA	Surface Transportation Assistance Act
SUDP	Specific Urban Development Plan
SVP	Society of Vertebrate Paleontology

SWMP	Storm Water Management Program
SWPPP	Storm Water Pollution Protection Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TCA	trichloroethane
TDS	Total dissolved solids
The BUS	Transit Joint Powers Authority of Merced County
TPAs	Transportation Planning Agencies
TPC	MCAG Technical Planning Committee for Regional Transportation Planning
TPY	tons per year
TRB	MCAG Technical Review Board
UBC	Uniform Building Code
UCMP	University of California Museum of Paleontology
UFC	California Uniform Fire Code
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USTs	underground storage tanks
VdB	velocity decibels
VDE	visible dust emissions
VMT	vehicle miles travel
WB	Westbound
WDR	Waste Discharge Requirement Permits
WSA	water supply assessments”
WWTP	Wastewater Treatment Plant
μin/sec	1 microinch per second

1 INTRODUCTION

1.1 PURPOSE OF THE EIR

The City of Merced (City) is the lead agency under the California Environmental Quality Act (CEQA) and has determined that an Environmental Impact Report (EIR) is required for the proposed Wal-Mart Distribution Center project (State Clearinghouse No. 2006071029). This EIR has been prepared in conformance with CEQA (California Public Resources Code [PRC] Section 21000 et seq.); CEQA Guidelines (California Code of Regulations [CCR], Title 14, Section 15000 et seq.); and the rules, regulations, and procedures for implementation of CEQA, as adopted by the City of Merced.

The principal CEQA Guidelines sections governing content of this EIR are Sections 15120 through 15132 (Contents of Environmental Impact Reports) and Section 15161 (Project EIR). As provided in Section 15121(a) of the CEQA Guidelines, this EIR is intended to serve as an informational document that will:

...inform public agency decision-makers and the public generally of the significant environmental effects of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project.

Section 15378 of the CEQA Guidelines defines a “project” as the whole of an action, which has the potential to result in either a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment. The term “project” refers to the activity that is being considered for approval and that may be subject to several discretionary approvals by governmental agencies.

If a lead agency proposes to approve a proposed project, one or more of the following findings must be made for each significant environmental effect identified through the DEIR process, pursuant to Section 15091 of the CEQA Guidelines:

- ▶ Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect as identified in the final EIR (FEIR).
- ▶ Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency.
- ▶ Specific economic, social, or other considerations make infeasible the mitigation measures or project alternatives identified in the final EIR.

In addition, Section 15093 of the CEQA Guidelines requires that the decision makers, when considering whether to approve a project, balance the benefits of the project against any unavoidable environmental effects that would result from the implementation of the project. If the benefits of a project outweigh the unavoidable adverse effects, the environmental effects may be considered acceptable by the decision makers and they would be required to issue a statement of overriding considerations, explaining why they are approving the project in spite of its significant impacts.

In accordance with state law, the EIR is subject to a public review and comment period, beginning with the circulation of the document to all responsible, trustees, or other interested federal, state, and local agencies. The availability of the EIR and the specified review period is noticed in the manner prescribed by law to afford the public knowledge of the review process and access to the environmental document. During this review period, written comments can be submitted to the lead agency by the reviewers with respect to the environmental aspects

of the project. This review and comment period allows the public and interested agencies the opportunity to participate in the environmental review process.

Following the review period, comments received will be evaluated and a written response will be prepared. These comments and responses are incorporated into the FEIR, along with a list of all persons, organizations, and agencies commenting on the DEIR. The City will then consider whether to certify that the FEIR has been completed in compliance with CEQA. The EIR must be certified before the City can consider project approval. Along with the necessary findings, the City will adopt a mitigation monitoring and reporting program if it decides to approve the project. This program is required by law to ensure that mitigation measures deemed necessary and feasible by the lead agency are implemented. Adoption of a mitigation monitoring and reporting program is independent of the EIR certification process.

1.2 SCOPE AND METHODOLOGY

Pursuant to Section 15143 of the State CEQA Guidelines, a lead agency may limit the EIR's discussion of environmental effects to specific issues where significant effects on the environment may occur. The City of Merced used a variety of information to determine which issue areas would result in potentially significant or significant effects on the environment. This information included field surveys of the project site, review of project characteristics, comments from public and agency consultation, and comments received on the notice of preparation (NOP). A NOP was circulated to public agencies and the public on July 7, 2006, for a 30-day review period. Two public scoping meetings were held on July 27, 2006, at 2:30 p.m. (primarily for public agencies) and at 6:00 p.m. (Primarily for the general public) in the Merced City Council Chambers. Comments received on the NOP and from the public scoping meeting are included in Appendix A.

To assist the City in determining the scope of analysis for the EIR, the NOP with a preliminary project description was sent to the State Clearinghouse and to various responsible and trustee agencies. A copy of the NOP is contained in Appendix A of this document, along with a list of responsible and trustee agencies to which these documents were sent. Several organizations/agencies submitted to the City responses to the NOP before the close of the review period, which was August 11, 2006. These responses are also contained in Appendix A.

This DEIR analyzes the potential effects of site preparation, construction, and operation of the project, including direct effects of the project, as well as reasonably foreseeable indirect effects and cumulative and growth-inducing effects. The EIR is full in scope, meaning it covers the majority of all potential environmental issues. The only environmental issues that will not be addressed are listed below.

1.2.1 ENVIRONMENTAL ISSUES NOT ADDRESSED

Landslides. The Geology and Soils section of CEQA Guidelines Appendix G provides for a discussion of landslides. However, since the site is virtually flat, there is no potential for the occurrence of landslides; therefore, this environmental topic was not addressed in this EIR.

Seiche, Tsunami, and Mudflow. Seiches and tsunamis are large waves that occur on bodies of water. Since there are no bodies of water on or near the project site that could potentially affect the site, these issues were not addressed in this EIR. Also, as noted above, since there are no hillsides on or near the site that could result in mudflows. Accordingly, these environmental topics are not addressed in this EIR.

Urban Decay. The potential for urban decay is a topic that is sometimes included in environmental impact reports, particularly for large retail projects. In a situation such as the subject project, there could be concern over the potential impact a large retail supplier could have on existing businesses in the community if it were to improve the functioning of existing retail outlets or facilitate the development of new retail establishments. Big-box, or warehouse, retail facilities are sometimes suspected of having a negative financial impact on existing, smaller retail establishments. An analysis of potential for urban decay does not, however, address direct impacts

on the financial health of these existing retail competitors. Rather, it would assess the potential impact of businesses leaving the community, because of an inability to financially compete, resulting in vacant buildings. In other words, the financial impact on local business is not an environmental issue that can be addressed in an environmental impact report. However, if enough local retail businesses were forced to close as a result of a new project, this could lead to vacant buildings. Vacant buildings can have a variety of environmental impacts on a community and would be considered a form of urban decay which is an environmental impact.

As noted in Chapter 3, “Project Description”, the proposed project is not a retail facility; rather, it is a regional warehouse that would supply retail facilities within a large radius of the project site. As described by the project proponent, this project is designed primarily to fill an existing gap in Wal-Mart’s distribution system that supplies its retail facilities, and would make existing distribution activities more efficient. However, it is possible that the project could support the operation of new Wal-Mart retail stores. Depending on where any new retail facilities are built, it is possible that such construction could contribute to urban decay in a nearby community.

The City of Merced has determined that the proposed project does not have the potential to create urban decay in existing developed areas beyond the project site. This determination is based on the fact that the proposed project would not be a retail outlet for goods and would not supply groceries to Wal-Mart retail outlets. The distribution center would not compete for a client base that could result in adverse affects to other businesses in the region. Similarly, it is too speculative to attempt to analyze whether or not the proposed distribution center would cause urban decay anywhere beyond Merced. Therefore, an analysis of the potential environmental impacts associated with urban decay is not included in the EIR. EDAW and the City believe that the factual situations for such analysis, such as if and where new Wal-Mart stores would go in, and whether those facilities would possibly foster urban decay, are unknown and unknowable, and thus the potential impact is too speculative to analyze in this EIR.

1.3 LEAD, RESPONSIBLE, AND TRUSTEE AGENCIES

The City of Merced is the lead agency with primary authority for approval of the project. Additional agencies (listed below) with potential permit or approval authority over the project, or elements thereof, will have the opportunity to review this document during the public review period, and will use this information in consideration and issuance of any permits required for the project.

Public agencies with known or potential permits, other approvals, or jurisdiction by law over resources on the site include, but may not be limited to:

1.3.1 LEAD AGENCY

- ▶ City of Merced – In order for the City to approve the project it would need to take the following actions: CEQA determination; site plan approval; General Plan amendment to address the Kibby Road right-of-way abandonment; and abandonment of Kibby Road. Subsequent to these actions, the City would be responsible for the issuance of building permits.

1.3.2 STATE RESPONSIBLE AGENCIES

- ▶ Central Valley Regional Water Quality Control Board (National Pollutant Discharge Elimination System permit)
- ▶ State Water Resources Control Board (Section 401 of the Clean Water Act)

STATE TRUSTEE AGENCIES

- ▶ California Department of Fish and Game (Streambed Alteration Agreement, California Endangered Species Act permit)

LOCAL RESPONSIBLE AGENCIES

- ▶ San Joaquin Valley Air Pollution Control District (authority to construct and permit to operate)

1.3.3 FEDERAL AGENCIES

The following federal agencies may consider using this EIR for environmental information in connection with potential permits for resources under their jurisdiction.

- ▶ U.S. Fish and Wildlife Service (federal Endangered Species Act permit)

Addition information about the potential role of state and federal agencies in development of the site is contained in Chapter 4 of this EIR.

1.4 PUBLIC REVIEW PROCESS

Consistent with the requirements of CEQA, a good faith effort has been made during the preparation of this DEIR to contact affected agencies, organizations, and individuals who may have an interest in the project. As described above, this effort included the circulation of the NOP on July 7, 2006, for a 30-day review period. Two public scoping meetings were held on July 27, 2006, at 2:30 p.m. (primarily for public agencies) and at 6:00 p.m. (Primarily for the general public) in the Merced City Council Chambers.

In addition, early consultation with relevant agencies, organizations, and individuals assisted in the preparation of this DEIR. The City of Merced has filed a notice of completion with the Governor's Office of Planning and Research, State Clearinghouse, indicating that this DEIR has been completed and is available for review and comment by the public. The State CEQA Guidelines (Section 15205(d)) requires circulation of a DEIR for a minimum of 45 days; this DEIR is being circulated for a 60-day public review period, during which time written comments will be received by the City of Merced at the following address:

Ms. Kim Espinosa, Planning Manager
City of Merced Planning Department
678 West 18th Street, Merced, CA 95340
Facsimile: (209) 725.8775
E-mail: espinosak@cityofmerced.org

Copies of the DEIR can be found at the following addresses:

Merced City Clerk
678 West 18th Street
Merced, CA 95340

City of Merced Planning Department
678 West 18th Street
Merced, CA 95340

1.5 TERMINOLOGY USED IN THE EIR

This DEIR includes the following terminology to denote the significance of environmental impacts of the project:

Less-than-significant Impact: A less-than-significant impact is one that would not result in a substantial and adverse change in the environment. This impact level does not require mitigation.

Significant Impact: CEQA Section 21068 defines a significant impact as one that causes “a substantial, or potentially substantial, adverse change in any of the physical conditions in the area affected by the project.” Feasible mitigation measures or alternatives to the project must be considered to reduce the magnitude of significant impacts to less-than-significant levels.

Potentially Significant Impact: A potentially significant impact is one that, if it were to occur, would be considered a significant impact as described above; however, the occurrence of the impact cannot be definitely determined. For CEQA purposes, a potentially significant impact is treated as if it were a significant impact and would require mitigation, if feasible.

Significant and Unavoidable Impact: A significant and unavoidable impact is one that would result in a substantial adverse effect on the environment that cannot be feasibly mitigated to a less-than-significant level. A project with significant unavoidable impacts can still be approved, but the City would be required to prepare a statement of overriding considerations, pursuant to State CEQA Guidelines Section 15093, explaining the social, economic, or other benefits of the project that outweigh the significant environmental impacts.

Thresholds of Significance: A criterion to define at what level an impact would be considered significant. A criterion is defined based on examples found in CEQA or the State CEQA Guidelines, scientific and factual data relative to the lead agency jurisdiction, views of the public in affected areas, the policy/regulatory environment of affected jurisdictions, and other factors.

1.6 EIR ORGANIZATION

This DEIR is organized into sections, as identified and briefly described below. These sections are further divided into sections (e.g., Section 4.1, “Agriculture”).

Chapter 1, Introduction. Chapter 1 describes the purpose and organization of the DEIR, context, and terminology used in the DEIR.

Chapter 2, Executive Summary. This chapter summarizes the project description, alternatives to the project, significant environmental impacts that would result from the project, and mitigation measures proposed to reduce or eliminate those impacts.

Chapter 3, Project Description. Chapter 3 describes the project location, background, proposed actions by the applicants, lead agency, trustee and responsible agency actions, project characteristics, and project objectives. This section also describes the project construction and regulatory requirements.

Chapter 4, Existing Conditions, Thresholds of Significance, Environmental Impacts, and Mitigation Measures. For each environmental issue area, this section describes the existing environmental setting, discusses the environmental impacts associated with the proposed project, and identifies mitigation for the impacts.

Chapter 5, Alternatives to the Project. This chapter describes alternatives to the project at a level consistent with CEQA requirements; State CEQA Guidelines Section 15126.6(d). This chapter presents descriptions of alternatives to the project that could reduce the project's environmental impacts while meeting most of the project's objectives. An analysis is provided comparing the impacts of the alternative to the impacts of the project, but the level of detail is less than for the project. This chapter also describes alternatives previously considered and rejected.

Chapter 6, Cumulative Impacts and Other CEQA Mandated Sections. This chapter contains a discussion of cumulative impacts that would result from the proposed project in combination with reasonably foreseeable projects in the project area. The potential for the project to foster economic or population growth, or remove obstacles to growth are evaluated in Chapter 6. Project and cumulative impacts that cannot be mitigated to a less-than-significant level are also documented in this chapter.

Chapter 7, Report Preparation. This chapter identifies the DEIR authors and consultants who provided analysis in support of the DEIR's conclusions.

Chapter 8, References. This chapter sets forth a comprehensive listing of all sources of information used in the preparation of the DEIR, including agencies or individuals consulted during preparation of the DEIR.

Appendices. Appendices contain various technical reports, letters, and official publications that are summarized or otherwise used for preparation of the DEIR.

1.7 AREAS OF CONTROVERSY/ISSUES TO BE RESOLVED

Several parties submitted responses to the NOP of the project EIR. The NOP responses are included in Appendix A. Each comment is addressed in the EIR. Several agencies identified issues and information that would need to be included in the DEIR. Pursuant to Section 15123(b)(2)(3) of the CEQA Guidelines, the following comments were considered by the City during preparation of this EIR.

Air Quality

- ▶ Concern about the effects of air quality on schools and nearby residences.
- ▶ Concern that the traffic would negatively affect air quality.
- ▶ Concern about truck exhaust

Traffic – General

- ▶ Concern about trucks driving through residential areas.
- ▶ Concern about where trucks would park or wait.
- ▶ Concern about damage to roads and other cars caused by increased truck traffic.

Traffic – Congestion

- ▶ Concern about traffic congestion on Highway 99.
- ▶ Concern about traffic on Campus Parkway.
- ▶ Concern about the impact of traffic on City roads.
- ▶ Concern over increased truck traffic causing congestion and unsafe conditions at the Martin Luther King, Yosemite/Mariposa, and Child's exits on Highway 99.

Traffic – Safety

- ▶ Concern about traffic and safety for neighborhoods nearby.
- ▶ Consider planning for safety near railroad crossings.
- ▶ Concern about traffic and safety in winter fog.
- ▶ Concern about safety for students traveling to/from school.

Land Use

- ▶ Concern of project proximity to residential areas and schools.

Population and Housing

- ▶ Concern about project attracting crime.

Noise

- ▶ Concern about noise from “trailer drops.”

Hydrology and Water Quality

- ▶ Concern about water quality because of the fuel storage and truck wash.
- ▶ Concern over stormwater system failing and pollution running into the nearby neighborhoods.
- ▶ Concern over underground storage tanks and affect on water quality in the event of leakage.

Hazards and Hazardous Materials

- ▶ Concern about hazardous materials.

Public Services and Facilities

- ▶ Concern that the limitations Senate Bill 50 places on statutory development fees would cause a deficit between what Wal-Mart pays and the actual costs to the community.

Other

General concern has been expressed by a number of residents over the project in general. People have regularly attended meetings and hearings with the City, and have submitted correspondence and articles expressing their concerns. The project itself is a source of controversy.

1.8 CONTACT PERSON

Comments on the DEIR should be addressed to Ms. Kim Espinosa, Planning Manager, City of Merced Planning Department, 678 West 18th Street, Merced, CA 95340.

1.9 SOURCE REFERENCES

A complete listing of source references is found in Chapter 8 of this report.

2 EXECUTIVE SUMMARY

2.1 SUMMARY DESCRIPTION OF THE PROPOSED PROJECT

The proposed project includes development of a Wal-Mart Stores East LP regional distribution center (approximately 1.1 million square feet) and associated facilities on 230 acres in the southeast area of the City of Merced and would primarily store and distribute nongrocery goods to Wal-Mart retail stores located throughout the region. No retail commercial is proposed as part of the project. The proposed regional distribution center would operate 24-hours per day and would employ approximately 1,200 employees (1,050 employees to work at the facility and an additional 150 employees as drivers).

The entitlements required for this proposed project consist of the following:

- ▶ Site Plan Approval (required of all principally permitted uses in industrial zones);
- ▶ City of Merced General Plan amendment (This is required because the undeveloped Kibby Road right-of-way is proposed to be abandoned between Childs Avenue and Gerard Avenue. Because Kibby Road is designated in the Circulation Element of the General Plan, a General Plan Amendment is required before action can be taken to abandon the unused right-of-way); and
- ▶ right-of-way abandonment (Kibby Road).

Subsequent to these actions, the City will be responsible for the issuance of building permits.

Construction is anticipated to last approximately 12 months.

2.2 PROJECT OBJECTIVES

The City's objectives for the project include the following:

- ▶ to develop the industrially zoned area in the City with permitted industrial uses;
- ▶ to locate industrial projects in areas with good access to major highway transportation links, and provide opportunities for buffers between industrial and nonindustrial uses;
- ▶ to encourage development of industrial projects that will create jobs, including full-time, nonseasonal employment opportunities for local residents;
- ▶ to encourage development of projects that will contribute toward improving roadways adjacent to the proposed development site; and
- ▶ to ensure that industrial areas are developed in an attractive manner.

The project applicant has developed objectives consisting of the following:

- ▶ to develop a project consistent with the City of Merced General Plan (City General Plan) and zoning ordinance,
- ▶ to develop a distribution/warehouse facility near other industrial uses,

- ▶ to construct and operate a distribution/warehouse facility in Merced County to take advantage of the strategic location between large urban centers and smaller urban and rural markets throughout the Central Valley in California,
- ▶ to construct a distribution/warehouse facility on a site sufficiently large (a minimum of 230 acres) to allow necessary building space and parking for trucks and employees,
- ▶ to construct a distribution/warehouse facility with sufficient space (approximately 1.2 million square feet) to allow operational efficiency and adequate distribution of goods to stores in a broad geographic area in California,
- ▶ to locate a distribution/warehouse facility with access to a regional roadway network including interstate, state, and regional roads,
- ▶ to locate a distribution/warehouse facility in an area well served by major local thoroughfares to minimize truck traffic traveling through residential neighborhoods,
- ▶ to provide sufficient parking for trucks and employees to minimize impacts to the surrounding area, and
- ▶ to take advantage of an existing labor pool living in the Merced area.

2.3 ALTERNATIVES

2.3.1 NO PROJECT ALTERNATIVE

This alternative assumes that the site would not be developed with the proposed project, but due to the site's large size, its industrial land use designation and zoning, its proximity to the freeway and major public infrastructure, it is unlikely that the project site would remain indefinitely vacant. It is therefore assumed under the No Project Alternative that the site would be developed with some type of industrial or warehouse development in the near term in accordance with the City's existing land use regulations with approximately 1.1 million square feet of warehouse or industrial use, similar to the proposed project. It is conceivable that another company would view the site as ideally suited for a regional distribution center similar to what is proposed by Wal-Mart.

2.3.2 REDESIGNED SITE PLAN

This alternative assumes that the site would be developed with identical size and extent of development, number of employees, and number of vehicle trips as the proposed project. As with the proposed project, a majority of the site would be cleared of vegetation and graded to accommodate approximately 1.1 million square feet of building, parking and driveways, and landscaping. Buildings and other proposed features on-site have been shifted to the east under this alternative to provide an increased buffer to residential development to the west and driveway access, as well as all truck loading and unloading has been shifted to the eastern edge of the site. This alternative has been identified as a means of reducing certain potential environmental impacts that cannot be sufficiently reduced in the proposed project solely through mitigation measures. This alternative is intended to reduce the following potential impacts on the closest residential communities in Merced: air quality, traffic, and noise. Areas west of the project site are designated for residential development.

2.3.3 REDUCED SITE PLAN AND OPERATIONS

This alternative assumes that the site would be developed 25% less site disturbance, 24% less floor area, 25% less impervious surface area, 25% fewer employees, and 25% fewer daily tractor trailer trips. This alternative is intended to reduce the potential impacts on the closest residential communities in Merced.

2.3.4 OFF-SITE ALTERNATIVES

Three alternative sites located within the City or unincorporated County were identified by City staff as having sufficient land area and zoning designations to accommodate a warehouse distribution center with approximately 1.1 million square feet of floor area and similar site development requirements to that of the proposed project. Each of the sites is in the southern portion of the City (or unincorporated County), in areas designated for, or near, industrial development and relatively close to major transportation routes. The City directed that alternative sites be identified and analyzed in terms of environmental impact, in addition to alternative versions of the proposed project on the site selected by Wal-Mart. Alternative sites are analyzed to see if development with the use currently proposed by Wal-Mart would result in different potential impacts.

ALTERNATIVE SITE #1

Alternative Site #1 is approximately 200-250 acres in size and is located immediately south of the proposed project site. It is roughly bordered by the following streets: Gerard Avenue, Mission Avenue, the future extension of Campus Parkway, and Tower Road. This site is within the Merced city limits and is directly south of the proposed project site. To see the alternative site locations, refer to Exhibit 5-4 in Section 5 “Alternatives to the Proposed Project.”

ALTERNATIVE SITE #2

Alternative Site #2 is located on the west side of SR 99, approximately 1 mile west/southwest of the project site. This site is northeast of the intersection of South Henry Street and East Mission Avenue, and just southwest of State SR 99. The site is roughly 250 acres in land area. This site is in unincorporated Merced County.

ALTERNATIVE SITE #3

Alternative Site #3 is located between Dickenson Ferry Road, Thornton Road, and immediately south of Merced Municipal Airport. The site is roughly 250 acres in land area. This site is in unincorporated Merced County.

2.3.5 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA requires that an “environmentally superior” alternative among the alternatives considered be selected and the reasons for such selection disclosed. The Reduced Site Plan and Operations alternative has been identified as having fewer potential environmental effects than the proposed project and the other alternatives that were analyzed in the EIR. The Reduced Site Plan and Operations alternative would be expected to have fewer impacts on the following resources:

- ▶ agricultural resources,
- ▶ air quality,
- ▶ biological resources (special-status species),
- ▶ cultural resources,
- ▶ hydrology and water quality,
- ▶ noise,
- ▶ utilities and public services,
- ▶ transportation and traffic, and
- ▶ visual resources.

In addition to being the environmentally superior alternative, the Reduced Site Plan and Operations alternative would meet all of the project objectives identified by the City and project proponent, except the following:

To construct a distribution/warehouse facility with sufficient space (approximately 1.2 million square feet) to allow operational efficiency and adequate distribution of goods to stores in a broad geographic area in California.

While the Reduced Site Plan and Operations alternative would meet the objectives related to siting the project (i.e. locating the facility in an industrially zoned area with access to major local and regional roadways), with 825,000 square feet of floor area, it would not meet the size component of the objective which has identified by the project proponent.

The Redesigned Site Plan Alternative shares many of the same environmental impacts with the proposed project, with reductions to a few of the project impacts, and the alternative meets all of the project objectives.

2.4 AREAS OF CONTROVERSY AND ISSUES TO BE RESOLVED

Section 15123 of the State CEQA Guidelines requires that a summary of an EIR identify areas of controversy known to the lead agency, including issues raised by agencies and the public. During the public comment period for the NOP, various comment letters were received regarding the proposed project. These letters are included as Appendix A of this EIR. In general, areas of potential controversy known to the City include: traffic congestion, hazardous materials handling, on-site security, urban decay, visual impacts, conversion of farmland, heat island effect, traffic hazards, pedestrian safety, proximity to residences and schools, air quality and health, noise increases, climate change, water quality and flooding, water supply, wastewater capacity, drainage system capacity, population and housing, growth inducement, economic effects, school impacts, employee wages and benefits, and property values. To the extent that these issues are considered to be “environmental impacts” under CEQA, these issues are addressed in the DEIR.

2.5 ENVIRONMENTAL IMPACTS AND RECOMMENDED MITIGATION MEASURES

Table 2-1 summarizes the environmental impacts of the project, levels of significance before mitigation, recommended mitigation measures, and levels of significance after the application of mitigation measures.

Table 2-1 Summary of Impacts and Mitigation Measures			
Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
4.1 Agricultural Resources			
4.1-1: Conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. The proposed project would result in the conversion of Prime Farmland. The project would result in a significant impact.	S	The City's General Plan EIR further concludes that to achieve the goals of maintaining a compact urban form, and other types of land-use compatibility issues, mitigation that would eliminate the loss of agricultural land to urban development is not possible. Therefore, because no mitigation is available to reduce this impact, the impact would remain significant and unavoidable. This conclusion is consistent with the conclusion of the EIR prepared for the Merced Vision 2015 General Plan. It should be noted that the City considered the significant impact associated with the conversion of farmland resulting from buildout of the General Plan and adopted a Statement of Overriding Considerations (Resolution No. 97-22).	SU
4.1-2: Conflict with Existing Zoning for Agricultural Use, or a Williamson Act Contract. The project site is neither zoned for agriculture nor is it in a Williamson Act contract; therefore, the proposed project would have no impact.	NI	No mitigation is required.	LTS
4.1-3: Other Changes in the Environment that Could Result in Conversion of Farmland to Nonagricultural Use. The proposed project could foster future farmland conversions; however, the project conforms to the City's plans and designations. This impact would be considered less than significant.	LTS	No mitigation is required.	LTS
4.1-4: Potential for Inconsistency with Merced General Plan Goals and Policies Relevant to Protection of Agriculture. The proposed project conforms to the City's planning documents and designations, making this impact less than significant.	LTS	No mitigation is required.	LTS
4.2 Air Quality			
4.2-1: Generation of Short-Term Construction-Related Emissions of Criteria Air Pollutants and Precursors. Project-generated, construction-related emissions of ROG and NO _x would exceed SJVAPCD's significance threshold of 10 TPY. In addition, with respect to construction-related emissions of PM ₁₀ ,	S	4.2-1a: Comply with SJVAPCD's Indirect Source Review Rule (Rule 9510). Construction of the proposed project shall comply with SJVAPCD's ISR rule (Rule 9510), as required by law. The	LTS

NI = No Impact

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SU = Significant and Unavoidable

**Table 2-1
Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
SJVAPCD-recommended control measures beyond compliance with Regulation VIII-Fugitive Dust Prohibition are not incorporated into the project design. Thus, project-generated, construction- related emissions of criteria air pollutants and precursors could violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations, especially considering the nonattainment status of Merced County. As a result, this would be a significant impact.		applicant shall submit and have approved an Air Impact Assessment (AIA) application to SJVAPCD no later than applying for a final discretionary approval with the City of Merced. The AIA application shall be submitted on a form provided by the SJVAPCD and contain, but not be limited to, the applicant's name and address, detailed project description, on-site emission reduction checklist, monitoring and reporting schedule, and an AIA. The AIA shall quantify construction NO_x and PM₁₀ emissions associated with the project. This assessment shall include: an estimate of construction emissions prior to the implementation of mitigation measures; a list of the mitigation measures to be applied to the project; an estimate of emissions for each applicable pollutant for the project, or each phase thereof, following the implementation of mitigation; and a calculation of the applicable off-site fee, if required by Rule 9510. The general mitigation requirements in the assessment, as contained in the ISR rule, shall include the following: ▶ Exhaust emissions for construction equipment greater than 50 horsepower used or associated with the development project shall be reduced by 20% of the total NO_x and by 45% of the total PM₁₀ emissions from the statewide average as estimated by ARB. ▶ Methods employed by the applicant to reduce construction emissions to the degree noted above include using less polluting construction equipment, including the use of add-on controls, cleaner fuels, or newer lower emitting equipment. The emissions reduction targets listed above shall be met through any combination of on-site emission reduction measures or offset fees, including those required and additional measures listed in Mitigation Measure 4.2-1b below. The requirements listed above can be met through any combination of on-site emission reduction measures or offset fees, including those required and additional measures listed in Mitigation Measures 4.2-1b and 4.2-1c below; however, any on-site emission	

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**Table 2-1
Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		reductions must be both quantifiable and verifiable to be credited towards the requirements of the ISR Rule. 4.2-1b: Implement Measures to Reduce Construction-Related Diesel Equipment Exhaust Emissions. The following required mitigation measures shall be implemented by the project applicant to reduce construction-related diesel equipment exhaust emissions regardless of whether the emission reductions can be quantified and documented. However, any emissions reductions attained by these measures that can be quantified and documented can be credited to achieve the ISR reduction goals discussed in Mitigation Measure 4.2-1a. These required measures are listed below. Required Measures to Reduce Construction-Related Diesel Equipment Exhaust Emission ▶ Cease construction activity on forecasted Spare the Air Days. ▶ Staging areas for heavy-duty construction equipment shall be located as far as possible from sensitive receptors. They shall be located on site and not be within 1,000 feet of the project boundary. ▶ Before construction contracts are issued, the project applicant shall perform a review of new technology in consultation with SJVAPCD, as it relates to heavy-duty diesel equipment, to determine what (if any) advances in emissions reductions are available for use and are economically feasible. Construction contract and bid specifications shall require contractors to utilize the available and economically feasible technology on a percentage of the equipment fleet, as determined by SJVAPCD. ▶ When not in use, idling of on-site equipment shall be minimized. Under no conditions shall on-site equipment be left idling for more than 5 minutes. ▶ Prohibit the use of trucks with off-road engines to haul materials on-site. Use trucks with on-road engines instead.	

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**Table 2-1
Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		In addition, measures implemented to achieve the above ISR reduction goals required by Mitigation Measure 4.2-1a may include, but are not limited to the additional measures listed below. Additional Operational Emission Reduction Measures Use alternate fuels and emission controls to further reduce NOX and PM10 exhaust emissions above the minimum requirements set forth in the ISR rule. Replace/substitute fossil-fueled (e.g., diesel) equipment with electrically driven equivalents (provided they are not run via a portable generator set). Use ARB-certified alternative fueled engines in construction equipment. Alternative fueled equipment may be powered by compressed natural gas, liquid propane gas, electric motors, or other ARB-certified off-road technologies. (To find engines certified by ARB, see http://www.arb.ca.gov/msprog/offroad/cert/cert.php.) ▶ Provide commercial electric power to the project site in adequate capacity to avoid or minimize the use of portable electric generators and equipment. ▶ Limit the hours of operation of heavy duty diesel equipment and/or the amount of equipment in use at any one time. 4.2-1c: Implement an Emissions Reduction Agreement with SJVAPCD to Reduce Construction Emissions of ROG and NOX. The Applicant shall enter into an emissions reduction agreement with SJVAPCD to reduce net ROG and NO_x emissions to less than 10 TPY. This agreement includes an emission reduction program, whereby the Applicant funds projects in the SJVAB, such as replacement and destruction of old engines with new more efficient engines. The agreement requires the Applicant to identify and propose opportunities for the reduction of emissions to fully mitigate the project's construction emissions to less than significant, and includes opportunities for removal or retrofication of stationary, transportation, indirect, and/or mobile-source equipment. Each	

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**Table 2-1
Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		proposal requires SJVAPCD approval and verification of emission reduction prior to receiving final discretionary approval of the project from the City of Merced. The emissions reduction agreement must be implemented <i>in addition to</i> the Required Measures to Reduce Construction-Related Diesel Equipment Exhaust Emission listed in Mitigation Measure 4.2-1b. Development and implementation of the emissions reduction agreement shall be fully funded by the Applicant. To the extent feasible, preference shall be given to off-site emission reduction projects that are located in or in close proximity to the City of Merced. If approved by SJVAPCD, the Applicant may develop an emissions reduction agreement that also fulfills the compliance requirements of SJVAPCD's ISR Rule (Rule 9510). 4.2-1d: Comply with SJVAPCD's Regulation VIII-Fugitive Dust Prohibitions and Implement All Applicable Control Measures. Construction of the proposed project shall comply with SJVAPCD's Regulation VIII-Fugitive Dust Prohibitions and implement all applicable control measures, as required by law. Regulation VIII contains, but is not limited to, the following required control measures: ▶ Prewater site sufficient to limit visible dust emissions (VDE) to 20% opacity. ▶ Phase work to reduce the amount of disturbed surface area at any one time. ▶ During active operations, apply water or chemical/organic stabilizers/suppressants sufficient to limit VDE to 20% opacity. ▶ During active operations, construct and maintain wind barriers sufficient to limit VDE to 20% opacity. ▶ During active operations, apply water or chemical/organic stabilizers/suppressants to unpaved haul/access roads and unpaved vehicle/equipment traffic areas sufficient to limit VDE to 20% opacity and meet the conditions of a stabilized unpaved road surface.	

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**Table 2-1
Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		▶ An owner/operator shall limit the speed of vehicles traveling on uncontrolled unpaved access/haul roads within construction sites to a maximum of 15 miles per hour (mph). ▶ An owner/operator shall post speed limit signs that meet State and Federal Department of Transportation standards at each construction site's uncontrolled unpaved access/haul road entrance. At a minimum, speed limit signs shall also be posted at least every 500 feet and shall be readable in both directions of travel along uncontrolled unpaved access/haul roads. ▶ When handling bulk materials, apply water or chemical/organic stabilizers/suppressants sufficient to limit VDE to 20% opacity. ▶ When handling bulk material, construct and maintain wind barriers sufficient to limit VDE to 20% opacity and with less than 50% porosity. ▶ When storing bulk materials, comply with the conditions for a stabilized surface as listed above. ▶ When storing bulk materials, cover bulk materials stored outdoors with tarps, plastic, or other suitable material and anchor in such a manner that prevents the cover from being removed by wind action. ▶ When storing bulk materials construct and maintain wind barriers sufficient to limit VDE to 20% opacity and with less than 50% porosity. If utilizing fences or wind barriers, apply water or chemical/organic stabilizers/suppressants to limit VDE to 20% opacity or utilize a 3-sided structure with a height at least equal to the height of the storage pile and with less than 50% porosity. ▶ Limit vehicular speed while traveling on the work site sufficient to limit VDE to 20% opacity. ▶ Load all haul trucks such that the freeboard is not less than 6 inches when material is transported across any paved public access road sufficient to limit VDE to 20% opacity.	

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**Table 2-1
Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		▶ Apply water to the top of the load sufficient to limit VDE to 20% opacity. ▶ Cover haul trucks with a tarp or other suitable cover. ▶ Clean the interior of the cargo compartment or cover the cargo compartment before the empty truck leaves the site; and prevent spillage or loss of bulk material from holes or other openings in the cargo compartment's floor, sides, and/or tailgate; and load all haul trucks such that the freeboard is not less than 6 inches when material is transported on any paved public access road, and apply water to the top of the load sufficient to limit VDE to 20% opacity; or cover haul trucks with a tarp or other suitable cover. ▶ Owners/operators shall remove all visible carryout and trackout at the end of each workday. ▶ An owner/operator of any site with 150 or more vehicle trips per day, or 20 or more vehicle trips per day by vehicles with three or more axles shall take actions for the prevention and mitigation of carryout and trackout. ▶ Within urban areas, an owner/operator shall prevent carryout and trackout, or immediately remove carryout and trackout when it extends 50 feet or more from the nearest unpaved surface exit point of a site. ▶ Within rural areas, construction projects 10 acres or more in size, an owner/operator shall prevent carryout and trackout, or immediately remove carryout and trackout when it extends 50 feet or more from the nearest unpaved surface exit point of a site. ▶ For sites with paved interior roads, an owner/operator shall prevent and mitigate carryout and trackout. ▶ Cleanup of carryout and trackout shall be accomplished by manually sweeping and picking-up; or operating a rotary brush or broom accompanied or preceded by sufficient wetting to limit VDE to 20% opacity; or operating a PM10-efficient street sweeper that has a pick-up efficiency of at least 80%; or	

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Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		flushing with water, if curbs or gutters are not present and where the use of water would not result as a source of trackout material or result in adverse impacts on storm water drainage systems or violate any National Pollutant Discharge Elimination System permit program. ▶ An owner/operator shall submit a Dust Control Plan to the Air Pollution Control Officer (APCO) before the start of any construction activity on any site that will include 10 acres or more of disturbed surface area for residential developments, or 5 acres or more of disturbed surface area for nonresidential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least 3 days. Construction activities shall not commence until the APCO has approved or conditionally approved the Dust Control Plan. An owner/operator shall provide written notification to the APCO within 10 days before the commencement of earthmoving activities via fax or mail. The requirement to submit a dust control plan shall apply to all such activities conducted for residential and nonresidential (e.g., commercial, industrial, or institutional) purposes or conducted by any governmental entity. 4.2-1e: Implement SJVAPCD-Recommended Enhanced and Additional Dust Control Measures. The following SJVAPCD-recommended enhanced and additional control measure shall be implemented to further reduce emissions of fugitive PM₁₀ dust. ▶ Install sandbags or other erosion control measures to prevent silt runoff to public roadways from adjacent project areas with a slope greater than 1%. ▶ Suspend excavation and grading activity when winds exceed 20 mph. ▶ Limit area subject to excavation, grading, and other construction activity at any one time.	

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**Table 2-1
Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
4.2-2: Generation of Long-Term Operation-Related (Regional) Emissions of Criteria Air Pollutants and Precursor Emissions. Operation-related activities would result in project-generated emissions of ROG and NO_x that exceed SJVAPCD's significance threshold of 10 TPY (refer to Table 4.2-7). Thus, project-generated, operation-related emissions of criteria air pollutants and precursors could violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations, especially considering the nonattainment status of Merced County. In addition, because SJVAPCD's significance thresholds approximately correlate with reductions from heavy-duty vehicles and land use project emission reduction requirements in the SIP, project-generated emissions could also conflict with any air quality planning efforts. As a result, this would be a significant impact.	S	4.2-2a: Comply with SJVAPCD's Indirect Source Review Rule (Rule 9510) Similar to Mitigation Measure 4.2-1a, which addresses construction-related emissions, operation of the proposed project shall comply with SJVAPCD's ISR rule (Rule 9510), as required by law. The applicant shall submit an AIA application to SJVAPCD no later than applying for a final discretionary approval with the City of Merced. The AIA application shall be submitted on a form provided by the SJVAPCD and contain, but not be limited to, the applicant's name and address, detailed project description, on-site emission reduction checklist, monitoring and reporting schedule, and an AIA. The AIA shall quantify operational NO_x and PM₁₀ emissions associated with the project. This shall include the estimated operational baseline emissions (i.e., before mitigation), and the mitigated emissions for each applicable pollutant for the project, or each phase thereof, and shall quantify the off-site fee, if applicable. General mitigation requirements, as contained in the ISR rule, include the following: Applicants shall reduce 33.3%, of the project's operational baseline NO_x emissions over a period of ten years as quantified in the approved AIA. Applicants shall reduce 50% of the project's operational baseline PM₁₀ emissions over a period of ten years as quantified in the approved AIA. The requirements listed above can be met through any combination of on-site emission reduction measures or offset fees, including those required and additional measures listed in Mitigation Measures 4.2-2b, 4.2-2c, 4.2-2d, and 4.2-2e for emissions of CAPs; and Mitigation Measures 4.2-6b and 4.2-6d for emissions of GHGs below; however, any on-site reductions of CAP emissions must be both quantifiable and verifiable to be credited towards the requirements of the ISR Rule. 4.2-2b: Develop and Implement an Employee Trip Reduction Program to Reduce Operational Emissions.	LTS

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Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		The applicant shall develop and implement an employee trip reduction program that minimizes the percentage of employee commute trips in single occupancy vehicles. At a minimum, the program shall ensure that at least 25% of employee commute trips occur by some other transportation mode than a single occupancy vehicle. This program shall be fully funded by the applicant and be developed in consultation with the City of Merced, the Transit Joint Powers Authority for Merced County, and SJVAPCD. Measures that result in quantifiable trip reductions can also be counted as reductions in NO_x and PM₁₀ emissions with respect to compliance with the ISR rule mentioned in Mitigation Measure 4.2-2a. The program shall be managed by an on-site Employee Transportation Coordinator employed and appointed by the applicant. A designated Transportation Manager shall also be on duty during each shift to manage the program. The 25% reduction in single occupancy vehicle trips by employees shall be achieved within 3 years of the opening of the distribution center. The reduction program and its effectiveness shall be evaluated annually and reported to the City of Merced. As part of the program, the applicant shall provide a display case or kiosk that displays all of the program information in a prominent area accessible to employees (e.g., break room, cafeteria, or entrance). Elements of the employee trip reduction program may include, but are not limited to, the following measures: Provide carpool ride matching assistance for employees, assistance with vanpool formation, and provisions of vanpool vehicles. Provide a separate site entrance exclusively for employee shuttles, carpools, vanpools, public transit, and cyclists that allows for more convenient and expedient access to and from the site during peak turnover periods (i.e., shift changes). Design and provide preferential parking for carpool and vanpool vehicles. Design features may include a separate parking lot for carpool and vanpool vehicles that is closer to the employee building entrance than the parking lot for single occupancy vehicles and/or covered parking spaces for carpool and vanpool vehicles. Other	

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Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		potential design features include connecting the preferential parking lot to the employee entrance of the building with shaded, landscaped walkways or with open-air, covered walkways. Implement parking fees for single occupancy vehicle commuters or a parking cash-out program for employees. Make available free public transit passes to all employees if public transit service is expanded to serve the project site. Provide adequate bicycle parking/racks in a covered, secure area. Provide an adequate number of showers, changing areas, and locker facilities to accommodate employees who bike to work (typically one shower and 3 lockers for every 25 employees of a shift). Fund the design and installation of bikeways or bike lanes along local roads that provide access to the site. Implement compressed work schedules for employees (e.g., 4 shifts per week for full time employees). Operate free employee shuttle or vanpool system that serves employees according to their shift times and places of residence. Low-emissions shuttle or vanpool vehicles shall be used (e.g., hybrid, CGN, or electric). Provide a covered area for the on-site employee shuttle stop or vanpool parking lot and an open-air covered walkway connection to the employee entrance of the building to provide summertime shade and protection from rain. Provide incentives for employees who take their children to child daycare centers to select nearby centers and designate these centers as official stops of the free employee shuttle or vanpool system. Incentives may include, but are not limited to, the subsidization of daycare rates or the negotiation of group discounts for children of employees at these childcare providers. An on-site child daycare center shall be provided only if supported by the findings of a comprehensive HRA performed in consultation with SJVAPCD. Time employee work shifts according to the class times at nearby K–12 schools and/or have employee shuttles or vanpools make stops at nearby K–12 schools.	

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**Table 2-1
Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		4.2-2c: Implement Recommended Mitigation Measures to Reduce Operational Emissions. The following required mitigation measures shall be implemented by the project applicant to reduce operation-related emissions regardless of whether the emission reductions can be quantified and documented for compliance with the ISR rule required by Mitigation Measure 4.2-2a or whether they result in a quantifiable reduction of employee commute trips in single occupancy vehicles. However, any emissions reductions attained by these measures that can be quantified and documented can be credited to achieve the ISR reduction goals discussed in Mitigation Measure 4.2-2a.or employee trip reduction goals discussed in Mitigation Measure 4.2-2b. These required measures are listed below. The applicant's participation in EPA's SmartWay Transport Partnership (EPA 2007) shall include the portion of its haul truck fleet that is based at or serves the Merced distribution center and shall continue participation of this truck fleet in the Partnership for as long as the Partnership or a similar successor program exists. The Applicant shall fully fund or contribute its fair share of funding for the development of a Class II Bike Lanes along Childs Avenue and Gerard Avenue from Parsons Avenue to the project's eastern boundary line that would connect the proposed project to nearby land uses, including the residential neighborhoods to the west along Childs Avenue and Gerard Avenue. Building bicycle lanes at these locations is consistent with the City of Merced Bicycle Plan, which was adopted on October 20, 2008 and meets requirements of the California Bicycle Transportation Act (1994) and qualifies the City of Merced to receive state funding for bicycle projects. The City shall determine the Applicant's fair share monetary contribution to the development of these bicycle lanes and the Applicant shall pay its fair share at the same time building permit fees are due to the City. Provide on-site shops and services for employees including a cafeteria and a bank/ATM.	

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Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		Use only electric-powered landscape maintenance equipment to care for landscaped areas. If this work is hired out to a landscaping company, then the contract shall prohibit the use of gasoline or diesel powered landscape maintenance equipment. Building and site design shall include electrical outlets around the exterior of the units to enable use of electric landscape maintenance equipment. 4.2-2d: Implement Additional Operational On-Site Emission Reduction Measures. Where feasible, additional measures shall be implemented to reduce operational emissions. Such measures shall include, but are not limited to the additional measures listed below. If, however, the additional measures listed below are technologically or economically infeasible, the Applicant shall submit a written report to the City of Merced Planning & Permitting demonstrating such infeasibility. Approval of this report shall be received by the Applicant prior to receiving final discretionary approval of the project from the City of Merced Planning & Permitting. Purchase and operate electric or hybrid-powered yard tractors (e.g., Volk-brand tractors) to serve as “yard trucks” that move trailers to and from the trailer yard and loading docks. Provide electric maintenance equipment, install solar, low-emission, or central water heaters, increase building insulation beyond Title 24 requirements, orient buildings to take advantage of solar heating and natural cooling and use passive solar designs, energy efficient windows (double pane and/or Low-E), highly reflective roofing materials, cool pavement, radiant heat barrier, install photovoltaic cells, programmable thermostats for all heating and cooling systems, awnings or other shading mechanisms for windows, patio, and walkway overhangs, ceiling fans, utilize passive solar cooling and heating designs, utilize day lighting systems such as skylights, light shelves, and interior transom windows. The project shall include as many clean alternative energy features as possible to promote energy self-sufficiency (e.g., photovoltaic	

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Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		cells, solar thermal electricity systems, small wind turbines). 4.2-2e: Implement an Emissions Reduction Agreement with SJVAPCD to Reduce Operational Emissions of ROG and NO_x. The Applicant shall enter into an emissions reduction agreement with SJVAPCD to reduce net ROG and NO_x emissions to less than 10 TPY. This agreement includes an emission reduction program, whereby the applicant funds projects in the SJVAB, such as replacement and destruction of old engines with new more efficient engines. The agreement requires the Applicant to identify and propose opportunities for the reduction of emissions to fully mitigate the project's operational emissions of ROG and NO_x to less than 10 TPY, and includes opportunities for removal or retrofit of stationary, transportation, indirect, and/or mobile-source equipment. Each proposal requires SJVAPCD approval and verification of emission reduction prior to receiving final discretionary approval of the project from the City of Merced. The emissions reduction agreement shall be implemented in addition to the Employee Trip Reduction Program required by Mitigation Measure 4.2-2b, the set of Recommended Mitigation Measures to Reduce Operational Emissions required by Mitigation Measure 4.2-2c, and the set of Additional Operational On-Site Emission Reduction Measures required by Mitigation Measure 4.2-d. However, any emission reductions achieved through these measures that are quantifiable and verifiable could effectively reduce the amount of additional, off-site reductions that must be obtained through the emissions reduction agreement. (Furthermore, any quantifiable and verifiable emissions of CAPs that would result as an added benefit from implementation of Mitigation Measures 4.2-6b and 4.2-6d, which are designed to achieve GHG reductions as discussed under Impact 4.2-6 below, could also effectively reduce the amount of additional, off-site reductions that must be obtained through the emissions reduction agreement.) To the extent feasible, the selection of program for reducing operational emissions of CAPs established in the agreement shall give preference to off-site emission reduction projects that are located in or in close proximity to the City of Merced. If approved by SJVAPCD the Applicant may develop an emissions reduction agreement that also fulfills the compliance requirements of	

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Table 2-1 Summary of Impacts and Mitigation Measures			
Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		SJVAPCD's ISR Rule (Rule 9510) discussed in Mitigation Measure 4.2-2a. Development and implementation of the emissions reduction agreement shall be fully funded by the Applicant.	
4.2-3: Generation of Long-Term, Operation-Related (Local) Mobile-Source Emissions of CO. Based on SJVAPCD's screening criteria, project-generated long-term operational local mobile-source emissions of CO would not result in or substantially contribute to emissions concentrations that exceed the 1-hour ambient air quality standard of 20 ppm or the 8-hour standard of 9 ppm, respectively. As a result, this impact would be less than significant.	LTS	No mitigation is required.	LTS
4.2-4: Exposure of Sensitive Receptors to Emissions of Toxic Air Contaminants. Construction and operation of the proposed project would result in increased health risk levels associated with short-and long-term emissions of diesel PM and other TACs. However, the incremental increase in health risk levels, including cancer risk and noncancer chronic risk, would not exceed applicable thresholds at nearby sensitive receptors. As a result, this impact would be less than significant.	LTS	No mitigation is required.	LTS
4.2-5: Exposure of Sensitive Receptors to Emissions of Odors. Construction and operation of the proposed project would not result in the frequent exposure of receptors to substantial objectionable odor emissions. As a result, this impact would be less than significant.	LTS	No mitigation is required.	LTS
4.2-6: Generation of Emissions of Greenhouse Gases. Construction- and operation-related activities of the proposed project would result in a considerable net increase in emissions of CO ₂ and other greenhouse gases. These levels would constitute a considerable net increase in GHG emissions. In addition, this increase would conflict with the state's AB 32 goals, which require reductions in statewide emissions levels of GHGs. As a result, this impact would be considered significant.	S	4.2-6a: Implement Mitigation Measures 4.2-1a and 4.2-1b. The applicant shall implement Mitigation Measures 4.2-1a and 4.2-1b, which will have the added benefit of reducing construction-related emissions of CO ₂ . 4.2-6b: Ensure On-Site Yard Trucks are Maintained and Meet On-Road Truck Emissions Standards. The applicant shall ensure that all on-site "yard trucks" have ARB-approved on-road truck engines that meet on-road truck emissions standards and are maintained in proper working condition	SU

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**Table 2-1
Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		according to manufacturer specifications. 4.2-6c: Implement Mitigation Measures 4.2-2a, 4.2-2b, 4.2-2c, and 4.2-2d. The applicant shall implement Mitigation Measures 4.2-2a, 4.2-2b, 4.2-2c, and 4.2-2d, which will have the added benefit of reducing project-generated, operation-related emissions of CO₂. 4.2-6d: Implement Effective Mitigation Measures. The following measures, as well as any other effective mitigation measures, shall be implemented by the project applicant to further reduce operation-related emissions of CO₂. ▶ Install solar panels in all available areas of the project site, including the roof of the warehouse building, the buffer areas surrounding the paved truck yards and employee parking lot, and covered parking areas, walkways and outdoor areas, to supply electricity for on-site use. This measure would be consistent with the Merced Vision 2015 General Plan Policy SD-3.1, which is to promote the use of solar energy technology (City of Merced 1995). ▶ Determine which local electricity provider, Pacific Gas and Electric Company or Merced Irrigation District, produces electricity with the lowest CO₂-equivalent output emission rate (lb/MWh) and select this provider to meet remaining electricity demand of on-site operations. ▶ Retain the portion of the existing almond orchard located between the proposed truck gate and future Campus Parkway. For all almond trees that are subject to removal, participate in an urban and community forestry program (such as the UrbanWood program managed by the Urban Forest Ecosystems Institute [Urban Forest Ecosystems Institute 2007]) in which tree wood is harvested for an end-use that would retain its carbon sequestration (e.g., furniture building, cabinet making). For all nonharvestable almond trees that are subject to removal, develop an off-site tree program that includes a level of tree planting that, at a minimum, increases	

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Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		carbon sequestration by an amount equivalent to what would have been sequestered by the almond orchard during its lifetime. This program shall be funded by the applicant and reviewed for comment by an independent Certified Arborist unaffiliated with the Applicant. Final approval of the program shall be provided by the City. Components of the program may include, but not be limited to, providing urban tree canopy in the City of Merced, or reforestation in suitable areas outside the City. Upon its completion, the California Urban Forestry Greenhouse Gas Reporting Protocol shall be used to assess this mitigation program. At the time of writing this document, the Center for Urban Forest Research expects to complete the California Urban Forestry Greenhouse Gas Reporting Protocol with the California Climate Action Registry sometime in 2008 (Center for Urban Forest Research 2007). All unused vegetation and tree material shall be shipped to the nearest composting facility, or landfill that is equipped with a methane collection system, or biomass power plant. Tree and vegetative material should not be burned on or off-site unless used as fuel in a biomass power plant. ► The applicant shall inventory all emissions of GHGs associated with operation of the project according to the most recently established methodologies of the CCAR or ARB. This inventory shall include mobile-source GHG emissions associated with trips by Wal-mart trucks traveling to and from the distribution center, and on-site vehicles that are part of Wal-mart's vehicle fleet. At the time of writing this report the most recently established methodology is the California Climate Action Registry's General Reporting Protocol, Version 2.2 (CCAR 2007).	

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Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
4.3 Biological Resources			
4.3-1: Effects on Special-Status Plants. Implementation of the proposed project would result in loss of agricultural and ruderal habitats, which are unsuitable for special-status plants known to occur in the region. This impact would be less than significant.	LTS	No mitigation is required.	LTS
4.3-2: Effects on Special-Status Wildlife. Implementation of the proposed project would result in loss of approximately 150 acres of suitable foraging habitat for Swainson's hawk and could result in destruction and/or disturbance of occupied burrowing owl burrows. Other special-status wildlife species known to occur in the project vicinity are unlikely to occur on the project site and would not be affected by project implementation. This impact would be potentially significant.	PS	4.3-2: Implement Measures to Minimize Potential Project Effects on Swainson's Hawk and Burrowing Owl. To minimize potential project effects on Swainson's hawk and burrowing owl, the project applicant shall do the following: Swainson's Hawk ▶ Loss of Swainson's hawk foraging habitat shall be compensated for by preservation and management of foraging habitat of at least a similar quality at an appropriate off-site location. Specific measures to offset the loss of foraging habitat shall be developed in consultation with DFG pursuant to DFG's "Draft Non-regulatory Guidelines for Determining Appropriate Mitigation for Impacts to Swainson's Hawks (<i>Buteo swainsoni</i>)." ▶ Mitigation lands shall be either grassland or croplands (i.e., row crops or alfalfa) that provide suitable Swainson's hawk foraging habitat and shall be located within 10 miles of a known active nest site. In accordance with DFG mitigation guidelines (DFG 1994), habitat shall be provided at a ratio of 0.75 acre of mitigation land for each acre of foraging habitat that would be lost within 5 miles of, but greater than 1 mile from, the nearest active nest. ▶ Long-term protection of mitigation lands shall be ensured through fee title acquisition, conservation easement, or other suitable mechanisms. Long-term management of mitigation lands shall be ensured by establishing a management endowment or other suitable funding source.	LTS

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Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		Burrowing Owl ▶ The project applicant shall hire a qualified biologist to conduct preconstruction surveys for burrowing owl to determine whether burrowing owls occupy the site during the breeding and/or nesting season. The timing and methodology for the surveys shall be consistent with DFG and Burrowing Owl Consortium survey guidelines. Winter surveys shall be conducted on four separate days between December 1 and January 31. Nesting season surveys shall be conducted on four separate days between February 1 and August 31, with at least two of the survey days during the peak nesting season (April 15–July 15). ▶ If no burrowing owls are documented during the surveys, the site shall be regularly maintained in a manner that ensures owls do not occupy the site in the future (e.g., regular discing of open areas). No further mitigation shall be necessary. ▶ If burrowing owls are discovered on the project site, the project applicant shall immediately notify and coordinate with DFG regarding implementation of passive relocation methods to exclude the owls from the site prior to initiating construction activities. Exclusion shall be conducted through installation of one-way doors at the burrow entrances and subsequent destruction of the burrows to preclude re-occupation. Passive relocation may only be conducted during the non-nesting season (September 31–January 31). After relocation, the site shall be regularly monitored to confirm that burrowing owls have not re-occupied the site. If the site is re-occupied, exclusion measures shall be repeated, in coordination with DFG. ▶ In addition to exclusion of the owls from the site, the project applicant shall consult with DFG to provide appropriate compensation for loss of burrowing owl habitat. To offset the loss of foraging and burrow habitat on the project site, DFG recommends, in their 1995 Staff Report on Burrowing Owl Mitigation, a minimum of 6.5 acres of foraging habitat (calculated on a 100 meter {approximately 300 ft.} foraging	

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Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		radius around the burrow) per pair or unpaired resident bird, should be acquired and permanently protected. The protected lands should be adjacent to occupied burrowing owl habitat and at a location acceptable to the Department. Mitigation for loss of Swainson's hawk foraging habitat could, upon approval by DFG, be used concurrently to mitigate for the loss of burrowing owl habitat. ► Long-term protection of mitigation lands shall be ensured through fee title acquisition, conservation easement, or other suitable mechanisms. Long-term management of mitigation lands shall be ensured by establishing a management endowment or other suitable funding source.	
4.3-3: Effects on Sensitive Habitats. Implementation of the proposed project would result in loss of agricultural and ruderal habitats that are not considered sensitive by any biological resource agencies or conservation organizations. This impact would be less than significant.	LTS	No mitigation is required.	LTS
4.3-4: Effects of Wildlife Movement. Implementation of the project would not substantially interfere with wildlife movement or impede the use of wildlife nursery site. This impact would be less than significant.	LTS	No mitigation is required.	LTS
4.3-5: Consistency with Local Plans, Policies, and Ordinances. Implementation of the project could conflict or be inconsistent with the City of Merced General Plan. This impact would be significant.	S	4.3-5: Implement Measures to Minimize Conflict with the City's General Plan. Implementation of Mitigation Measure 4.3-2 would reduce the impact on consistency with the City's General Plan to a less-than-significant level.	LTS
4.3-6: Consistency with Adopted Habitat Conservation Plan, Natural Community Conservation Plan, or Other Approved Conservation Plan. Implementation of the project would not conflict with or be inconsistent with any conservation plans because no such plans apply to the project site. This impact would be considered less than significant.	LTS	No mitigation is required.	LTS

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4.4 Cultural Resources			
4.4-1: Destruction/Damage to As-Yet Undiscovered Cultural Resources. Subsurface disturbances could potentially destroy or damage of as-yet undiscovered prehistoric or historic cultural resources. If these resources were to represent “unique archaeological resources” or “historic resources” as defined by CEQA, a significant impact would occur.	S	4.4-1: Contact Cultural Resources Specialist for Potential Cultural Finds during Project-Related Ground-Disturbing Activities. If unrecorded cultural resources are encountered during project-related ground-disturbing activities, a qualified professional cultural resources specialist shall be contacted to assess the potential significance of the find. If an inadvertent discovery of cultural materials (e.g., unusual amounts of shell, animal bone, bottle glass, ceramics, structure/building remains) is made during project-related construction activities, ground disturbances in the area of the find will be halted and a qualified professional archaeologist will be notified regarding the discovery. The archaeologist shall determine whether the resource is potentially significant per the CRHR and develop appropriate mitigation. The preferred mitigation would be preservation in place. If that is not feasible, a mitigation plan would be prepared and implemented and could include, but not necessarily be limited to documentary research; subsurface testing; data recovery; the analysis of excavated materials; preparation of a technical report; and curation of the collection and supporting documentation at a qualified institution.	LTS
4.4-2: Potential to Uncover Human Remains. Subsurface disturbances could potentially uncover unmarked historic-era and prehistoric Native American burials. Any such disturbance would represent a significant impact.	S	4.4-2: Stop Potentially Damaging Work if Human Remains Are Uncovered during Construction, Assess the Significance of the Find, and Pursue Appropriate Management. In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, the contractor and/or the project proponent shall immediately halt potentially damaging excavation in the area of the burial and notify the Merced County Coroner and a professional archaeologist to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code Section 7050.5[b]). If the coroner determines that	LTS

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Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		the remains are those of a Native American, he or she must contact the Native American Heritage Commission (NAHC) by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). Following the coroner's findings, the property owner, contractor or project proponent, an archaeologist, and the NAHC-designated Most Likely Descendent (MLD) shall determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed. The responsibilities for acting on notification of a discovery of Native American human remains are identified in California PRC Section 5097.9. Implementation of Assembly Bill (AB) 2641 requires that the following procedures be implemented: Upon the discovery of Native American remains, the procedures above regarding involvement of the County Coroner, notification of the NAHC, and identification of a MLD shall be followed. The landowner shall ensure that the immediate vicinity (according to generally accepted cultural or archaeological standards and practices) is not damaged or disturbed by further development activity until consultation with the MLD has taken place. The MLD shall have 48 hours to complete a site inspection and make recommendations after being granted access to the site. A range of possible treatments for the remains, including nondestructive removal and analysis, preservation in place, relinquishment of the remains and associated items to the descendants, or other culturally appropriate treatment may be discussed. AB 2641 suggests that the concerned parties may extend discussions beyond the initial 48 hours to allow for the discovery of additional remains. AB 2641(e) includes a list of site protection measures and states that the landowner shall comply with one or more of the following: (1) Record the site with the NAHC or the appropriate Information Center (2) Utilize an open-space or conservation zoning designation or easement (3) Record a document with the county in which the property is located	

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4.5 Geology, Minerals, Soils, and Paleontological Resources			
4.5-1: Disturbance of Paleontological Resources during Earth-Moving Activities. Previously undiscovered paleontological resources could be present in sediments of the Modesto Formation that underlie the project site. Therefore, construction activities could potentially disturb unknown subsurface paleontological resources. Destruction of “significant” paleontological resources would be a potentially significant impact.	PS	4.5-1: Implement Construction Personnel Training and Recover Paleontological Resources if Encountered. To minimize potential adverse impacts on unique, scientifically important paleontological resources, the project applicant shall do the following: ▶ Before the start of grading or excavation activities, construction personnel involved with earth-moving activities shall be informed of the possibility of encountering fossils, the appearance and types of fossils likely to be seen during construction activities, and proper notification procedures should fossils be encountered. This worker training shall be prepared and presented by a qualified paleontologist or archaeologist. ▶ If paleontological resources are discovered during earth-moving activities, the construction crew shall immediately cease work in the vicinity of the find and shall notify the City planning department. The project applicant shall retain a qualified paleontologist to evaluate the resource and prepare a proposed mitigation plan in accordance with SVP guidelines (1995). The proposed mitigation plan may include a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations determined by the lead agency to be necessary and feasible shall be implemented before construction activities can resume at the site where the paleontological resources were discovered.	LTS

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Table 2-1 Summary of Impacts and Mitigation Measures			
Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
4.5-2: Risks to People and Structures from Surface Fault Rupture and Strong Seismic Ground Shaking. The project site is located in an area of low seismic activity and structures at the site would be designed in accordance with CBC standards. Therefore, this impact is considered less than significant.	LTS	No mitigation is required.	LTS
4.5-3: Risks to People and Structures from Seismically-Induced Liquefaction and/or Subsidence. While the project site is located in an area of low seismic activity, localized areas of the project site may pose a hazard related to liquefaction and/or subsidence if seismic activity were to occur. Therefore, this impact is considered potentially significant.	PS	4.5-3a: Prepare a Final Geotechnical Design Report and Implement All Applicable Recommendations. Before the approval of grading plans for all project phases, a final geotechnical subsurface investigation report shall be prepared by the project applicant(s) for the proposed development and shall be submitted to the City. The final geotechnical engineering report shall address and make recommendations on the following: ▶ site preparation; ▶ appropriate sources and types of fill; ▶ potential need for soil amendments; ▶ road, pavement, and parking areas; ▶ structural foundations, including retaining wall design; ▶ grading practices; ▶ erosion/winterization; ▶ expansive/unstable soils; and ▶ liquefaction. The geotechnical investigation shall include subsurface testing of soil and groundwater conditions and determine appropriate foundation designs that are consistent with the CBC. Recommendations contained in the geotechnical engineering report shall be noted on the grading plans and implemented as appropriate before the issuance of building permits. Design and construction of all new development in all phases of the project shall be in accordance with the CBC. It is the responsibility of the project applicant(s) to provide for engineering inspection and certification that earthwork has been performed in conformity with recommendations contained in the report.	LTS

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Table 2-1 Summary of Impacts and Mitigation Measures			
Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		4.5-3b: Provide On-Site Construction Monitoring by a Geotechnical Engineer. All earthwork shall be monitored by a geotechnical engineer retained by the project applicant(s). The geotechnical engineer shall provide oversight during all excavation, placement of fill, and disposal of materials removed from and deposited on the subject site and other sites. Before export/import of any soil to/from an off-site location, the project applicant(s) shall obtain a grading permit from the City Inspection Services Division.	
4.5-4: Potential Temporary, Short-Term Construction-Related Erosion. Construction activities during project implementation would involve grading and movement of earth, which could expose soils to erosion and result in the loss of topsoil. This impact is considered potentially significant .	PS	4.5-4: Prepare and Implement a Grading and Erosion Control Plan. A grading and erosion control plan shall be prepared by a California Registered Civil Engineer retained by the project applicant(s) for all project phases. The grading and erosion control plan shall be submitted to the City Inspection Services Division before issuance of grading permits for all new development within the project site. The plan shall be consistent with Appendix Chapter A33 of the CBC as well as the City's National Pollutant Discharge Elimination System (NPDES) permit and shall include the site-specific grading associated with development for all project phases. The plan shall include the location, implementation schedule, and maintenance schedule of all erosion and sediment control measures, a description of measures designed to control dust and stabilize the construction-site road and entrance, and a description of the location and methods of storage and disposal of construction materials. Erosion and sediment control measures could include the use of detention basins, berms, swales, wattles, and silt fencing. Stabilization of construction entrances to minimize trackout (control dust) is commonly achieved by installing filter fabric and crushed rock to a depth of approximately 1 foot. The project applicant(s) shall ensure that the construction contractor is responsible for securing a source of transportation and deposition of excavated materials. Implement Mitigation Measures 4.5-4 and 4.6-1a.	LTS

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Table 2-1 Summary of Impacts and Mitigation Measures			
Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
4.5-5: Potential Damage to Structures from Construction on Expansive Soils. Portions of the project site are underlain by soils that have a moderate to high potential for expansion when wet. Construction in these soils may result in foundation movements that could cause damage to overlying structures. This impact is considered significant .	S	4.5-5: Implement Mitigation Measures 4.5-3a and 4.5-3b.	LTS
4.6 Hydrology and Water Quality			
4.6-1: Short-Term Degradation of Water Quality from Project-Related Construction Activities. Construction disturbances associated with the proposed project would create the potential for soil erosion and sedimentation of stormwater drainage systems and runoff to the Merced Irrigation District Doane Lateral Canal west of the proposed project site. The construction process may also involve the potential for releases of other pollutants to surface waters and/or the future storm drain system, including oil and gas, chemical substances used in the construction process, accidental discharges, waste concrete and wash water. This impact is considered potentially significant.	PS	4.6-1a.Acquire Appropriate Regulatory Permits and Implement SWPPP and BMPs. Before the approval of grading permits and improvement plans, the project applicant for all project phases shall consult with the City of Merced, the SWRCB, and the Central Valley RWQCB to acquire the appropriate regulatory approvals that may be necessary to obtain a SWRCB statewide NPDES stormwater permit for general construction activity, and any other necessary site-specific Waste Discharge Requirements WDRs or waivers under the Porter-Cologne Act. The project applicant shall prepare and submit the appropriate Notice of Intent (NOIs) and prepare the SWPPP and any other necessary engineering plans and specifications for pollution prevention and control. After completion of construction and issuance of a Notice of Completion by the City of Merced, the project applicant shall prepare and submit the appropriate Notice of Termination (NOT) of the NOI. The SWPPP and best management practices (BMPs) therein shall identify and specify: ▶ the use of erosion and sediment-control BMPs, including construction techniques that will reduce the potential for runoff as well as other measures to be implemented during construction. These may include but not be limited to sedimentation ponds, inlet protection, perforated riser pipes, check dams and silt fences; ▶ the means of waste disposal; ▶ the implementation of approved local plans, nonstormwater-management controls, permanent postconstruction BMPs, and	LTS

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**Table 2-1
Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		inspection and maintenance responsibilities; ▶ the pollutants that are likely to be used during construction that could be present in stormwater drainage and nonstormwater discharges, and other types of materials used for equipment operation; ▶ spill prevention and contingency measures, including measures to prevent or clean up spills of hazardous waste and of hazardous materials used for equipment operation, and emergency procedures for responding to spills; ▶ personnel training requirements and procedures that will be used to ensure that workers are aware of permit requirements and proper installation methods for BMPs specified in the SWPPP; and ▶ the appropriate personnel responsible for supervisory duties related to implementation of the SWPPP. Where applicable, BMPs identified in the SWPPP shall be in place throughout all site work and construction and shall be used in all subsequent site development activities. BMPs shall include the following measures: ▶ Implementing temporary erosion-control measures in disturbed areas to minimize discharge of sediment into nearby drainage conveyances. These measures may include silt fences, staked straw bales or wattles, sediment/silt basins and traps, geofabric, sandbag dikes, and temporary vegetation. ▶ Establishing permanent vegetative cover to reduce erosion in areas disturbed by construction by slowing runoff velocities, trapping sediment, and enhancing filtration and transpiration. ▶ Using drainage swales, ditches, and earth dikes to control erosion and runoff by conveying surface runoff down sloping land, intercepting and diverting runoff to a watercourse or channel, preventing sheet flow over sloped surfaces, preventing runoff accumulation at the base of a grade, and avoiding flood damage along roadways and facility infrastructure.	

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**Table 2-1
Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		All construction contractors shall retain a copy of the approved SWPPP on the construction site. Implementation of Mitigation Measure 4.6-1a would reduce the potentially significant impact of water quality degradation from project-related construction activities to a less-than-significant level because the project applicant would conform to applicable local and state regulations regulating construction discharges and successfully implement the SWPPP. However, Mitigation Measure 4.6-1b, discussed below, is necessary to assure that the measures put in place by Mitigation Measure 4.6-1a are properly maintained during the life of the project. 4.6-1b: Establish a Maintenance Entity for BMPs. The project applicant shall establish a maintenance district, Community Facilities District (CFD), or other maintenance entity acceptable to the City of Merced and the MID, prior to recordation of any Final Maps, to provide funding for the operation, maintenance, and replacement costs of the stormwater BMPs. The maintenance entity shall insure that stormwater runoff shall meet all state and local water quality requirements, through modification of BMPs or stormwater pretreatment measures if required.	
4.6-2: Long-Term Degradation of Surface Water Quality from Project-Related Contaminants. The conversion of undeveloped land to urban land uses would alter the types, quantities, and timing of contaminant discharges in stormwater runoff. Overall, the potential for the proposed project to cause or contribute to long-term discharges of urban contaminants (e.g., oil and grease, trace metals and organics, trash) into the stormwater drainage system would increase compared to existing conditions. This impact is considered potentially significant.	PS	4.6-2. Develop and Implement a BMP and Water Quality Maintenance and Monitoring Plan. Design standards for water quality treatment are being formulated that would meet or exceed City of Merced Storm Drain Master Plan and Standard Design requirements. The design standards, when completed, will incorporate the adopted City of Merced Master Storm Drain Plan and Design guidance (City of Merced 2002): Excavated Open Channels – 60-foot right-of-way open channels would convey runoff through areas where the estimated peak flow rates from a watershed exceed the capacity of a 66-foot storm drain. These open channels would include landscaping and bike paths for recreational opportunities. They shall be turfed or otherwise protected to	LTS

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**Table 2-1
Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		prevent erosion. A minimum of 1 foot of freeboard shall be maintained above the design 10-year water surface elevation to the top of the banks. One side of the channel shall provide for all weather maintenance unless the channel is adjacent to a public road. ► Storm Drains – Underground storm drain pipelines would be utilized. Storm drain trunk lines would be sized to convey the 10-year discharges operating under uniform flow conditions, and shall be located in public streets. ► Stormwater Detention Facilities – The two stormwater detention basins, one draining the north portion of the proposed project site and the other draining the south portion, have been designed to accommodate runoff generated during a 50-year 24-hour storm event under General Plan buildout conditions, with the rate of outflow being limited to the discharge generated by the watershed during a 2-year storm event under existing conditions. Detention basins have been conceptually designed with a maximum depth of 5 feet below ground surface due to the relatively shallow depth to groundwater in some of the areas surrounding the proposed Project. One foot of freeboard from the 50-year 24-hour storm to the top of the basin has also been included in the conceptual design. ► Pump Stations – Due to the relative flatness of the proposed Project terrain, pump stations would be used to augment the gravity flow draining of the detention basins. The pumps have been conceptually designed to handle the 2-year discharge flow from the basins. Facilities would consist of a low flow pump, a high flow pump, and a backup pump. The stormwater treatment system would reduce the increased amount of stormwater runoff and associated erosion created by the proposed project site. The runoff would be collected by overland flow and an underground storm sewer system into detention ponds to control the quantity of runoff exiting the site. The quality of runoff would be controlled by sedimentation ponds, biological	

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Table 2-1
Summary of Impacts and Mitigation Measures

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		treatment of the water by vegetation, infiltration of the water into the ground and a skimmer plate to skim floatable objects from the water surface. Implementation of these mitigation measures would reduce impacts to a less-than-significant level. Design Criteria and Methodology To design a treatment system that meets or exceeds the City and MID guidelines and standards for stormwater quantity and quality that must be met or exceeded, the site was analyzed to determine the peak discharge rates for the predeveloped and developed conditions under various storm event scenarios (Carter-Burgess 2007). The City requires the detention ponds to be designed (1) to store water deposited on site by the so-called 50-year storm and (2) to control the allowable discharge from developed conditions so as not to exceed the 2-year predeveloped discharge (City of Merced 2002). The City also has a requirement that the ponds be dry in 48 hours, if the maximum discharge rate will allow it. The MID requires that the allowable discharge from developed conditions not exceed the 10-year storm. However, the MID requested that the maximum allowable discharge be 2,200 gpm (gallons per minute), which is less than both the 10-year storm and the 2-year predeveloped discharge rates. The MID maximum allowable rate of 2,200 gpm, lower than the City's discharge rate of 8,960 gpm, was agreed on by the City and MID (Carter-Burgess 2007). The 24-hour rainfall values were selected from NMFS Atlas 14, Volume I by the National Oceanic and Atmosphere Administration. Time of concentration values were computed based on the methods in the Soil Conservation Service Technical Report Manual SCS TR-55, widely used for calculating stormwater runoff in small urban watersheds (USDA 1986). The detention ponds were size based on volume required to hold the stormwater runoff from a 100-year storm event. The computer program Interconnected Pond Routing by Streamline Technologies, Inc., a FEMA approved stormwater modeling system, was utilized to rout the various storms through the detention ponds and the pump station. The 2-year, 10-year, 25-year, 50-year and 100-year 24-	

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Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		Hour Storms were used in the analysis to size the stormwater conveyances such that they would handle the water volumes of all of those stormwater volumes. Pre- and Postdevelopment Conditions The site is currently used as farmland, with cultivation of alfalfa and almonds being the primary crops. Site topography indicates that the site slopes from northeast to southwest, with elevations ranging from approximately 195 feet msl near the northeast corner to approximately 187 feet msl at the southwest corner. Stormwater runoff from the site currently ponds in a low lying area near the southwest corner of the site and eventually spills over to a roadside ditch running to the west along the north side of Gerard Avenue. The development of the approximately 235 acre site would create approximately 110 acres of impervious surface area. To offset the additional impervious area, a series of detention ponds would be constructed around the perimeter of the site area to store stormwater runoff (Exhibit 4.6-2). The detention ponds would be utilized to control the quantity and quality of runoff. The retention time of the stormwater in the ponds would allow additional stormwater infiltration into the soil (Infiltration rates are described in Mitigation measure 4.6-4). As determined by MID based on their review of the proposed Project Preliminary Site Drainage Analysis (Carter-Burgess 2007), stormwater would be pumped from the detention ponds into a connection to an existing irrigation canal. The preferred pump location is shown on Exhibit 4.6-2. The preferred project canal to receive the stormwater runoff would be MID Fairfield Canal (Exhibit 4.6-3). This is the canal preferred by the MID as well based on their review of the proposed Project Preliminary Site Drainage Analysis (Carter-Burgess, 2007). To discharge in to this canal, a pump station would be located near the northeast corner of the development. Stormwater would be pumped in a closed system within the property owned by Wal-Mart, City right-of-way and MID easement/property to Fairfield Canal. In the event the Fairfield Canal could not be utilized, the alternative canal to receive the flow would be the Farmdale Lateral (Exhibit 4.6-4).	

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**Table 2-1
Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		To reach the Farmdale Lateral, a pump station would be located near the southwest corner of the development (Exhibit 4.6-5). Stormwater would be pumped in a closed system within the property owned by Wal-Mart, City right-of-way or easement and MID easement/property to the Farmdale Lateral. The detention ponds and the drainage channels would be grassed-lined to help filter stormwater runoff. In addition all of the ponds would be interconnected to each other and a discharge pipe would connect the detention ponds to the wet well basin of the pump station. The inlet side of this discharge pipe would have a skimmer plate on it to prevent floating contaminants from entering the wet well basin and leaving the site. Using the maximum discharge rate of 2,200 gpm as required by the MID, the ponds could not be drained within 48 hours for the 10-year storm, as required by the City. Therefore the City would agree to allow longer drawdown duration time for the system. The drawdown durations for the 10-year, 25-year, 50-year and 100-year would be approximately 72 hours, 88 hours, 95 hours and 108 hours, respectively. These drawdown times assume that once the pumps start pumping they would operate continuously; however, the pumps would be controlled by MID. If MID determined that downstream conditions warranted the discharge from the proposed project site be discontinued, then MID would have the ability to shut the pumps down to discontinue the discharge. This would then increase the duration stormwater would remain in the ponds and the additional volume that could infiltrate into the soil. The 10-year, 24-Hour storm runoff volume for the entire 235 acre site for predeveloped conditions is 10.7 af and for developed conditions is 26.2 af. Permanent water quality improvement BMPs may include but not be limited to unlined detention ponds for filtration, biological treatment of runoff over vegetation, skimmer plates on discharge structures and sedimentation basins. The expected pollutant removal success rates listed in Table 4.6-1 suggest that multiple BMPs, when properly installed and maintained, can achieve nearly 100% sediment removal. Multiple temporary construction and	

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Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		permanent BMPs would therefore be used in combination to achieve this result. Although 100% contaminant removal is often infeasible, BMPs would be selected and designed with the objective of achieving maximum contaminant removal, using the best available technology that is economically feasible, and explicitly identifying the expected level of BMP effectiveness in removing contaminants. In summary, the stormwater management design for the proposed project would consist of the following measures to safely convey on-site and off-site flows through the project site, and prevent increased flood hazard on downstream areas by limiting peak discharges to below pre-project levels. ▶ Stormwater would be captured and conveyed in a closed system within the property owned by Wal-Mart, City right-of-way and MID easement/property ▶ Detention ponds in the system would be sized based on volume required to hold the stormwater runoff from a 100-year storm event ▶ Stormwater would be conveyed to Fairfield Canal (preferred) or Farmdale Lateral (alternative) ▶ Discharge would be limited to 2,200 gpm for all storm events. The finish floor elevation of each structure on the site would be at least 2 feet above the existing ground elevation at the location of the structure, pursuant to City requirements for development within Zone A. The proposed project would meet or exceed City requirements for development within Zone A, and the stormwater management system would safely convey runoff from the 100-year storm.	
4.6-3: On-Site and Off-Site Flooding Hazards from Increased Stormwater Runoff. The proposed project would alter the ground surface and drainage patterns of the majority of the site, creating approximately 110 acres of impervious surface area. This impact is considered potentially significant.	PS	Implementation of Mitigation Measure 4.6-2.	LTS

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**Table 2-1
Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
4.6-4: Depletion of Groundwater Supplies or Substantial Interference with Groundwater Recharge. The impervious surface area resulting from the proposed project has the potential to interfere with groundwater recharge compared to existing conditions. However, the existing groundwater recharge potential of the site is low due low permeability soil characteristics, and the existing agricultural uses utilize groundwater at a rate greater than that which would be lost to recharge via impermeable surfaces. Therefore this impact is less than significant.	LTS	No mitigation is required.	LTS
4.6-5: Proposed Project Structures within the 100-year Flood Zone Could Impede or Redirect Flood Flows. Portions of the proposed project are within the 100-year flood zone. However, the project stormwater management system, and compliance with City requirements regarding placement of structures in the flood zone, makes this impact less than significant.	LTS	No mitigation is required.	LTS
4.6-6: Wells Not Properly Decommissioned Could Directly Transport Effluent Irrigation Water to the Groundwater Aquifer. The irrigation well on the northeastern portion of the proposed project site has a potential for negative impacts to the site if not removed or filled in a proper manner. The well would be decommissioned pursuant to applicable State and City requirements. Therefore, this impact is less than significant.	LTS	No mitigation is required.	LTS
4.6-7: Potential Exposure to 200-Year Flood Prior to Implementation of SB 5. The project site is located within an area that will require 200-year flood protection as required by SB5, as described in Section 1.2 “Regulatory Setting” above. The potential exists for exposure of the proposed project to the 200-year flood. Therefore this impact is potentially significant.	PS	4.6-6: Comply with SB 5 Criteria Establishing 200-Year Urban Flood Protection. Prior to submittal to the City of development agreements, tentative maps or rezones after 2015, but potentially sooner depending on when the Central Valley Flood Protection Plan takes effect, the project applicant would be required to show that one of three conditions would be met: ▶ flood management facilities provide level of protection necessary to withstand 200-year flood event; ▶ the development agreement or other entitlements include conditions that provide protections necessary to withstand	

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Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation	
		200-year flood event; or the local flood management agency has made adequate progress on construction of a flood protection system that will result in protections necessary to withstand 200-year flood event by 2025.		
4.7 Land Use				
4.7-1: Effects on Adjacent Land Uses/Division of an Established Community. The project site would be located in a planned buildout area and would not divide an established community. This would be a less-than-significant impact.	LTS	No mitigation is required.		LTS
4.7-2: Effects on State and Local Plans and Policies. The proposed project is in compliance with all state and local plans and policies and would result in a less-than-significant impact.	LTS	No mitigation is required.		LTS
4.7-3: Effects on Habitat Conservation Plans. The proposed project site is not located in any habitat conservation plan area and would therefore have a no impact.	NI	No mitigation is required.		LTS
4.8 Noise				
4.8-1: Short-Term Construction Noise. Short-term construction-generated noise levels could exceed local exterior noise standards for non-transportation noise sources (Table 4.8-6) or result in a noticeable increase in ambient noise levels (i.e., 3 dBA CNEL) at existing nearby off-site sensitive land uses. This would be a significant impact.	S	4.8-1: Regulate Construction before Approval of Implementation Plans. Prior to approval of Implementation Plans and subsequent projects, the City shall require the applicant to regulate construction as follows: - Construction shall occur only in the daytime hours between 7 a.m. to 6 p.m., daily. - Construction staging areas shall be set back from nearby off-site sensitive receptors, as much as possible, including the new Crossing at River Oaks/Sandcastle housing development located west of the site, the existing farmhouse located across Gerard Avenue near the southwest corner of the site, and the		LTS

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Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		existing farmhouse located east of the site across Tower Road. ▶ Construction equipment mufflers shall be well tuned and maintained according to the manufacturer's specifications, and the equipment's standard noise reduction devices shall be maintained in good working order. ▶ Construction equipment noise shall be minimized during project construction by muffling and shielding intakes and exhaust on construction equipment (according to the manufacturers' specifications) and by shrouding or shielding impact tools. All equipment shall have sound-control devices no less effective than those provided by the manufacturer. ▶ To further address the nuisance impact of project construction, construction contractors shall implement the following: • Signs shall be posted at the construction site that include permitted construction days and hours, a day and evening contact number for the job site, and a day and evening contact number for the City in the event of problems. • An on-site complaint and enforcement manager shall be posted to respond to and track complaints and questions related to noise. ▶ The transportation management plan that is required by Mitigation Measure 4.11-2a and 2b in Section 4.11, "Traffic and Transportation," shall route construction-related traffic away from Weaver Elementary School, Pioneer Elementary School, and residences in the area.	
4.8-2: Stationary- and Area-Source Noise. Noise levels generated by stationary- and area-noise sources on the project site would not exceed local land use compatibility noise level standards at existing nearby noise-sensitive land uses. This would be a less-than-significant impact of the proposed project.	LTS	No mitigation is required.	LTS

**Table 2-1
Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
4.8-3: Long-Term Operational Traffic Noise. Implementation of the proposed project would result in increases in traffic noise levels greater than 3 dBA and cause traffic noise levels to exceed the City's 60 dBA Ldn exterior noise standard at sensitive receptors within the city limits. This would be a significant impact.	S	4.8-3: Implement Measures to Reduce Exposure to Traffic Noise from Project. The project applicant shall implement the following measures to reduce the exposure of existing sensitive receptors to project-generated traffic noise levels: ▶ The applicant shall offer the owners of the two affected residences on the east side of Tower Road between SR 140 and Gerard Avenue and the single residence located on the south side of Gerard Avenue between Campus Parkway and the project site entrances the installation of a sound barrier along the property line of their affected residential properties. The sound barriers must be constructed of solid material (e.g., wood, brick, adobe, an earthen berm, or combination thereof). All barriers shall blend into the overall landscape and have an aesthetically pleasing appearance that agrees with the color and rural character of the houses and the general area, and not become the dominant visual element of the community. Relocation of the driveway at each residence may be necessary in order to preclude having gaps in the sound barrier. Relocation of landscaping may also be necessary to achieve an aesthetically pleasing appearance. The owners of the affected properties may choose to refuse this offer; however, the offer shall be made available to subsequent owners of the property. If an existing owner refuses these measures a deed notice must be included with any future sale of the property to comply with California state real estate law, which requires that sellers of real property disclose "any fact materially affecting the value and desirability of the property" (California Civil Code, Section 1102.1[a]) and shall indicate that the applicant agrees to install a sound barrier, as described above.. The applicant shall be responsible for all costs incurred by the implementation of this mitigation measure. ▶ To ensure compliance with applicable noise standards, a site-specific noise study shall be conducted by the City or its approved consultant to determine specific noise barrier design.	SU

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Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		The applicant shall be responsible for all costs incurred by the implementation of this mitigation measure. ▶ The cost to fully implement this mitigation measure, including related studies, and design and installation shall be completely funded by the applicant. ▶ The applicant shall maintain its truck fleet in proper working condition, including truck mufflers and exhaust systems, according to manufacturers' specifications.	
4.8-4: Intermittent Single-Event Noise from Trucks Passing Off-Site Sensitive Receptors. Intermittent Single-Event Noise Level increases from Trucks Passing Off-Site Sensitive Receptors would result in a significant impact.	S	Implement Mitigation Measure 4.8-3.	LTS
4.8-5: Exposure of Sensitive Receptors or Generation of Excessive Vibration Levels. Short-term construction-generated vibration levels and truck vibration levels during long-term operations would not exceed Caltrans's recommended standard of 0.2 in/sec PPV with respect to the prevention of structural damage for normal buildings or FTA's maximum acceptable vibration standard of 80 VdB regarding human response for residential uses (i.e., annoyance) at nearby existing residential dwellings. This impact would be less than significant.	LTS	No mitigation is required.	LTS
4.8-6: Land Use Compatibility of Proposed Project with On-Site Noise Levels. As a light industrial land use, the proposed project would not be considered a noise sensitive receptor and existing and future projected noise levels are not expected to exceed the City's "normally acceptable" noise standard of 75 L _{dn} for industrial land uses. Therefore, exposure of proposed facility to noise generated at surrounding land uses would be a less-than-significant impact.	LTS	No mitigation is required.	LTS

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Table 2-1 Summary of Impacts and Mitigation Measures			
Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
4.9 Population and Housing			
4.9-1: Potential for Directly or Indirectly Inducing Substantial Unplanned Population Growth in an Area. Development of the proposed project would not directly or indirectly induce population growth, but is expected to induce retail service development near the site. The potential impact is less than significant	LTS	No mitigation is required.	LTS
4.9-2: Potential to Displace People or Housing, Necessitating Construction Elsewhere. The project site is undeveloped. There is no housing or population that would be displaced by the proposed construction. There is no impact.	NI	No mitigation is required.	LTS
4.10 Public Health and Hazards			
4.10-1: Create a Safety Hazard to Construction Workers and the General Public from Potential Release of Unknown or Previously Undiscovered Hazardous Materials during Construction. No “recognized environmental concerns” (RECs) have been identified to date on the project site. However, excavation and construction activities in the area could result in the exposure of construction workers and the general public to hazardous materials, including petroleum hydrocarbons, pesticides, herbicides, and fertilizers; contaminated debris; elevated levels of chemicals that could be hazardous; or hazardous substances that could be inadvertently spilled or otherwise spread. In addition, if contaminated sites in the area are not remediated before use of the site, then residents and others could be exposed to hazardous materials. This impact would be significant.	S	Mitigation Measure 4.10-1: Remediate Unknown or Previously Undiscovered On-Site Hazardous Materials. If, during site preparation and construction activities, previously undiscovered or unknown evidence of hazardous materials contamination is observed or suspected through either obvious or implied indicators (i.e., stained or odorous soil), construction activities shall immediately cease in the area of the find. MCDEH and the City of Merced Environmental Health Division staff shall be immediately consulted, and the project applicant shall contract with a qualified consultant registered in DTSC’s Registered Environmental Assessor Program to assess the extent to which soil and/or groundwater has been adversely affected by past activities. This investigation shall follow DTSC guidelines and shall include, as necessary, analysis of soil and/or groundwater samples taken at or near the potential contamination sites. If necessary, risk assessments shall include a DTSC Preliminary Endangerment Assessment or no further action determination, or equivalent. Any required remediation shall include a DTSC Remedial Action Work Plan or equivalent. The site shall be remediated in accordance with recommendations made by a qualified environmental consultant registered in DTSC’s	LTS

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Table 2-1 Summary of Impacts and Mitigation Measures			
Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		Registered Environmental Assessor Program; MCDEH; the City of Merced Environmental Health Division staff; Central Valley RWQCB; DTSC; or other appropriate federal, state, or local regulatory agencies as generally described above. The agencies involved would be dependent on the type and extent of contamination. Site preparation and construction activities shall not proceed until remediation is completed to the satisfaction of MCDEH and the City of Merced Environmental Health Division.	
4.10-2: Create a Significant Hazard to Construction Workers and the General Public through the Use of Hazardous Materials during Construction of the Project. The proposed project would involve the storage, use, and transport of hazardous materials at the project site during construction activities. Compliance with federal, state, and local hazardous materials regulations, which would be monitored by the state and/or local jurisdictions, would reduce impacts associated with the use, transport, and storage of hazardous materials during construction. Therefore, impacts related to creation of significant hazards to the public or the environment would be less than significant.	LTS	No mitigation is required.	LTS
4.10-3: Create a Significant Hazard to the General Public through the Routine Use of Hazardous Materials during Operation of the Project. The proposed project would use many materials, some of which are considered hazardous, during the course of its daily operations. Compliance with federal, state, and local hazardous materials regulations, which would be monitored by the state and/or local jurisdictions, would reduce impacts associated with the use, transport, and storage of hazardous materials during operation of the project. Therefore, impacts related to creation of significant hazards to the public or the environment would be less than significant.	LTS	No mitigation is required.	LTS
4.10-4: Create a Significant Hazard through the Transport of Hazardous Materials Adjacent to Schools in the Vicinity of the Project. The proposed project would require transportation of materials, some of which are considered hazardous, during	S	Implementation of Mitigation Measure 4.11-2b.	LTS

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**Table 2-1
Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
construction of the proposed project and through the course of its daily operations. Based on the designated truck routes to and from the project site (see Section 4.11, Traffic and Transportation), no tractor trailer traffic is expected to travel past any of these schools; however, there is a potential for trucks to stray from their expected routes occasionally and pass by these schools. Therefore, impacts related to creation of significant hazards to students would be significant.			
4.10-5: Exposure to Electromagnetic Fields. The proposed project would be in close proximity to electrical transmission lines on the project site and would potentially result in health hazards associated with exposure to EMFs emitted from these lines. Because the proposed warehouse building and associated uses would be constructed approximately 400 feet from these transmission lines, the exposure to EMFs would be minimal and the proposed location of on-site facilities would be adequate to reduce potential hazards associated with electromagnetic fields. This impact would be less than significant .	LTS	No mitigation is required.	LTS
4.10-6: Exposure of People or Structures to Wildfire Fires. The project site is not located in a designated wildland fire area, a High Fire Hazard Severity Zone, or a SRA area. Therefore, the project would not expose people or structures to significant risk of loss of injury involving wildland fires. This impact would be less than significant.	LTS	No mitigation is required.	LTS
4.11 Traffic and Transportation			
4.11-1: Effects on Level of Service. Implementation of the project would not cause study intersections and roadway segments to exceed level of service standards. For intersections and roadway segments that already exceed level of service standards, the project would not contribute more than 5% of the total volume. This impact is considered less than significant.	LTS	No mitigation is required.	LTS

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**Table 2-1
Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
4.11-2: Design Feature Hazards, Vehicle Stacking, and Parking Capacity. Implementation of the project would include truck traffic using roadways in the project vicinity, tractor trailer trucks that could potentially park in the project vicinity, and truck operations on streets where school buses operate. The impact is potentially significant.	PS	4.11-2a: Accommodate All Delivery Truck Parking On-Site. The project design shall incorporate a designated on-site waiting area within the site between Gerard Road and the truck gate that is located further within the site. This area shall be large enough to accommodate at least 20 inbound delivery trucks. It is recommended that the access roadway be designed to have a temporary parking area located between Gerard Avenue and the truck entrance gate. The parking area shall be paved and marked as a designated waiting area for delivery trucks, and shall not impede access to the site. The holding area(s) shall be located in the interior of the project site and be more than 1,000 feet from all off-site residences, which is a distance threshold identified in the Noise Analysis of this EIR. If the waiting area(s) are located closer than 1,000 feet to off-site residences then sound barrier(s) shall be implemented into the design to ensure that on-site truck idling would not result in an exceedence of the nighttime standard of 45 A-weighted decibels energy-equivalent noise level established by the Merced General Plan (Table N-5). Wal-Mart shall instruct all delivery truck drivers not to park, stand, wait, or stay overnight along local roadways. In order to minimize noise and vehicle emissions, idling in the waiting area shall be limited by Wal-Mart to 5 minutes, as required by 13 CCR Chapter 10, Section 2485. 4.11-2b: Manage Truck Traffic on Local Streets. To reduce hazards on local roadways associated with truck traffic during <i>construction operations</i>, Wal-Mart Stores East LP shall ensure that its primary construction contractor implements the following measures: Develop and implement a construction truck traffic safety plan in coordination with the City of Merced, County of Merced, and Caltrans. The construction contractor shall develop a plan for traffic safety assurance for the County roadways in the project vicinity. The contractor shall submit the plan to the City Development Services Department for approval before the initiation of construction-related activity	LTS

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Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		that could adversely affect traffic on City, County, and State roadways. The plan(s) may call for the following elements, based on the requirements of each agency: ▶ posting warnings about the potential presence of slow-moving construction vehicles; ▶ using traffic control personnel when appropriate; ▶ scheduling truck trips outside of peak morning and evening traffic periods to the extent feasible; ▶ placing and maintaining barriers and installing traffic control devices necessary for safety, as specified in Caltrans's <i>Manual of Traffic Controls for Construction and Maintenance Works Zones</i> and in accordance with City and County requirements; and ▶ maintaining routes for passage of emergency response vehicles through roadways affected by construction activities. The contractor shall train construction personnel in appropriate safety measures as described in the plan(s), and shall implement the adopted plan(s). b. <i>Minimize the accumulation of mud and dirt on local roadways.</i> All operations shall limit or expeditiously remove the accumulation of project-generated mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring. The construction contractor shall sweep the paved roadways (water sweeper with reclaimed water recommended) at the end of each day if substantial volumes of soil material have been carried onto adjacent paved, public roads from the project sites. To reduce hazards on local roadways associated with truck traffic during <i>ongoing operations</i>, Wal-Mart Stores East LP shall ensure implement the following measures: c. <i>Develop and implement a truck route plan.</i> Tractor trailers approaching and departing from the distribution center shall be limited to the following roadways from SR 99 and SR 140:	

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Table 2-1 Summary of Impacts and Mitigation Measures			
Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		Campus Parkway, Mission Avenue west of Campus Parkway, Gerard Avenue east of Campus Parkway, and Tower Road. Wal-Mart shall regularly and routinely instruct its employees, contract truck drivers, and vendors of these roadway limitations.	
4.11-3: Emergency Access Impacts. The project shows two access points to the site, both along Gerard Avenue. Emergency service providers may require additional access to a site this large with the operations as proposed. The impact is potentially significant.	PS	4.11-3: Provide Emergency Access Gate and Driveway. The project applicant shall modify the site plan to show a third point of ingress and egress on Childs Avenue that is gated and available only for emergency purposes. The emergency access driveway on-site shall be of a width and design acceptable to the City and shall provide unimpeded access to all structures on the site.	LTS
4.11-4: Construction Traffic and Parking. Implementation of the project would involve use of roadways in the vicinity of the project by construction employees and for moving construction equipment on- and off-site. While roadways in the vicinity are capable of accommodating construction traffic and streets abutting the site are capable of accommodating construction worker vehicles, construction vehicles entering and leaving the site could create impacts on local roadways. The impact is a potentially-significant.	PS	Mitigation Measure 4.11-2b will ensure that impacts are reduced to a less-than-significant level.	LTS
4.11-5: Transit, Pedestrian, and Bicycle Impacts. The project could increase demand for public transit in the project site vicinity and affect existing and future pedestrian and bicycle access in the project vicinity. The impact is potentially significant.	PS	4.11-4: Update Safe Routes to School Plan. The City shall ensure that the Safe Routes to School Plans are appropriately updated such that school bus and pedestrian routes in the vicinity of the Wal-Mart are revised as appropriate to avoid potential conflicts taking into account the project's potential increase in truck traffic and potential truck routes.	LTS
4.12 Utilities and Public Services			
4.12-1: Increased Demand for Water Supply and Distribution. Implementation of the proposed project would increase demand on the existing water supply and water distribution systems. Existing water supply and distribution facilities would be adequate to serve	LTS	No mitigation is required.	LTS

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Table 2-1 Summary of Impacts and Mitigation Measures			
Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
the project. Therefore, this impact is considered less than significant.			
4.12-2: Demand for Wastewater Treatment and Conveyance Facilities. Implementation of the proposed project would increase demand for wastewater treatment and conveyance facilities. Existing wastewater treatment facilities and the City's wastewater conveyance facilities would be adequate to serve the project. This impact would be less than significant.	LTS	No mitigation is required.	LTS
4.12-3: Increased Generation of Solid Waste. The proposed project would incrementally increase the amount of solid waste generated in the City. Because the Highway 59 Landfill has sufficient permitted capacity to accommodate the project's solid waste disposal needs and because the project would also comply with all federal, state, and local statutes and regulations and the Merced Municipal Code related to solid waste reduction and recycling, this impact would be a less than significant.	LTS	No mitigation is required.	LTS
4.12-4: Increased Demand for Electricity and Required Extension of Electrical Infrastructure. Implementation of the proposed project would increase demand for electricity and electrical infrastructure. PG&E or MID would be able to provide electricity to the project site, and the increase in demand for electricity would not be substantial in relation to the existing electricity consumption in PG&E's or MID's service area. The City of Merced has identified the need to reduce energy demands in new development, and the proposed project would be required to include energy efficiency measures in project designs; therefore, this impact would be potentially significant.	PS	4.12-4: Incorporated Energy Efficiency Features into Project Designs The project applicant shall prepare and submit to the City a sustainability plan, which shall incorporate the following energy efficiency features in project designs: ▶ providing electric maintenance equipment; ▶ using solar, low-emissions, or central water heaters; ▶ increasing building insulation beyond Title 24 requirements; ▶ orienting buildings to take advantage of solar heating and natural cooling; ▶ limiting the amount of glass on the south and west facades and providing solar protection for south-facing walls through landscaping or earth sheltering; ▶ installing thermal insulation, double-paned windows, high-tech window glazing, vapor barriers, and controlled air filtration to reduce energy consumption;	LTS

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Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		▶ installing skylights, light pipes, light shelves, exterior shade panels, and reflectors to transfer light to the interior of the building; and ▶ using clean alternative energy features, such as photovoltaic cells, solar panels, small wind turbines, and/or fuel cells, to generate power and reduce power consumption.	
4.12-5: Increased Demand for Natural Gas and Required Extension of Natural Gas Infrastructure. Implementation of the proposed project would increase demand for natural gas. PG&E would provide natural gas to the project site, and the increase in demand for natural gas would not be substantial in relation to the existing natural gas consumption in PG&E's service area. The City of Merced has identified the need to reduce energy demands in new development, and the proposed project would be required to include energy efficiency measures in project designs; therefore, this impact would be potentially significant.	PS	4.12-5: Implement Mitigation Measures 4.12-4. The applicant shall implement Mitigation Measure 4.12-4 above to reduce potentially significant impacts associated with increased demands for energy to a less-than-significant level by ensuring the proposed project includes energy efficiency measures in project designs.	LTS
4.12-6: Required Extension of Telecommunications Services. Implementation of the proposed project would require extension of existing telecommunication services. AT&T would provide service to the project site and upgrade existing facilities, as necessary, to serve the project. This impact would be less than significant.	LTS	No mitigation is required.	LTS
4.12-7: Increased Demand for Fire Protection Facilities, Systems, Equipment, and Services. Development of the proposed project would result in increased demand for fire protection facilities and services. The City of Merced Fire Department has indicated it would be capable of serving the proposed project, project designs would incorporate all California Fire Code requirements, and project applicant would be required to pay its fair share of costs through payment of the Public Facilities Impact Fees and Permit Inspection Fees; therefore, this impact would be less than significant.	LTS	No mitigation is required.	LTS

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Summary of Impacts and Mitigation Measures**

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4.12-8: Increased Demand for Police Protection Facilities, Systems, Equipment, and Services. Development of the proposed project would result in increased demand for police protection facilities and services. Project designs would incorporate on-site security measures, and the project applicant would be required to pay its fair share of costs through payment of the Public Facilities Impact Fees; therefore, this impact would be less than significant.	LTS	No mitigation is required.	LTS
4.13 Visual Resources			
4.13-1: Effects on a Scenic Vista, or Damage to a Scenic Resource. The project site would be located in an area planned for industrial development and with existing industrial uses in the vicinity. The site is not a scenic vista or in a notable viewshed, and does not contain scenic resources. Therefore, implementation of the project would result in a less-than-significant impact.	LTS	No mitigation is required.	LTS
4.13-2: Substantial Degradation of the Visual Character or Quality of the Site and Surroundings. The project would alter the visual character of the proposed site itself and significantly impact the visual character of the surrounding area, resulting in a potentially significant impact.	SU	4.13-2. Prepare and Submit a Landscaping Plan. The applicant shall prepare and submit a landscaping plan to the satisfaction of the City that includes the following features and accomplishes the following objectives on the site ▶ The developer shall plant trees (minimum 15 gallon) no further than 30 feet apart, on site along the perimeter roads surrounding the project site, including Childs Avenue, Gerard Avenue, and Tower Road. These trees are in addition to the street trees required every 40 feet per City Standards. Shrubs and turf shall be combined with the trees in a minimum 15-foot wide landscape strip along the entire project perimeter which abut public streets. Irrigation shall be provided to all landscape areas. A detailed landscape and irrigation plan per MMC 17.60 shall be approved by City staff at the building permit stage. ▶ Parking lot trees at a minimum of one for each six spaces (per MMC 20.58.385) shall be required in all employee and visitor parking areas on site. Parking lot trees, however, shall not be	SU

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Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		required in truck or trailer parking areas. ▶ Existing almond trees shall be preserved in any areas of the site that are to be left undeveloped by buildings, parking areas, driveways, drainage basins, etc. The developer shall submit a plan showing the location of existing trees and the proposed development and the City shall approve a plan at the building permit stage for preserving as many trees as feasible. ▶ All vegetation shall be maintained by an automatic irrigation system. The landscaping and irrigation plans and details shall be subject to review and approval by the City. The City shall create and adopt a mechanism that will ensure that Wal-Mart Stores East, LP maintains the landscaping in accordance with the adopted plan.	
4.13-3: Create Substantial Light or Glare That Would Affect Nighttime Views. The illumination level upon and from the site would change noticeably as a result of the proposed project, resulting in a potentially significant impact on light or glare.	PS	Mitigation Measure 4.13-3. Prepare and Submit a Lighting Plan. The applicant shall prepare a lighting plan for review and approval by the City of Merced. The lighting plan shall identify the design and placement, orientation, and illumination level (in watts) of all light fixtures. The lighting plan shall be designed so that illumination is focused downward upon targeted horizontal surfaces. Illumination of vertical surfaces shall be minimized. The lighting plan shall specify that no illumination source (including light bulb and reflector) shall be visible beyond the property line. The exception to this performance standard is at driveway intersections with public streets.	LTS
4.13-4: Substantially Conflict with Goals and Policies in the Merced Vision 2015 General Plan. The project would be located in an area planned for industrial development. The project is consistent with the City's General Plan goals, policies, and land use designation and would result in a less-than-significant impact.	LTS	No mitigation is required.	LTS

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Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
CUMULATIVE IMPACTS			
Agricultural Resources			
Cumulative Agricultural Land Impact. The project would contribute to cumulative loss of farmland in the region. This is a cumulatively considerable incremental contribution, and the cumulative impact is therefore considered significant.	S	According to Department of Conservation (DOC), 565 acres of Prime Farmland, 177 acres of Farmland of Statewide Importance, 55 acres of Unique Farmland, and 231 acres of Farmland of Local Importance were converted to urban and built-up land between 2000 and 2002 in Merced County. As of 2004, there were 535,562 acres of Farmland in the County. In the period between 2000 and 2004, 7,149 acres of Prime Farmland and 3,345 acres of Farmland of Statewide Importance were lost, and 71 acres of Unique Farmland was gained for a net loss of 10,423 acres over this four-year period. The continued loss of high-quality farmland in the City and surrounding areas of Merced County is a significant cumulative impact. The project would result in a loss of approximately 158.2 acres of Prime Farmland, 57.87 acres of Farmland of Statewide Importance, and 12.61 acres of Unique Farmland, which is considered a cumulatively considerable contribution to this cumulative impact when considered along with past farmland conversions identified above and planned future development proposed in the City of Merced, as shown in the list at the beginning of this section. The City has adopted a Statement of Overriding Considerations for conversion of agricultural land throughout the City's Specific Urban Development Plan (SUDP). Regardless, the impact represents a cumulatively considerable incremental contribution and is significant cumulative impact.	SU
Air Quality			
Cumulative Air Quality Impact (Construction and Operations). The project would not contribute to cumulative degradation of air quality in the region as a result of construction (short term) and operational (long term) air emissions. This would not be a cumulatively considerable incremental contribution, and the project's cumulative impact would be less than significant.	LTS	No mitigation is required.	LTS

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Cumulative Air Quality Impact (Carbon Monoxide). Traffic associated with project operations would not exceed standards for carbon monoxide concentrations at nearby intersections. This would not be a cumulatively considerable incremental contribution, and the project's cumulative impact would be less than significant.	LTS	No mitigation is required.	LTS
Cumulative Air Quality Impact (Toxic Air Emissions). Project operations would not result in the release of toxic air emissions that constitute a public health risk at existing or potential future sensitive receptors, based on SJVAPCD's thresholds. This would not be a cumulatively considerable incremental contribution, and the project's cumulative impact would be less than significant.	LTS	No mitigation is required.	LTS
Cumulative Air Quality Impact (Greenhouse Gas Emissions). Project construction and operations would result in release of carbon dioxide and other greenhouse gases. Even with mitigation measures, the project would result in a net increase of greenhouse gasses and conflict with California's Assembly Bill (AB) 32 goals. This would potentially be a cumulatively considerable incremental contribution, and the cumulative impact would be therefore considered significant.	S	Project implementation would also result in significant air quality impacts with respect to global climate change from both construction- and operation-related emissions of carbon dioxide (CO ₂) and other greenhouse gases. Implementation of Mitigation Measures 4.2-6a, 4.2-6b, 4.2-6c, and 4.2-6d would lessen these impacts by requiring specific measures to reduce and/or offset CO ₂ emissions. In addition, implementation of Mitigation Measures 4.2-1a and 4.2-2a, which require the project to comply with SJVAPCD's Indirect Source Review (ISR) rule, and Mitigation Measures 4.2-1c and 4.2-2e, which require implementation of an emissions reduction agreement with SJVAPCD, would also result in a reduction in operational CO ₂ emissions. However, the extent of the reduction is not quantifiable at the time of writing of this EIR and the resultant contribution of CO ₂ emissions by the project may potentially be substantial. Despite mitigation this net increase may potentially conflict with the state's AB 32 goal to reduce statewide GHG emissions to 1990 levels by 2020. Moreover, CO ₂ emissions attributable to the project would contribute to the existing and projected global warming trend. Thus, the project's contribution to the significant impact of global climate change would be considered cumulatively considerable, and the project would result in a significant cumulative impact.	SU

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Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
Biological Resources			
Cumulative Biological Resources Impact (Special Status Species Foraging Habitat). Project construction would result in the conversion of foraging habitat that supports Swainson’s hawk and burrowing owl. However, because of proposed mitigation, the project’s contribution to habitat loss would be mitigated to a less-than-significant level. However, there is a cumulatively considerable incremental contribution, and the project would result in a significant cumulative impact.	S	Implementation of the proposed project would result in loss of approximately 150 acres of suitable foraging habitat for Swainson’s hawk and could result in destruction and/or disturbance of occupied burrowing owl burrows. These special-status species are very susceptible to impacts as a result of land development activities occurring throughout the San Joaquin Valley. While it is possible to minimize impacts through avoidance and to preserve compensation habitat, a net loss nevertheless results from the impact. Mitigation included in Section 4.3, “Biological Resources,” would be implemented to address potential direct effects on these resources. Preservation and management of Swainson’s hawk foraging habitat at an off site location, and surveys and other avoidance measures for burrowing owl as described in Mitigation Measure 4.3-2 would reduce potential impacts to Swainson’s hawk and burrowing owl to a less-than-significant level.	LTS
Cultural Resources			
Cumulative Cultural Resources Impact. As a result of research conducted and mitigation measures proposed, project construction would not contribute to the cumulative loss of cultural resources in the region. This is not a cumulatively considerable incremental contribution, and the project’s cumulative impact is less than significant.	LTS	No mitigation is required.	LTS
Geology, Soils, and Paleontology			
Cumulative Geology and Soils Impact. Project construction would be subject to adopted construction standards, thus ensuring that impacts associated with soils and geology would not occur. This is a less-than-significant cumulative impact.	LTS	No mitigation is required.	LTS

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Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
Cumulative Geology and Soils Impact. Project construction would be subject to adopted construction standards, thus ensuring that impacts associated with soils and geology would not occur. This is a less-than-significant cumulative impact.	LTS	No mitigation is required.	LTS
Cumulative Paleontological Resources Impact. As a result of research conducted and the anticipated low occurrence, project construction would not contribute to the cumulative loss of paleontological resources in the region. This is not a cumulatively considerable incremental contribution, and the project's cumulative impact is less than significant.	LTS	No mitigation is required.	LTS
Hazards and Hazardous Materials			
Cumulative Hazards and Hazardous Materials Impact. Existing laws addressing storage, transport, and disposal of hazardous materials that may be stored and used at the project site are subject to existing regulations. This is not a cumulatively considerable incremental contribution, and the project's cumulative impact is less than significant.	LTS	No mitigation is required.	LTS
Hydrology and Water Quality			
Cumulative Hydrology and Water Quality Impact. Existing laws address water resources at the project site, and construction and operation of the proposed project would be subject to existing regulations. This is not a cumulatively considerable incremental contribution, and the project's cumulative impact is less than significant.	LTS	No mitigation is required.	LTS
Land Use			
Cumulative Land Use Impact. The proposed project is consistent with local land use regulations and would not result in an incremental contribution to potential division of an established community or adverse affects on adjacent land uses. The project's cumulative impact is less than significant.	LTS	No mitigation is required.	LTS

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Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
Noise			
Cumulative Noise Impact. Transportation source noise would extend beyond the project site along existing and future approved offsite roads. Project traffic can cause significant traffic noise impacts to sensitive uses along these roadways. This is a cumulatively considerable incremental contribution, and the project's cumulative impact would be significant.	S	Because the City has not developed a noise ordinance (Espinosa, pers. comm. 2006), the City has elected to adopt the time-of-day exemption established by the Merced County Noise Ordinance for construction noise. Construction activities occurring during the daytime hours are exempt from the noise limits set forth in the Merced County Noise Ordinance (Merced County Code [Code 18.41.070]). Under the terms of the County Code, in order to qualify for this exemption, construction equipment must be fitted with factory installed muffling devices and maintained in good working order, and staging areas must be set back away from off-site sensitive receptors as much as possible. For the proposed project, it was determined that adherence to the existing County noise regulations would be sufficient to avoid significant construction noise impacts. While the construction noise sources associated with the proposed project could be considered exempt if limited to the daytime, there is no guarantee that other noise in the area would be created only during the exempt daytime hours. Therefore, significant cumulative noise impacts associated with construction activities could occur. However, noise levels are not directly additive and attenuate rapidly with distance. Thus, if construction of nearby projects occurs simultaneously, these projects would likely not result in cumulative impacts unless sites are being developed in close proximity to one another and expose sensitive receptors to significant noise levels at the same time. Because the proposed project would not result in significant construction noise impacts after mitigation, it would not contribute to any such significant cumulative noise impacts. Stationary noise associated with the proposed project would not result in exceedence of the City's general plan policies or Merced County's (County's) noise regulations at off-site sensitive receptors. While the noise from any stationary noise sources associated with the proposed project could be controlled at the source (via noise walls, enclosures, site planning), there is no	SU

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Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		guarantee that all other projects in the area would include such noise controls. Hence, significant cumulative noise impacts associated with stationary noise sources could occur. However, because the proposed project would not result in significant stationary noise impacts, it would result in a small contribution to any significant cumulative noise impacts. While construction- and stationary-source noise can be controlled onsite at the point of origin, transportation-source noise may extend beyond a project site along existing and future approved offsite roads. Project traffic can cause significant traffic noise impacts to sensitive uses along these roadways. As described in Section 4.8, “Noise,” implementation of the proposed project would result in significant and unavoidable long-term traffic-generated noise impacts under baseline plus project conditions at residences along the segment of Tower Road between State Route (SR) 140 and Childs Avenue, the segment of Tower Road between Childs Avenue and Gerard Avenue, and the segment of Gerard Avenue between Campus Parkway and the project site entrances. In addition, truck trips generated by the proposed project would result in significant and unavoidable single-event noise level (SENL) impacts at residential land uses located near affected road segments. As explained in the traffic noise analysis of Section 4.8, traffic noise increases would result in significant and unavoidable impacts at the project level at residential receptors along some area roads, including the farm house located along the south side of the segment of Gerard Avenue between Campus Parkway and the project site entrances. Under cumulative conditions, project-generated traffic would cause the traffic noise level to increase 12.4 dBA along this road segment. A 14.7 dBA traffic noise level increase would occur along the segment of Gerard Avenue between the project site entrances and Tower Road; however, no sensitive receptors are located along this road segment. The combined cumulative increase in traffic on local roadways anticipated from the proposed project and regional growth would result in a substantial number of additional existing and proposed	

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Table 2-1 Summary of Impacts and Mitigation Measures			
Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		sensitive receptors. Thus, the traffic noise impacts from the proposed project and related projects, taken together, are considered cumulatively significant. Future development in the project area may generate additional traffic volume, including truck trips that pass by sensitive receptors, thereby increasing traffic noise, as shown in Table 4.8-10, and the frequency of exposure to SENLs. While some of the future planning projects in the area may result in removal and/or redevelopment of some existing affected receptors, and thereby serve as an opportunity to provide design features that reduce exposure to traffic noise and SENLs, there is no guarantee that these design features would be sufficient.	
Population and Housing			
Cumulative Population and Housing Impact. The project is consistent with existing local land use policies and regulations and would not result in a cumulatively considerable incremental contribution. The cumulative impact is therefore less than significant.	LTS	No mitigation is required.	LTS
Utilities and Public Services			
Utilities—Water			
Cumulative Water Supply Impact. Based on a water supply assessment prepared for the proposed project, there are sufficient water resources to support the proposed project. . This is not a cumulatively considerable incremental contribution, and the project’s cumulative impact is less than significant.	LTS	No mitigation is required.	LTS
Utilities—Wastewater			
Cumulative Wastewater Impact. The approved WWTP expansion would accommodate wastewater demand of the project and related projects. Therefore the project’s increase in demand is not a cumulatively considerable incremental contribution, and the project’s cumulative impact is less than significant.	LTS	No mitigation is required.	LTS

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Table 2-1 Summary of Impacts and Mitigation Measures			
Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
Utilities—Electricity			
Cumulative Electrical Impact. Because sufficient electricity supplies are available to support cumulative development and cumulative electricity impacts from the proposed project and related projects, the cumulative impact of the project would not result in a cumulatively considerable incremental contribution, and the project's cumulative impact would be less than significant.	LTS	No mitigation is required.	LTS
Utilities—Natural Gas			
Cumulative Natural Gas Impact. Sufficient natural gas supplies are available to support cumulative development and cumulative natural gas demands from the proposed project and related projects. . This is not a cumulatively considerable incremental contribution, and the project's cumulative impact is less than significant.	LTS	No mitigation is required.	LTS
Public Services—Solid Waste			
Cumulative Solid Waste Impact. Existing storage and conveyance capacity would be adequate to serve the project and other development in its service area. . This is not a cumulatively considerable incremental contribution, and the project's cumulative impact is less than significant.	LTS	No mitigation is required.	LTS
Public Services—Police, Fire, and Schools			
Existing fire and police protection services would be adequate to serve the proposed project. . This is not a cumulatively considerable incremental contribution, and the project's cumulative impact is less than significant.	LTS	No mitigation is required.	LTS
Transportation/Traffic <i>(See Table 2-2 immediately following this table for the project's fair share contribution)</i>			

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Table 2-1 Summary of Impacts and Mitigation Measures			
Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
Cumulative Traffic Impact— SR 140 and Parsons Avenue Intersection Operation (2030 No Project). Cumulative traffic growth without the project would cause the SR 140 and Parsons Avenue intersection to operate at an unacceptable LOS (LOS E or F) during the a.m. and p.m. peak hour. This is a cumulatively considerable impact that would occur without the proposed project.	N/A (No Project)	6-1: Intersection of SR 140 and Parsons Avenue. Under the 2030 Cumulative No Project Conditions, traffic on SR 140 would operate at deficient LOS F due to high traffic volumes along SR 140. In order to achieve acceptable levels of service, the intersection would have to have a revised traffic signal timing plan as part of a regular signal maintenance routine. This would improve the intersection to operate at an acceptable LOS of D during the a.m. peak hour for the 2030 Cumulative No Project Condition.	N/A (No Project)
Cumulative Traffic Impact— SR 140 and Baker Drive Intersection Operation (2030 No Project). Cumulative traffic growth without the project would cause the SR 140 and Baker Drive intersection to operate at an unacceptable LOS (LOS E or F) during both a.m. and p.m. peak hours. This is a cumulatively considerable impact that would occur without the proposed project.	N/A (No Project)	6-2: Intersection of SR 140 and Baker Drive. Under the 2010 Background and 2030 Cumulative No Project Conditions, traffic on Baker Drive would operate at deficient LOS (LOS E or F) due to high traffic volumes on SR 140. The intersection would also meet the traffic signal warrant under both 2010 Background and 2030 Cumulative No Project Conditions. In order to achieve acceptable levels of service, the intersection would have to be signalized to accommodate the southbound left-turn traffic. This would improve the intersection to LOS C during both a.m. and p.m. peak hours under the 2010 Background Conditions and the 2030 Cumulative No Project Conditions.	N/A (No Project)
Cumulative Traffic Impact— SR 140 and Kibby Road Intersection Operation (2030 No Project). Cumulative traffic growth without the project would cause the SR 140 and Kibby Road Intersection to operate at an unacceptable LOS (LOS E or F) during both a.m. and p.m. peak hours. This is a cumulatively considerable impact that would occur without the proposed project.	N/A (No Project)	6-3: Intersection of SR 140 and Kibby Road. Under the 2030 Cumulative No Project Conditions, the northbound and southbound traffic on Kibby Road would deteriorate to deficient LOS. Even though the peak hour traffic volumes on SR 140 would be relatively light, the operating condition would not be improved by lane re-striping or adding a lane in any direction. The intersection would also meet the traffic signal warrant under the 2030 Cumulative No Project Conditions. In order to achieve acceptable levels of service, the intersection would have to be signalized and the signal would need to be synchronized with the railroad signal just south of the intersection. This would improve the operating condition on Kibby Road approaches to acceptable LOS (LOS D or better) and maintain the intersection operating conditions at LOS B during both a.m. and p.m. peak hours.	N/A (No Project)

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**Table 2-1
Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
Cumulative Traffic Impact— Childs Avenue and SR 99 Northbound Off-ramp Operations (2030 No Project). Cumulative traffic growth without the project would cause the Childs Avenue and SR 99 Northbound Off-ramp to operate at an unacceptable LOS (LOS E or F) during both a.m. and p.m. peak hours. This is a cumulatively considerable impact that would occur without the proposed project.	N/A (No Project)	6-4: Intersection of Childs Avenue and SR 99 Northbound Off-Ramp. This intersection would operate at LOS F under the 2010 Background and 2030 Cumulative No Project Conditions during both a.m. and p.m. peak hours. The intersection would also meet the peak hour traffic signal warrant under both 2010 Background and 2030 Cumulative No Project Conditions. In order to achieve acceptable levels of service under 2010 Background Conditions, the intersection would have to be signalized and the eastbound approach would have to be widened to two lanes. The intersection would operate at acceptable levels of service under 2030 Cumulative No Project Conditions by adding the second westbound left-turn lane in addition to widening the eastbound approach. The improvement, however, may not be feasible within the existing right-of-way due to the overcross structure. The measures would improve the intersection to LOS C during the a.m. and p.m. peak hours under both the 2010 Background Conditions and the 2030 Cumulative No Project Conditions.	N/A (No Project)
Cumulative Traffic Impact— Childs Avenue at SR 99 Southbound Off-ramp Operations (2030 No Project). Cumulative traffic growth without the project would cause the Childs Avenue at SR 99 Southbound Off-ramp to operate at an unacceptable LOS (LOS E or F) during both a.m. and p.m. peak hours. This is a cumulatively considerable impact that would occur without the proposed project.	N/A (No Project)	6-5: Intersection of Childs Avenue and SR 99 Southbound Off-Ramp. This intersection would operate at LOS F during the p.m. peak hour and would meet a peak hour signal warrant under the 2010 Background Conditions. This intersection would operate at LOS F the 2030 Cumulative No Project Conditions during the both a.m. and p.m. peak hours. The improvement would include adding a second left-turn lane to the southbound approach, adding a westbound left-turn lane, and that the intersection be signalized and coordinated with the intersection of Childs Avenue at SR 99 northbound off-ramp. This would improve the intersection to LOS C during the p.m. peak hour under the 2010 Background Conditions and for both peak hours for the 2030 Cumulative No Project Condition.	N/A (No Project)
Cumulative Traffic Impact—Childs Avenue at Parsons Avenue Intersection Operation (2030 No Project). Cumulative traffic growth without the project would cause the Childs Avenue at Parsons Avenue intersection to operate at an unacceptable LOS	N/A (No Project)	6-6: Intersection of Childs Avenue and Parsons Avenue. Under 2030 Cumulative No Project Conditions, traffic at the intersection would deteriorate to LOS E for both of the a.m. and p.m. peak hours. In order to achieve acceptable levels of service, the signalized	N/A (No Project)

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Table 2-1 Summary of Impacts and Mitigation Measures			
Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
(LOS E or F) during both a.m. and p.m. peak hours. This is a cumulatively considerable impact that would occur without the proposed project.		intersection would need a revised signal timing plan as part of a regular signal maintenance routine. This would improve the intersection to operate at an acceptable LOS D during the a.m. and p.m. peak hours for the 2030 Cumulative No Project Condition. All other intersections would continue to operate at acceptable LOS (LOS D or better) Roadway Segment Operating Conditions Table 6-4 summarizes the roadway segment operating level of service under the 2030 Cumulative No Project Condition. For more information on existing, 2010, and cumulative traffic conditions, please refer to Appendix E. The addition of cumulative growth traffic would cause the roadway segment of SR 140 between Santa Fe Avenue and Kibby Road to deteriorate from LOS D to LOS E during the a.m. peak hour. All other study roadway segments would continue to operate at an acceptable LOS (LOS D or better).	
Cumulative Traffic Impact—Roadway Segment Operations (2030 No Project). SR 140 between Santa Fe Avenue and Kibby Road.	N/A (No Project)	6-7: SR 140 between Santa Fe Avenue and Kibby Road. It was determined that the roadway segment of SR 140 between Santa Fe Avenue and Kibby Road would deteriorate to LOS E under the 2030 Cumulative No Project Condition. Currently, the roadway is classified as a two-lane highway. By adding one lane in each direction in this segment, the roadway would be improved to operate at an acceptable LOS A. The widening of the roadway, however, may require right of way acquisition, the need for utility relocation, and approval by Caltrans.	N/A (No Project)
Cumulative Traffic Impact—Roadway Segment Operations (2030 No Project). Tower Road between SR 140 and Gerard Avenue.	N/A (No Project)	6-8: Tower Road between SR 140 and Gerard Avenue. Tower Road would be one of the truck access routes to the proposed Wal-Mart Distribution Center. Based on field observations, this roadway segment has poor pavement conditions, and the pavement markings along the middle of the road are faded. It is recommended that the roadway segment between SR 140 and Gerard Avenue be improved to address these issues. In addition, the Tower Road approaches to the intersection at	N/A (No Project)

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Table 2-1 Summary of Impacts and Mitigation Measures			
Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		Gerard Avenue (and the approaches along Gerard Avenue to Tower Road) should be improved to provide proper turning radii for standard trucks as classified under the Surface Transportation Assistance Act (STAA). It is also recommended that the intersection of Tower Road and SR 140 be widened to accommodate truck turning activities (such as providing turn bays and acceleration lane). The improvement would help maintain traffic flow on SR 140. As a Caltrans facility, the roadway widening on SR 140 would be required to follow Caltrans design standards and would need to be approved by Caltrans.2030 Cumulative No Project Condition Traffic Signal Warrant Analysis	
Cumulative Traffic Impact—Traffic Signal Operations (2030 No Project). Based on the signal warrant analysis results, five study area intersections would meet the signal warrant during the a.m. and while four would meet the signal warrant during the p.m. peak hour. This is a cumulatively considerable impact that would occur without the proposed project.	N/A (No Project)	Table 6-5 summarizes the traffic signal warrant analysis performed at the five unsignalized intersections that would operate at unacceptable level of service under the 2030 Cumulative No Project Condition. Detailed traffic signal warrant analysis sheets are included in Appendix E. Based on the signal warrant analysis results; all of the five intersections would meet the signal warrant during the a.m. peak hour while four intersections would meet the signal warrant during the p.m. peak hour. 2030 Cumulative with Project Condition This section evaluates the 2030 Cumulative with Project Condition. In addition, all roadway improvements mentioned in the 2030 Cumulative Project Condition are assumed to be implemented and thus were included in this analysis. An adjustment was made to the distribution and assignment of trips to account for the extension of the Campus Parkway corridor and to allow for more circulation via Campus Parkway rather than via Parsons Avenue. The truck trips were also adjusted to allow for circulation via Campus Parkway between SR 140 and Gerard Avenue rather than Tower Road. Intersection Operating Conditions Intersection operational levels of service along with their associated delays are summarized in Table 6-6. Appendix E includes the detailed calculation level of service analysis sheets,	N/A (No Project)

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**Table 2-1
Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
		including the weekday a.m. and p.m. peak hours. For more information on existing, 2010, and cumulative traffic conditions, please refer to Appendix E. The study intersections that would operate at acceptable LOS (LOS D or better) under the 2030 Cumulative No Project Condition would continue to operate at acceptable LOS under the 2030 Cumulative with Project Condition with the exception of one intersection. At the intersection of Mission Avenue at SR 99 northbound off-ramp, the LOS would deteriorate from D to E. For the intersections that would operate at LOS E or F under the 2030 Cumulative No Project Condition, the proposed project would not contribute more than five percent of the intersection total volume at any of the intersections during either the a.m. or p.m. peak hours. Overall, the proposed project would result in significant cumulative impacts at one intersection during the p.m. peak hour. Project's Share of Traffic Table 6-7 provides a breakdown of project traffic for the purposes of calculating the fair share contribution towards any mitigation measures.	
Cumulative Traffic Impact—Intersection Operations (2030 with Project). The study intersections that would operate at acceptable LOS (LOS D or better) under the 2030 Cumulative No Project Condition would continue to operate at acceptable LOS under the 2030 Cumulative with Project Condition with the exception of one intersection. At the intersection of Mission Avenue at SR 99 northbound off-ramp, the LOS would deteriorate from D to E. For the intersections that would operate at LOS E or F under the 2030 Cumulative No Project Condition, the proposed project would not contribute more than 5% of the intersection total volume. Therefore, the proposed project would result one significant impact at the study intersections. The impact to the intersection of Mission Avenue at SR 99 northbound off-ramp is a	S	6-9: Mission Avenue at SR 99 northbound off-ramp. Restriping the northbound and westbound approaches would mitigate the impact at this intersection. It is proposed to restripe the northbound approach from a left-through turning movement and a right-only turning movement to a left-through-right turning movement and a right-only turning movement. The westbound approach would be restriped from two through lanes and one right-turn only lane to one through lane, one through-right lane, and one right-turn only lane. Restriping could be accomplished within the existing right-of-way. With these mitigation measures, the intersection of Mission Avenue at SR 99 northbound off-ramps would operate under LOS C conditions, fully mitigating the impact occurring in the p.m. peak hour under 2030 Cumulative with Project Conditions.	LTS

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Table 2-1 Summary of Impacts and Mitigation Measures			
Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
cumulatively considerable incremental contribution, and the project's cumulative impact would be significant.			
Cumulative Traffic Impact—SR 140 Between Santa Fe Avenue and Kibby Road Roadway Segment Operations (2030 with Project). The addition of project traffic would cause the segment of SR 140 between Santa Fe Avenue and Kibby Road to deteriorate from LOS D under the 2030 Cumulative No Project Condition to LOS E during the p.m. peak hour. All other study roadway segments would operate at an acceptable LOS (LOS D or better). The impact to SR 140 is a cumulatively considerable incremental contribution, and the project's cumulative impact would be significant.	S	6-10: SR 140 between Santa Fe Avenue and Kibby Road. The addition of project traffic would cause the segment of SR 140 between Santa Fe Avenue and Kibby Road to deteriorate from LOS D under the 2030 Cumulative No Project Condition to LOS E during the p.m. peak hour. All other study roadway segments would operate at an acceptable LOS (LOS D or better). The level of service on SR 140 between Santa Fe Avenue and Kibby Road is a significant cumulative impact. The project's contribution to this significant impact is cumulatively considerable; therefore, the project's cumulative impact would be significant. By adding one lane in each direction in this segment, the roadway would be improved to operate at an acceptable LOS A. The widening of the roadway, however, may require right of way acquisition, the need for utility relocation and, approval by Caltrans. With implementation of this mitigation measure, the cumulative impact would be reduced to a less-than-significant level.	LTS
Cumulative Traffic Impact—Traffic Signal Operations (2030 with Project). Based on the signal warrant analysis results, all of five study area intersections would meet the signal warrant during the a.m. peak hour while four intersection would meet the signal warrant during the p.m. peak hour. The project's contribution to these intersections is a cumulatively considerable incremental contribution, and the project's cumulative impact would be significant.	S	Table 6-9 summarizes the traffic signal warrant analysis performed at the five unsignalized intersections that would operate at an unacceptable level of service under the 2030 Cumulative No Project Condition. For more information on existing, 2010, and cumulative traffic conditions, please refer to Appendix E. Similar to the 2030 Cumulative No Project Condition, a signal warrant would be met at all five of these intersections during the a.m. peak hour and four intersections during the p.m. peak hour. Impacts to these intersections will be reduced to less-than-significant levels by mitigation measures 6-9, 6-10, and 6-11.	LTS
Cumulative Traffic Impact -Tower Road between SR 140 and Gerard Avenue. Tower Road would be one of the truck access routes to the proposed Wal-Mart Distribution Center. Based on field observations, this roadway segment currently has poor	S	6-11: It is recommended that the roadway segment between SR 140 and Gerard Avenue be improved to address these issues. In addition, the Tower Road approaches to the intersection at Gerard Avenue (and the approaches along Gerard Avenue to Tower Road)	LTS

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**Table 2-1
Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
pavement conditions, and the pavement markings along the middle of the road are faded. The project's contribution to these intersections is a cumulatively considerable incremental contribution, and the project's cumulative impact would be significant.		should be improved to provide proper turning radii for standard trucks as classified under the Surface Transportation Assistance Act (STAA). The project would be responsible for paying its fair share contribution toward this implementation measure.	
Visual Resources			
Cumulative Visual Impact. The cumulative change of agricultural and open space views in the project region to urban land uses and the associated increase in nighttime light and glare and subsequent skyglow from past and planned future projects is a cumulatively considerable incremental contribution, and the project's cumulative impact would be significant.	S	Past and future urban development has changed, and will continue to alter, the visual character along roadway corridors in both the City and County. Generally speaking, these changes involve the replacement of grazing/rural lands and vast areas of open space to urban uses, thus altering and limiting the open space views available to motorists along these roadways and residents living in the area. This trend will continue as future development projects are constructed in the region and in the City as a whole, consistent with growth planned in the City and County General Plans. From a cumulative standpoint, substantial changes in visual conditions will continue as agricultural lands and open space are replaced by urban development. Increased urban development will also lead to increased nighttime light and glare and subsequent skyglow in the region and more limited views of the night sky. Although these cumulative impacts can be minimized to a degree through topographic screening of structures, use of outdoor lighting that limits glare, appropriate building design, and other measures, the significant cumulative impact cannot be fully mitigated. The cumulative change of agricultural and open-space views in the project region to urban land uses and the associated increase in nighttime light and glare and subsequent skyglow from past and planned future projects is a significant cumulative impact. The project's incremental contribution to these impacts is cumulatively considerable, and the project's cumulative impact is therefore considered significant.	SU

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**Table 2-1
Summary of Impacts and Mitigation Measures**

Impacts	Significance before Mitigation	Mitigation	Significance after Mitigation
The following cumulative impacts are identified earlier in this section as “significant.” ▶ Cumulative Agricultural Land Impact ▶ Cumulative Air Quality Impact (Greenhouse Gas Emissions) ▶ Cumulative Biological Resources Impact (Special Status Species Foraging Habitat) ▶ Cumulative Noise Impact ▶ Cumulative Traffic Impact—Intersection Operations (2030 with Project) ▶ Cumulative Traffic Impact—SR 140 Between Santa Fe Avenue and Kibby Road Roadway Segment Operations (2030 with Project) ▶ Cumulative Traffic Impact—Traffic Signal Operations (2030 with Project) ▶ Cumulative Traffic Impact -Tower Road between SR 140 and Gerard Avenue ▶ Cumulative Visual Impact Mitigation measures would not reduce these cumulative impacts to a less-than-significant level. Please refer to the discussion under 6.1.2 “Cumulative Impacts of the Proposed Project” above for more detailed discussion.			

Note that the City may wish to calculate and require the project to contribute on a pro-rata basis to the improvements (Improvement Measures) described below and based on the information in Table 2-2 below, or identified in Table 6-7 on page 6-29.

Table 2-2 Project's Share of Traffic 2030 Cumulative with Project Condition													
No	Study Intersection	Trips (veh/hr)						Percentages(%)					
		Project		2030 Cumulative		Total		Project		2030 Cumulative		Total	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	SR 140 / Parsons Avenue	31	41	2620	2302	2651	2343	1.2%	1.7%	98.8%	98.3%	100.0%	100.0%
2	SR 140 / Baker Drive	29	34	2028	1745	2057	1779	1.4%	1.9%	98.6%	98.1%	100.0%	100.0%
3	SR 140 / Kibby Road	13	43	1942	1580	1955	1623	0.7%	2.6%	99.3%	97.4%	100.0%	100.0%
4	Childs Avenue / SR 99 SB Off-Ramp	6	15	2588	2376	2594	2391	0.2%	0.6%	99.8%	99.4%	100.0%	100.0%
5	Childs Avenue / SR 99 NB Off-Ramp	7	25	2842	2725	2849	2750	0.2%	0.9%	99.8%	99.1%	100.0%	100.0%
6	Childs Avenue / Parsons Avenue	10	32	2765	2667	2775	2699	0.4%	1.2%	99.6%	98.8%	100.0%	100.0%
7	Childs Avenue / Coffee Street	9	32	1110	1075	1119	1107	0.8%	2.9%	99.2%	97.1%	100.0%	100.0%
8	Childs Avenue / Kibby Road	0	0	469	665	469	665	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%
9	Childs Avenue / Tower Road	23	77	405	679	428	756	5.4%	10.2%	94.6%	89.8%	100.0%	100.0%
10	Gerard Avenue / Coffee Street	5	18	693	749	698	767	0.7%	2.3%	99.3%	97.7%	100.0%	100.0%
11	Gerard Avenue / Tower Road	23	77	117	161	140	238	16.4%	32.4%	83.6%	67.6%	100.0%	100.0%
12	Mission Avenue / SR 99 SB Off-Ramps	165	165	2032	2332	2197	2497	7.5%	6.6%	92.5%	93.4%	100.0%	100.0%
13	Mission Avenue / SR 99 NB Off-Ramps	263	317	2656	3447	2919	3764	9.0%	8.4%	91.0%	91.6%	100.0%	100.0%
14	Mission Avenue / Coffee Street	262	317	2665	3493	2927	3810	9.0%	8.3%	91.0%	91.7%	100.0%	100.0%
15	Campus Parkway / Childs Avenue	300	383	1876	1916	2176	2299	13.8%	16.7%	86.2%	83.3%	100.0%	100.0%
16	Campus Parkway / Childs Avenue	33	48	1397	1415	1430	1463	2.3%	3.3%	97.7%	96.7%	100.0%	100.0%

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3 PROJECT DESCRIPTION

3.1 PROJECT OVERVIEW

The proposed project, a Wal-Mart Stores East LP regional distribution center, consists of a warehouse, distribution center, and support facilities, and would be located on 230 acres in the City of Merced. The proposed support facilities consist of offices, a cafeteria, and aerosol storage (all located within the warehouse building), as well as a truck gate, a truck maintenance garage, a truck fueling station, a fire pump house, and parking lots. The underlying purpose of the project is storage and distribution of nongrocery goods to Wal-Mart retail stores located throughout the region. No retail commercial is proposed as part of the project.

3.2 REGIONAL LOCATION

The project site is located at the southeast end of the City of Merced in eastern Merced County in the San Joaquin Valley. Merced is approximately 118 miles south of Sacramento and 130 miles east of San Francisco (Exhibit 3-1, “Regional Location Map”).

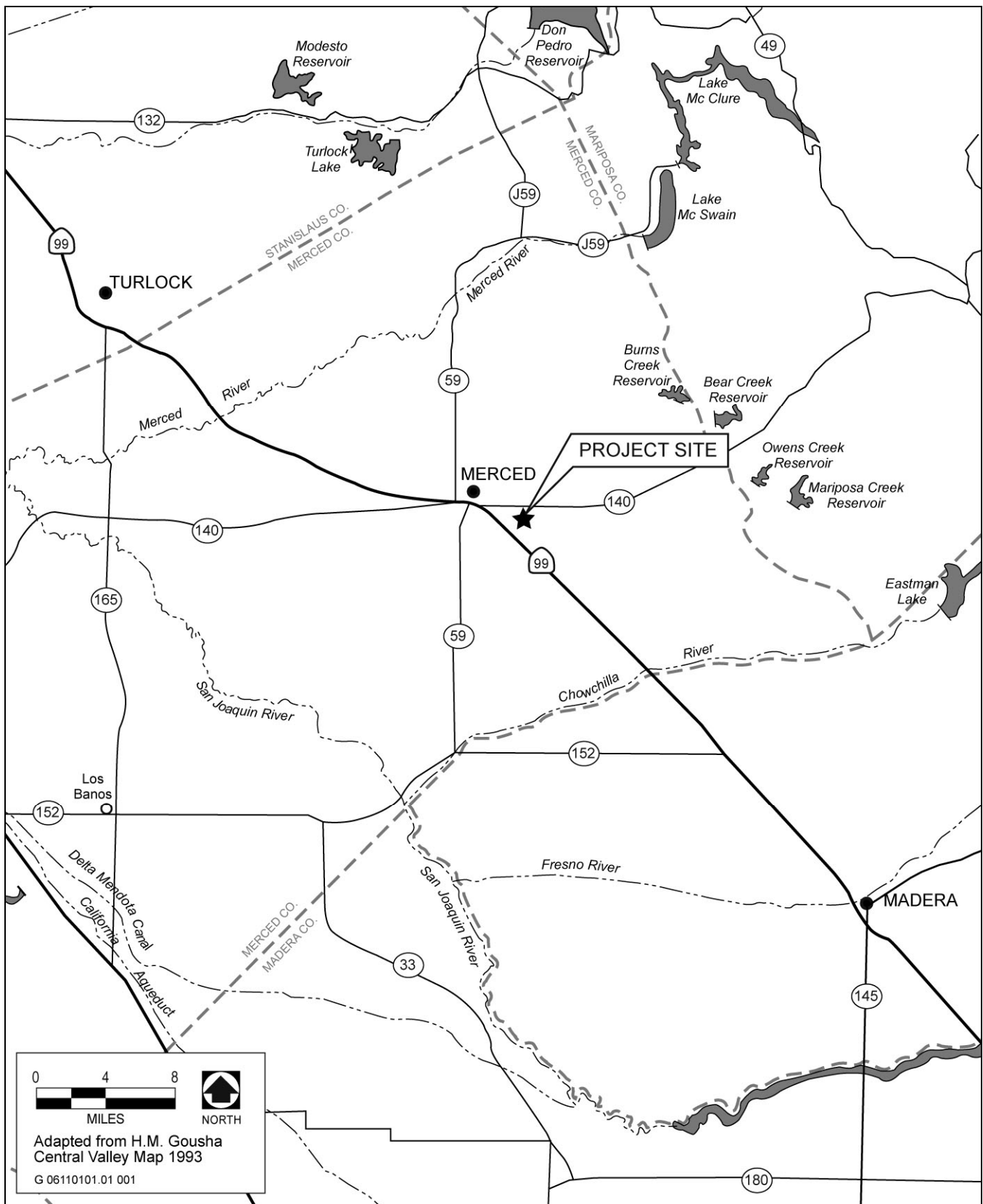
3.3 PROJECT LOCATION AND SITE DESCRIPTION

The approximately 230-acre project site is bounded on the north by Childs Avenue, on the east by Tower Road, and on the south by Gerard Avenue. Kibby Road, which heads north from this area, terminates at Childs Avenue at the north end of the project site (Exhibit 3-2, “Local Vicinity Map”). The future Campus Parkway is approximately 975 feet west of the project site. The site is just over 3 miles southeast of downtown Merced and approximately 1.3 miles directly northeast of the State Route (SR) 99, or 2 miles east of SR 99 by car (via Child’s Avenue). Phase I of the Campus Parkway from Mission Avenue/SR 99 to Childs is planned to begin construction in mid-2009 and be complete by mid-2010. This roadway would provide access between the site and SR 99 via the new Mission Avenue interchange with SR 99, which is now complete. The proposed site plan is illustrated in Exhibit 3-3. An aerial photo is shown in Exhibit 3-4.

The City of Merced (City) General Plan designates the site for Industrial uses and the zoning map designates the site as part of a Heavy Industrial District. Merced County (County) and City General Plan land use designations are shown in Exhibit 3-5, and City and county zoning districts are shown in Exhibit 3-6. County General Plan and zoning designations are noteworthy because, while the site is entirely within the Merced city limits, it abuts unincorporated Merced County.

The site consists of two parcels: Assessor’s Parcel Numbers 061-250-090 and 061-290-047. The site is located in the northern half of Section 34 and the northern half of Section 35, Township 7 South, Range 14 East, Mt. Diablo Base and Meridian.

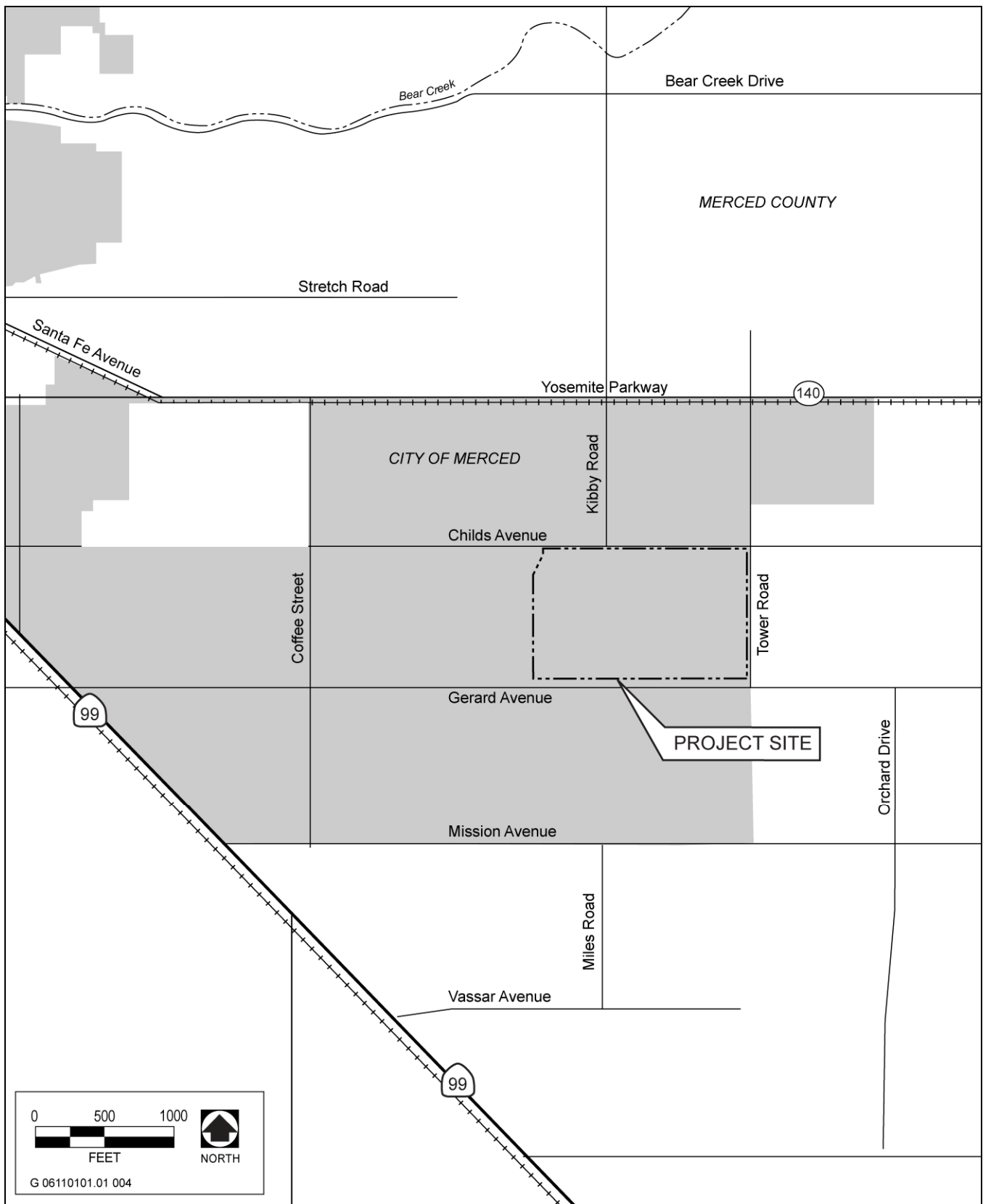
The land is generally flat but gently slopes to the west and ranges from 185 to 190 feet above mean sea level. The site contains no structures or improvements, except for an irrigation water well and City of Merced Water Well 10-R2. The western one-third of the site contains an almond orchard, and the eastern two-thirds consist of agricultural fields. The northern, southern, and part of the northeastern boundary of the fields contain irrigation ditches, which connect to the Wilson Substation (approximately 1 mile north of the site) along SR 140. Overhead power lines run through the eastern portion of the site. The area containing these power lines would remain as an easement, and all site development would take place on the approximately 80% of the project site located west of this easement. Relocation of the power lines is not proposed as part of this project. The site includes right-of-way for the extension of Kibby Road between Childs Avenue and Gerard Avenue. This section of right-of-way is proposed to be abandoned to allow project uses as part of site development.



Source: Compiled by EDAW in 2006

Regional Location Map

Exhibit 3-1



Source: Compiled by EDAW in 2006

Local Vicinity Map

Exhibit 3-2

The project parcel is bounded by agricultural fields and a few rural residential dwellings across Tower Road to the east and Gerard Avenue to the south. The land east of Tower Road is designated Agriculture in the City General Plan, and land to the north, west, and south is designated Industrial. Undeveloped open lands and industrial lands are located to the north. To the west is another orchard. Also to the west is a Merced Irrigation District (MID) canal.

3.4 NECESSARY ENTITLEMENTS

Zoning districts are shown in Exhibit 3-6. The entitlements required for this proposed project consist of the following:

- ▶ CEQA Determination
- ▶ Site Plan Approval (required of all principally permitted uses in industrial zones);
- ▶ City of Merced General Plan amendment (This is required because the undeveloped Kibby Road right-of-way is proposed to be abandoned between Childs Avenue and Gerard Avenue. Because Kibby Road is designated in the Circulation Element of the General Plan, a General Plan Amendment is required before action can be taken to abandon the unused right-of-way; and
- ▶ right-of-way abandonment (Kibby Road).

Subsequent to these actions, the City would be responsible for the issuance of building permits.

Please see Section 1 “Introduction” for a list of local, State, and Federal responsible and trustee agencies.

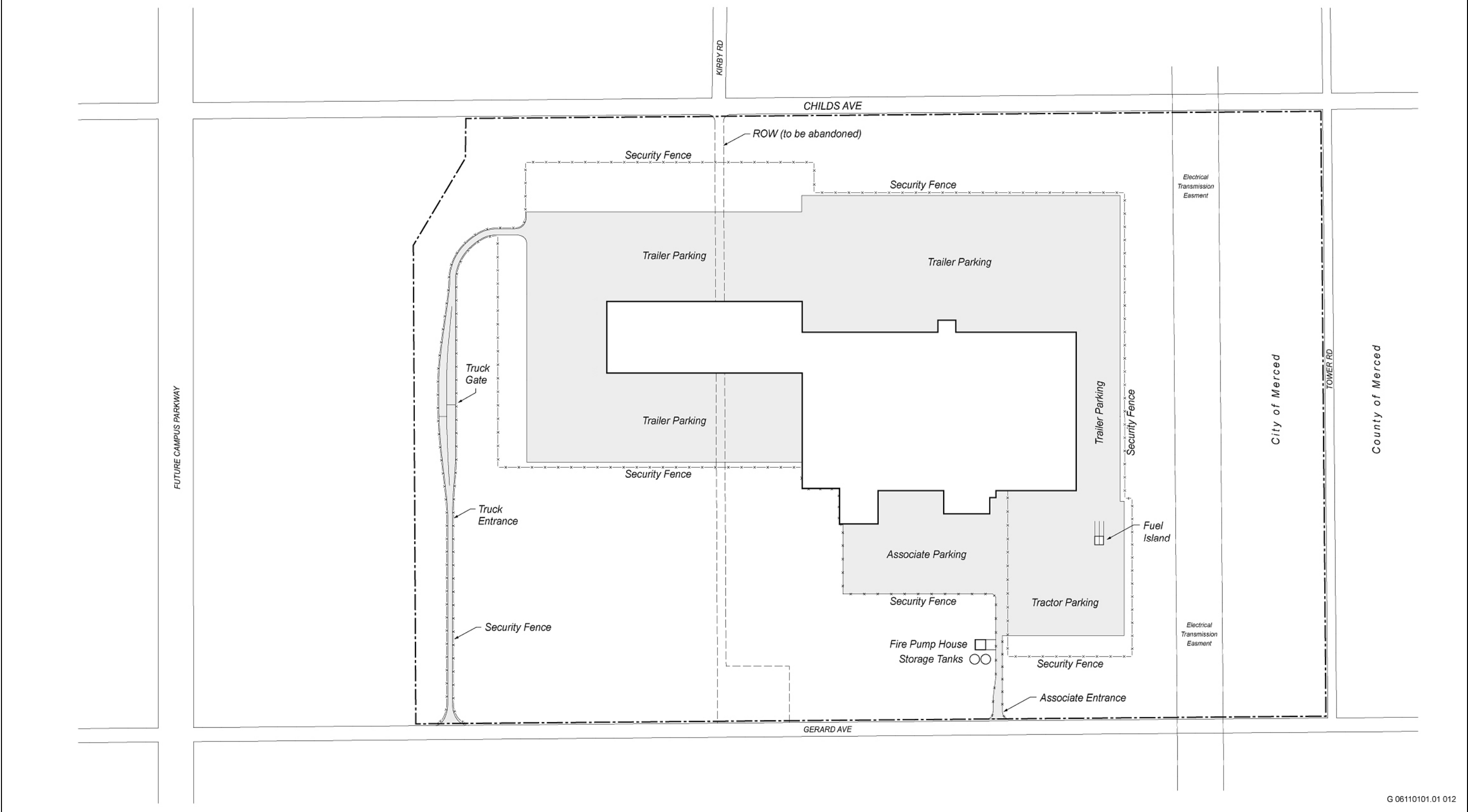
3.5 PROJECT BACKGROUND

The project site is within the city limits of Merced. Land immediately to the south, north, and west of the site is also within the city limits. Land immediately to the east is in unincorporated Merced County, but is within the City’s sphere of influence. As described above, the project site is designated Industrial in the Merced General Plan and Heavy Industrial District (I-H) in the zoning ordinance. The site has historically been used for agriculture. (Refer to Section 4.7 “Land Use” for descriptions of these General Plan and zoning districts.)

The site is owned by Wal-Mart Stores East LP. The most recent owner of the site before the Wal-Mart Stores East LP was Lyons Investments, a California Limited Partnership. Wal-Mart Stores East LP supplies the majority of its goods to its retail stores through regional distribution centers. A number of Wal-Mart stores are located throughout the central San Joaquin Valley. Presently, the closest California distribution centers are located in Red Bluff (approximately 250 miles away), Porterville (approximately 130 miles away), and Apple Valley (approximately 230 miles away).

The project applicant (Wal-Mart Stores East LP) conducted an extensive siting study that resulted in selection of the site for the proposed project. This site was selected for multiple reasons, including the following:

- ▶ the site’s industrial zoning and proximity to other industrial uses,
- ▶ Merced’s strategic location among the Central Valley’s large urban centers and smaller urban and rural markets,
- ▶ the site’s sufficient size to accommodate the needed building and parking space,
- ▶ the site’s proximity to SR 99 and access via sufficient local roads,



Source: Carter Burgess 2007

Project Site Plan

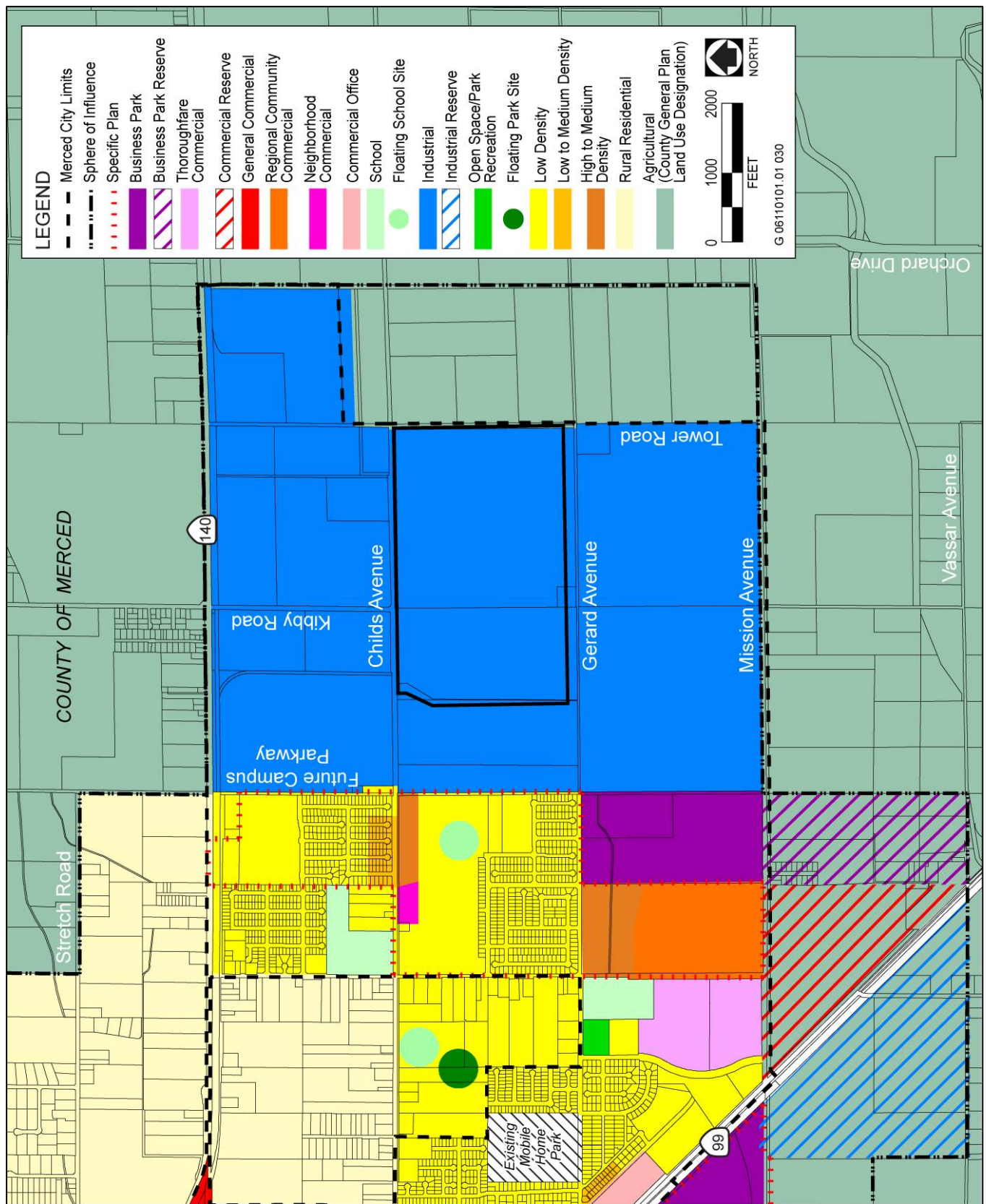
Exhibit 3-3



Source: Adapted by EDAW 2008

Aerial Photo of Project Vicinity

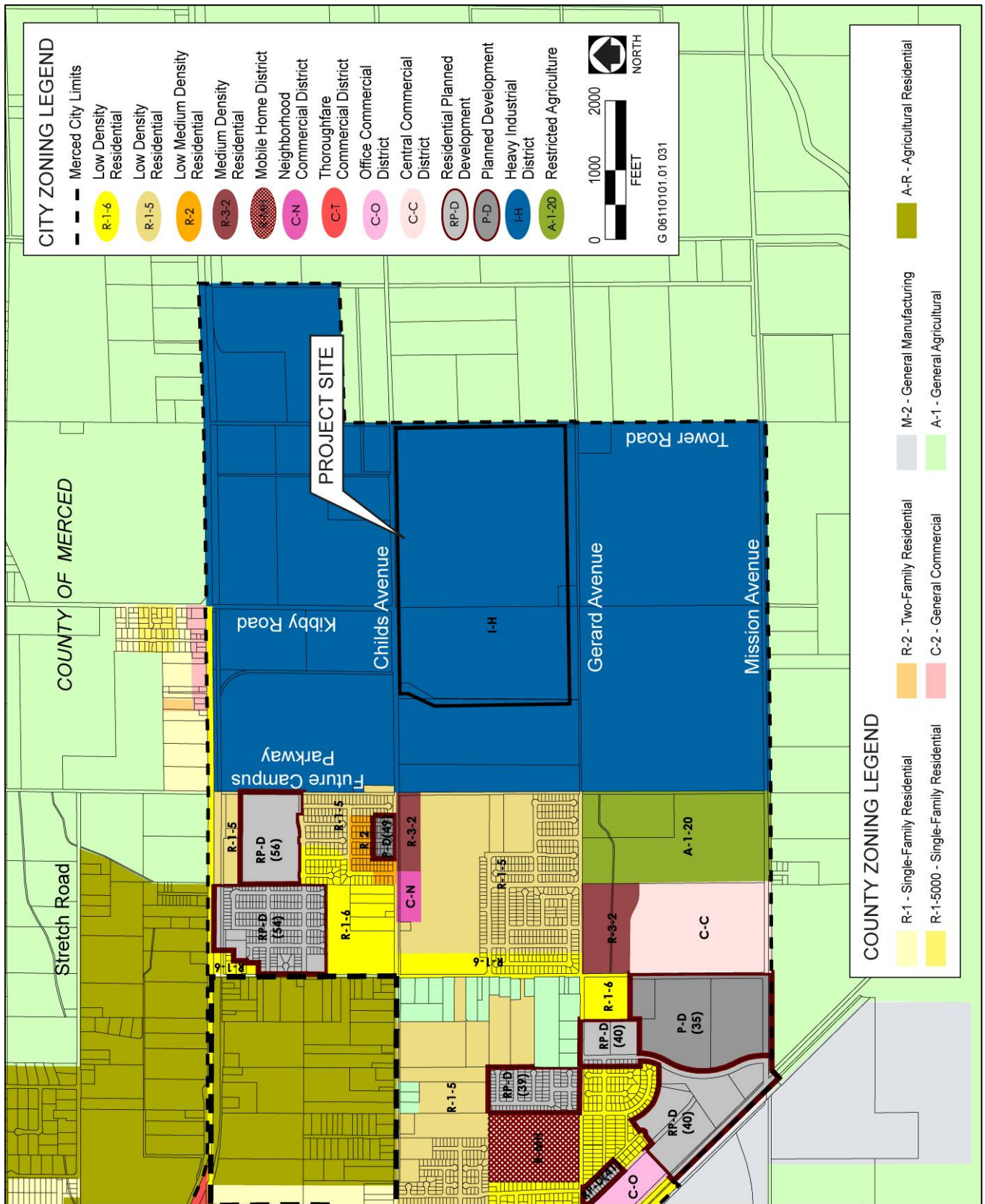
Exhibit 3-4



Source: Merced County Association of Governments 2004

Merced County and City of Merced General Plan Designations

Exhibit 3-5



Source: Merced Data Special Services, Inc. 2003

Zoning Designations

Exhibit 3-6

- ▶ the site's location allowing access to SR 99 and other highways without drivers having to drive semi-trucks through residential neighborhoods,
- ▶ the ability to construct sufficient access points on arterial roads adjacent to the site, and
- ▶ the location's proximity to the labor pool of Merced.

This environmental impact report (EIR) uses as a reference document the City General Plan EIR (State Clearinghouse Number 95082050), which was adopted in 1997. The 1997 update of the City General Plan was the update that designated the general plan designation of Industrial for the eastern portion (east of the Kibby Road right-of-way) of the project site. This eastern portion of land was annexed as "Heavy Industrial" in 1999. The western portion (west of the Kibby Road right-of-way) was designated for Industrial use at least as far back as the 1981 City General Plan. This portion of land was annexed as "Heavy Industrial" in 1978.

3.6 PROJECT OBJECTIVES

The objectives of the proposed project from the City of Merced and from the project applicant include the following:

3.6.1 CITY OBJECTIVES

- ▶ To develop the industrially zoned area in the City with permitted industrial uses.
- ▶ To locate industrial projects in areas with good access to major highway transportation links, and provide opportunities for buffers between industrial and nonindustrial uses.
- ▶ To encourage development of industrial projects that will create jobs, including full-time, nonseasonal employment opportunities for local residents.
- ▶ To encourage development of projects that will contribute toward improving roadways adjacent to the proposed development site.
- ▶ To ensure that industrial areas are developed in an attractive manner.

3.6.2 APPLICANT OBJECTIVES

- ▶ To develop a project consistent with the City General Plan and zoning ordinance.
- ▶ To develop a distribution/warehouse facility near other industrial uses.
- ▶ To construct and operate a distribution/warehouse facility in Merced County to take advantage of the strategic location between large urban centers and smaller urban and rural markets throughout the Central Valley in California.
- ▶ To construct a distribution/warehouse facility on a site sufficiently large (a minimum of 230 acres) to allow necessary building space and parking for trucks and employees.
- ▶ To construct a distribution/warehouse facility with sufficient space (approximately 1.1 million square feet) to allow operational efficiency and adequate distribution of goods to stores in a broad geographic area in California.

- ▶ To locate a distribution/warehouse facility with access to a regional roadway network including interstate, state, and regional roads.
- ▶ To locate a distribution/warehouse facility in an area well served by major local thoroughfares to minimize truck traffic traveling through residential neighborhoods.
- ▶ To provide sufficient parking for trucks and employees in order to minimize impacts to the surrounding area.
- ▶ To take advantage of an existing labor pool living in the Merced area.

The alternatives analysis in Chapter 5 of this EIR uses the project objectives as its starting point. As required by Section 15126.6 of the CEQA Guidelines, this EIR is required to analyze only those alternatives that can feasibly attain most of the project objectives.

3.7 PROJECT ELEMENTS

3.7.1 BUILDINGS AND OPERATIONS

The primary building on the site would be the approximately 1.1-million-square-foot regional distribution warehouse. The warehouse would be primarily a materials-handling operation; it would not handle perishable goods, such as fruit, vegetables, dairy products, bakery goods, and meat. There would also be warehouse support space to house administrative offices, the data processing center, and a cafeteria. Other internal office/support areas for administrative uses would consist of an electric forklift battery charging/maintenance area and an aerosol product storage area. There would be approximately 37,000 square feet of office/support areas within the warehouse. An emergency generator would be located outside, near the warehouse. The generator would have an approximately 500-gallon aboveground diesel fuel tank.

The proposed site plan (Exhibit 3-3) consists of the warehouse with related administrative and support functions, a truck maintenance building, fueling station, a fire pump house, a truck gate, and aerosol storage (located within the warehouse). All buildings would be single-story and constructed of pre-engineered steel components with metal panels. Maximum building height is proposed to be 40 feet above the finished floor level. On three sides of the building the finished floor would be 4 feet above finished grade. The main office floor would be at finished grade level.

The 17,000-square-foot truck maintenance building would be used for routine maintenance of tractor/trailers serving the facility. The building would include a wash bay for trucks and trailers, service bays, break rooms, offices, storage rooms, and restrooms. The truck maintenance equipment would consist of two underground storage tanks near the building; a storage tank for new oil (6,000-gallon capacity) and a storage tank for waste oil (2,500-gallon capacity). Additionally, a fuel dispensing station with two underground storage tanks, each containing 20,000 gallons of diesel fuel is proposed for trucks using the distribution center.

The 1,600-square-foot fire pump house would house the primary and standby fire pumps serving the building fire-sprinkler systems and site fire hydrants. An electric motor would drive the primary fire pump and a diesel engine would drive the standby pump. An aboveground diesel fuel storage tank for the standby pump, with a capacity of approximately 500 gallons, would be located inside the fire pump house. Adjacent to the fire pump house would be two steel aboveground storage tanks, each containing 300,000 gallons of water. The tanks would be directly connected to the fire pumps to serve as their water source.

The truck gate would be located on the truck driveway serving the site and would contain a storage closet, a restroom, and workspace for two security officers. This would involve a building with approximately 500 square feet of floor space.

3.7.2 LANDSCAPING AND LIGHTING

Site lighting would consist of pole-mounted metal halide lamps located approximately 45 feet above the ground. The lighting is designed so that light would not cross the property boundaries except possibly at roadway intersections. The lighting is designed for an average lighting level of 0.5 foot-candle and has not been designed based on a uniformity ratio. To design based on a uniformity ratio would require more lamps than would be provided for the site. Landscaping would be provided for the public road improvements, as required by local ordinance. The City would require, as a condition of approval, submittal of a landscape plan, which would include tree planting consistent with City standards and along the site perimeter. There would be security fencing surrounding the buildings, parking areas, and driveways.

3.7.3 ROADWAYS AND PARKING

The site would be served via two driveways connected to Gerard Avenue. One driveway would be dedicated to employee traffic and the other driveway would be dedicated to tractor trailer traffic. The tractor trailer driveway and parking area would be secured by the truck gate and by a 6-foot-high chain-link fence with three strands of barbwire. The site would have up to approximately 850 employee parking spaces, 1,600 tractor trailer parking spaces, 300 tractor (without trailer) parking spaces, and 300 dock doors. There would be approximately 70 acres of pavement, in addition to the area covered by buildings.

The project proponent intends to widen and upgrade Childs Avenue, Tower Road, and Gerard Road along the site frontages to City of Merced standards. The Kibby Road right-of-way, within the site boundary, would be abandoned and the sewer line would be removed.

3.7.4 PUBLIC UTILITIES AND SERVICES

The City of Merced provides wastewater, water, storm drainage, solid-waste disposal, street maintenance, fire service, and police service to the project site. Either Pacific Gas and Electric (PG&E) or MID can provide electricity to the site. PG&E would provide natural gas service. AT&T, Inc. (AT&T) (formerly SBC Communications) would provide telephone service to the site, and Comcast would provide cable television service. The project site is within the Weaver Union Elementary School District (grades K–8) and the Merced Union High School District (grades 9–12). However, because it includes no residential uses, neither of these districts would directly serve the proposed project.

According to the project engineer, the sanitary sewer line that exists within the Kibby Road right-of-way would be abandoned and replaced with a new sewer line that would be installed along the western boundary of the site. Similarly, the water line that is located within the Kibby Road right-of-way would also be replaced. Preliminary plans indicated that the replacement water line would be installed on the eastern edge of the site.

The distribution center would receive electrical power from Merced Irrigation District via an overhead line that exists within the Childs Road right-of-way. Gas service, to be provided by PG&E, would be extended to the site from a transmission line in Childs Road, approximately one-half mile east of Tower Road. AT&T would extend telephone service to the site from lines located in the rights-of-way of Childs Avenue and Gerard Avenue.

A series of stormwater management detention ponds would serve the site. These ponds and associated drainage-control structures are designed to accommodate stormwater runoff from impervious areas such that system discharge flow rates would be equal to or less than predevelopment flow rates for equivalent events.

3.7.5 EMPLOYMENT

The facility would become fully operational approximately 3 years after opening. Once fully operational, the facility would employ approximately 1,200 employees. The facility would operate 24 hours per day continuously throughout the year.

The proportions of employees in different positions and shifts at an analogous Wal-Mart Stores East LP distribution center in Apple Valley in San Bernardino County were used to determine the following estimates. The project was assumed to employ approximately 1,050 employees at the distribution center, and an additional 150 employees that would be drivers not hired at the facility that would only be on the premises for a limited period of time. Table 3-1 shows the total number of employees by department and title. Table 3-2 shows the number of employees on each shift.

Table 3-1 Employees by Title and Division	
Title/Division	Number of Employees
Drivers in Transportation	150
Associates in Transportation	64
Associates in Other Departments	986
Total Employees	1,200

Table 3-2 Number of Employees by Shift	
Shift	Number of Employees
Tuesday–Friday 5:30 a.m.–4:00 p.m.	359
Tuesday–Friday 4:00 p.m.–2:30 a.m.	255
Tuesday–Friday 9:00 p.m.–7:30 a.m.	19
Saturday–Monday 5:30 a.m.–4:00 p.m., plus another designated 6-hour day	282
Saturday–Monday 4:00 p.m.–2:30 a.m., plus another designated 6-hour day	272
Saturday–Monday 9:00 p.m.–7:30 a.m., plus another designated 6-hour day	13
Total Employees	1,200

3.7.6 PROPOSED SUSTAINABILITY AND ENERGY CONSERVATION MEASURES

The following information has been provided by representatives of Wal-Mart Stores East LP, and is a part of the project description. Implementation of the measures described below could reduce potential impacts of construction and operation of the proposed distribution center. These reductions could occur in areas such as, but not limited to, energy usage (for buildings and vehicles) and vehicle emissions. The effectiveness of these measures in reducing potential impacts cannot, however, be quantified. As such, they are not analyzed quantitatively in this EIR.

According to Wal-Mart representatives, Wal-Mart Stores East LP has set four primary sustainability goals:

- ▶ to be supplied by 100 percent renewable energy,

- ▶ to create zero waste,
- ▶ to sell environmentally friendly products, and
- ▶ to increase truck fleet efficiency

Wal-Mart has indicated an intention to incorporate several environmental and sustainable practices into the construction and operation of the Merced Regional Distribution Center project that would help achieve those goals.

CONSTRUCTION AND OPERATION

According to Wal-Mart representatives, building plans for the Merced Regional Distribution Center would include use of concrete that mixes traditional concrete with industrial by-products, including fly ash and slag. In addition, construction waste would be recycled on-site. The facility would incorporate an energy monitoring and reporting system, high-efficiency interior lighting including a dimming system with sensors, and water-saving bathroom fixtures, such as waterless urinals.

Technologies are currently being developed that would help meet the zero waste and renewable energy goals. Many of these technologies are still being refined, but all viable technologies would be incorporated into the building design and operations plan of the Merced Regional Distribution Center project as they become available. These include the following:

- ▶ daylight harvesting system;
- ▶ recycled, recyclable, and low toxicity finishes for interior office spaces;
- ▶ solar power;
- ▶ hydrogen fuel cell forklifts;
- ▶ paperless process for managing freight;
- ▶ waste recycling programs;
- ▶ Material Return Facilities to reduce the amount of waste generated and ensure re-use of shipping materials;
- ▶ “smart systems” that power down warehouse equipment when not in use. Wal-Mart has indicated its intention to continue to monitor these technologies and incorporate those that are effective, reliable and make business sense.

Wal-Mart would submit a sustainability plan to the City of Merced, which outlines how each of these measures would be incorporated, and, for those technologies that are currently not available, the plan would identify a timeline for incorporating the measures, as well as alternate technologies that are currently available, which would provide similar impact reductions. The plan would indicate that these alternate technologies would be implemented in the event that the emerging technologies are not available on the date specified by the timeline.

TRANSPORTATION

According to Wal-Mart representatives, to increase the efficiency of its vehicle fleet, all Wal-Mart-owned and operated tractor trailers domiciled at the Merced Distribution Center would comply with EPA 2010 truck fleet requirements, which would result in reduced emissions. Wal-Mart plans to increase its truck fleet efficiency by 25 percent over the next three years and by 50% within 10 years. Following are specific steps Wal-Mart will take in order to reach that goal.

- ▶ In June 2007, Wal-Mart's truck fleet was qualified as a "superior environmental performer" by the EPA's SmartWay Partnership, a collaboration between the EPA and the freight industry to increase energy efficiency while reducing greenhouse gases and air pollution. Wal-Mart has indicated its intention to continue its participation in the program as a "superior environmental performer," a title reserved for partners who operate the nation's least polluting fleets. All Wal-Mart trucks based at or serving the proposed Merced distribution center would participate in the SmartWay Partnership.
- ▶ All Wal-Mart trucks based at or serving the proposed Merced distribution center that perform overnight trips would be equipped with Auxiliary Power Units. Auxiliary Power Units are small efficient diesel engines used for cabin climate control and communication systems during breaks that operate more efficiently than large tractor engines.
- ▶ Wal-Mart has been working with and has indicated its intention to continue working with major truck design companies such as ArvinMeritor, Peterbilt, and International to develop diesel hybrid trucks and aerodynamic trucks that would help achieve efficiency goals.
- ▶ All corporate fleet vehicles based at the proposed Merced distribution center would be hybrid vehicles. Hybrid vehicles dramatically reduce gasoline consumption and therefore have lower operating emissions.
- ▶ Wal-Mart would offer carpooling incentive programs in an effort to reduce the number of commute trips generated by associates employed at the Merced facility. This program would include having reserved parking spots near the building entrance for carpools of two or more associates.

3.7.7 CONSTRUCTION SCHEDULE

Construction is anticipated to take 12 months for completion, most likely beginning in early January 2010 and ending in late December 2010. Construction worker parking would be provided onsite.

4 ENVIRONMENTAL SETTING, THRESHOLDS OF SIGNIFICANCE, ENVIRONMENTAL IMPACTS, AND MITIGATION MEASURES

Chapter 4 of the DEIR contains a discussion of existing conditions, thresholds above which an impact of constructing and operating the proposed Merced Wal-Mart Regional Distribution Center is considered significant, environmental impacts, mitigation measures, and levels of significance after mitigation. Issues evaluated in these sections consist of a full range of potential environmental topics originally identified for review in the notice of preparation (NOP) prepared for the proposed project. The date of the release of the Notice of Preparation (July 7, 2006) is considered the baseline condition for the environmental setting. Appendix A contains a copy of the NOP and comments received on the NOP. Sections 4.1 through 4.13 of this DEIR are each organized into the following major components:

- ▶ **Environmental Setting:** This subsection presents the existing regional and local environmental conditions relevant to the consideration of project impacts.
- ▶ **Regulatory Setting:** The applicable regulatory framework, including plans and policies under which the proposed project would be implemented, are discussed in this subsection.
- ▶ **Environmental Impacts:** This subsection describes the significance criteria used to evaluate impacts on the environment, issues not requiring further evaluation, and the environmental impacts associated with the project and mitigation measures proposed to reduce the impacts.
 - **Thresholds of Significance:** A discussion that presents the criteria used to define significant effects on the environment. The criteria are expressed as thresholds above which the project would have a significant effect on the environment. Thresholds may be quantitative or qualitative, or they may be based on agency standards or legislative or regulatory requirements as related to the impact analysis.
 - **Impact Analysis:** The discussion of potential significant effects of the proposed project on the environment, based on whether it exceeds expressed thresholds. Project impacts are numbered sequentially in each section. For instance, impacts in Section 4.3, “Biological Resources,” are numbered Impact 4.3-1, Impact 4.3-2, Impact 4.3-3, and so on. An italicized conclusion follows each impact statement and provides the summary of each impact and its level of significance before mitigation. A detailed discussion follows each impact statement and includes information to support the stated conclusion.

This discussion also provides mitigation measures to reduce significant or potentially significant effects of the proposed project to the extent feasible. Section 15370 of the State *CEQA Guidelines* defines mitigation as:

- (a) Avoiding the impact altogether by not taking a certain action or parts of an action.
- (b) Minimizing impacts by limiting the degree of magnitude of the action and its implementation.
- (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- (d) Reducing or eliminating the impact over time by preservation and maintenance operation during the life of the action.
- (e) Compensating for the impacts by replacing or providing substitute resources or environments.

The mitigation measures are listed numerically, corresponding to the impact being addressed. For example, “Impact 4.3-1” would be mitigated by “Mitigation Measure 4.3-1.”

This discussion also describes the status of all significant impacts following application of mitigation measures. Either the impact would be reduced to a level below the significance threshold (mitigated to a less-than-significant level) or it would be concluded that feasible mitigation is not available or is insufficient to reduce an impact to less than significant. This would be a “significant unavoidable effect on the environment.”

4.1 AGRICULTURAL RESOURCES

This section assesses the extent to which development of the proposed project would adversely affect important agricultural resources, conflict with adopted agricultural preservation policies, and conflict with agricultural zoning designations. Where impacts are identified, feasible mitigation measures are recommended.

4.1.1 ENVIRONMENTAL SETTING

The project site is located approximately 2 miles east of State Route 99, in the southeast corner of the City of Merced. The eastern boundary of the project site is the current city limits. Land immediately to the south, north, and west of the site is also within the city limits. Land immediately to the east is in unincorporated Merced County, but is within the City of Merced's (City's) sphere of influence. The project site is designated Industrial in the City General Plan and Heavy Industrial District in the zoning ordinance. The site has historically been used for agriculture.

The project site has most recently been used to grow almonds and alfalfa. The entire 230-acre project site consists of agricultural land. The western one-third of the site contains an almond orchard, and the eastern two-thirds consist of agricultural fields. The northern, southern, and part of the northeastern boundary of the fields contain irrigation ditches, which connect to the Wilson Substation.

Undeveloped open lands and commercial lands are located to the north of the project site. An orchard and a Merced Irrigation District (MID) canal are located west of the site. A few rural residential dwelling units are located across Tower Road to the east and Gerard Avenue to the south. Land east of Tower Road is designated Agriculture in the City General Plan. Land to the north, west, and south is designated Industrial.

SOIL RESOURCES

The type of agricultural activity that occurs in Merced County is dependent, in part, on the capability of the soil for supporting agriculture. The soil types and their corresponding agricultural suitability classifications are discussed below.

Soil Type

The majority of the soils on the project site are Wyman loam soils, totaling approximately 58%. The three types of Wyman soils span from the northwest corner of the project area, along Childs Avenue on the north boundary of the project area, then southerly through the mid-eastern region of the site, eventually spanning to the eastern and western boundaries in the southern region of the project site. The Wyman series consists of deep, well-drained soils that formed in alluvium from andesitic and basaltic rocks. Wyman soils are on terraces and alluvial fans that range from nearly level to strongly sloping and have slopes of 0 to 15%. The Wyman series is used extensively for orchard and truck crops, but some areas are used for vineyards, grain, alfalfa, and clover.

Landlow silty clay loam makes up 23% of the project site and is located in the central and mid-western region of the project site. Landlow soils are on nearly level basins of valley plains at elevations of 25–150 feet. These soils formed in moderately fine textured alluvium. These soils are often used to cultivate rice, field crops, and row crops.

Yokohl clay loam is located in the mid-western region and in a small area along the northern boundary in the central region of the project site. The Yokohl soils occur on gently sloping old fans and terraces on alluvium from primarily basic igneous rock. Soils are well drained. Runoff is very slow to rapid and permeability is slow to very slow.

Honcut silty clay loam is located in the northeast corner, with a small pocket of Porterville clay directly south along the eastern boundary of the project site. Honcut soils are highly productive under irrigation. Honcut soils are on floodplains and alluvial fans at elevations less than 2,000 feet. The Porterville series consists of deep, well-drained soils that formed in fine textured alluvial material from basic and metabasic igneous rock. Porterville soils are on fans and foothills and have slopes of 0 to 15%.

Table 4.1-1 shows the acreage and percentage of associated soil types located on the project site.

Table 4.1-1 Soil Types in the Project Area		
Soil Type	Acreage Percentage	Acreage
Honcut silty clay loam, 0 to 1% slopes	3.53	8.12
Landlow silty clay loam, 0 to 1% slopes	22.44	51.61
Porterville clay, 0 to 3% slopes	7.39	17.00
Wyman clay loam, 0 to 3% slopes	18.90	43.47
Wyman clay loam, deep over hardpan, 0 to 1% slopes	29.04	66.79
Wyman loam, 0 to 3% slopes	13.59	31.26
Yokohl clay loam, 0 to 3% slopes	5.11	11.75
Total	100.00	230.00
Source: NRCS 2006		

Soil Classification

The Natural Resources Conservation Service (NRCS) classifies soils by eight categories ranging from Class I to Class VIII. Classes V through VIII are less suitable for most types of agricultural production than are Classes I through IV. These classes are further delineated into subsets based on other site characteristics. The following is a brief description of the eight categories as defined by the NRCS:

- ▶ **Class I soils** have few limitations that restrict their use. These soils are typically used for vegetables, seed crops, orchards, and other irrigated specialty crops and irrigated field crops.
- ▶ **Class II soils** have minor-to-moderate limitations that reduce the choice of plants or that require moderate conservation practices. Uses are very similar to those found on Class I soils.
- ▶ **Class III and IV soils** have severe-to-very severe limitations that reduce the choice of plants, require special conservation practices, or require very careful management. In some cases, the Class III soils may be used for some of the crop types that are typically found on Class I and Class II soils, but are more typically used for specialty crops, forage lands, mixed croplands, and dryland field crops. Irrigated Class IV soils are commonly used for vineyards.
- ▶ **Class V soils** are not likely to erode but have other limitations, impractical to remove, that limit their use. These soils are not found in Merced County.
- ▶ **Class VI soils** have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife.

- ▶ **Class VII soils** have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland, or wildlife.
- ▶ **Class VIII soils** and landforms have limitations that preclude their use for commercial plants and restrict their use to recreation, wildlife, water supply, or aesthetic purposes.

Certain soil types correlate with soil classifications. No one soil type dominates the project site, but there is more Wyman clay loam than any other soil type. Several soils comprise different sizable swaths of the project site. The following soils and their classes are present on the project site:

- ▶ Honcut silty clay loam, 0 to 1% slope (HwA), Class I-1
- ▶ Landlow silty clay loam, 0 to 1% slopes (LeA), Class IIIw-2
- ▶ Porterville clay, 0 to 3% slopes (PwA), Class IIIs-5
- ▶ Wyman clay loam, deep over hardpan, 0 to 1% slopes (WnA), Class IIs-3
- ▶ Wyman clay loam, 0 to 3% slopes (WoA), Class I-1
- ▶ Wyman loam, 0 to 3% slopes (WrA), Class I-1
- ▶ Yokohl clay loam, 0 to 3% slopes (YbA), IVs-3

4.1.2 REGULATORY SETTING

The U.S. Department of Agriculture and California Department of Conservation (DOC) monitor conversion of farmland and develop methods of categorizing farmland according to its overall agricultural capacity. The State of California has developed farmland preservation programs, such as the Williamson Act to protect ongoing operations from urbanization due, in large part, to increases in land values. Merced County and the City of Merced have recognized the important value of agriculture, and have established policies to preserve farmland and encourage the viability of agricultural operations. Key aspects of the regulatory setting are described below.

CLASSIFYING FARMLAND

DOC develops programs to protect agricultural resources of the state and track conversion of agricultural land. Concern about the loss of important farmland led DOC to develop the Farmland Mapping and Monitoring Program, which classifies different agricultural soil types relating to their ability to sustain agricultural crops. The following categories are used:

- ▶ **Prime Farmland** is land with the best combination of physical and chemical features for the long-term production of agricultural crops. This land can economically produce sustained high yields when treated and managed according to modern farming methods.

According to NRCS, “prime farmland” is of major importance in meeting the nation’s short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our nation’s prime farmland

- ▶ **Farmland of Statewide Importance** is land with a good combination of physical and chemical features, but with minor shortcomings, such as greater slopes or less ability to hold and store moisture.
- ▶ **Unique Farmland** is land of lesser quality soils used for the production of the state’s leading agricultural cash crops. Unique farmland is not based on national criteria. It is commonly found in areas where there is a special microclimate, such as the wine country in California.
- ▶ **Farmland of Local Importance** is pasture land and other agricultural land identified by the local jurisdiction as being important.

CEQA (Appendix G) defines “Farmland”, for purposes of evaluating impacts, as land classified by DOC as Prime, Unique, or Farmland of Statewide Importance. According to DOC, Merced County currently has 535,562 acres of Farmland (as of 2004). In the period between 2000 and 2004, 7,149 acres of Prime Farmland and 3,345 acres of Farmland of Statewide Importance were lost, and, 71 acres of Unique Farmland was gained in Merced County, for a net loss of 10,423 acres over this four-year period. This equals 2% of the total Farmland (as defined by CEQA) in Merced County.

As shown in Exhibit 4.1-1, a majority of the project site consists of Prime Farmland. A large section of the western half of the site consists of Farmland of Statewide Importance, while smaller sections on the western and northern ends of the site consist of Unique Farmland. The entire site consists of Farmland, as defined by CEQA. Table 4.1-2 shows the acreage and percentage of farmland located on the project site according to the Farmland Mapping and Monitoring Program.

Table 4.1-2 Important Farmland in the Project Area		
Farmland Type	Acreage	Acreage Percentage
Prime Farmland	158.20	69.19
Farmland of Statewide Importance	57.87	25.29
Unique Farmland	12.61	5.51
Total	228.68	100

NUISANCE ISSUES

Urban encroachment on agricultural areas introduces issues such as land use conflicts, vandalism, increased land values and taxes, and other issues. The state recognized potential land use conflicts, and through Assembly Bill 1190 (Chapter 97, Statutes of 1992) attempted to avoid impacts on agricultural operations associated with urban uses “coming to a nuisance.” By amending provisions of the California Civil Code, under Assembly Bill 1190, existing agricultural processing facilities do not constitute a nuisance, provided they operate in a manner consistent with historic operations.

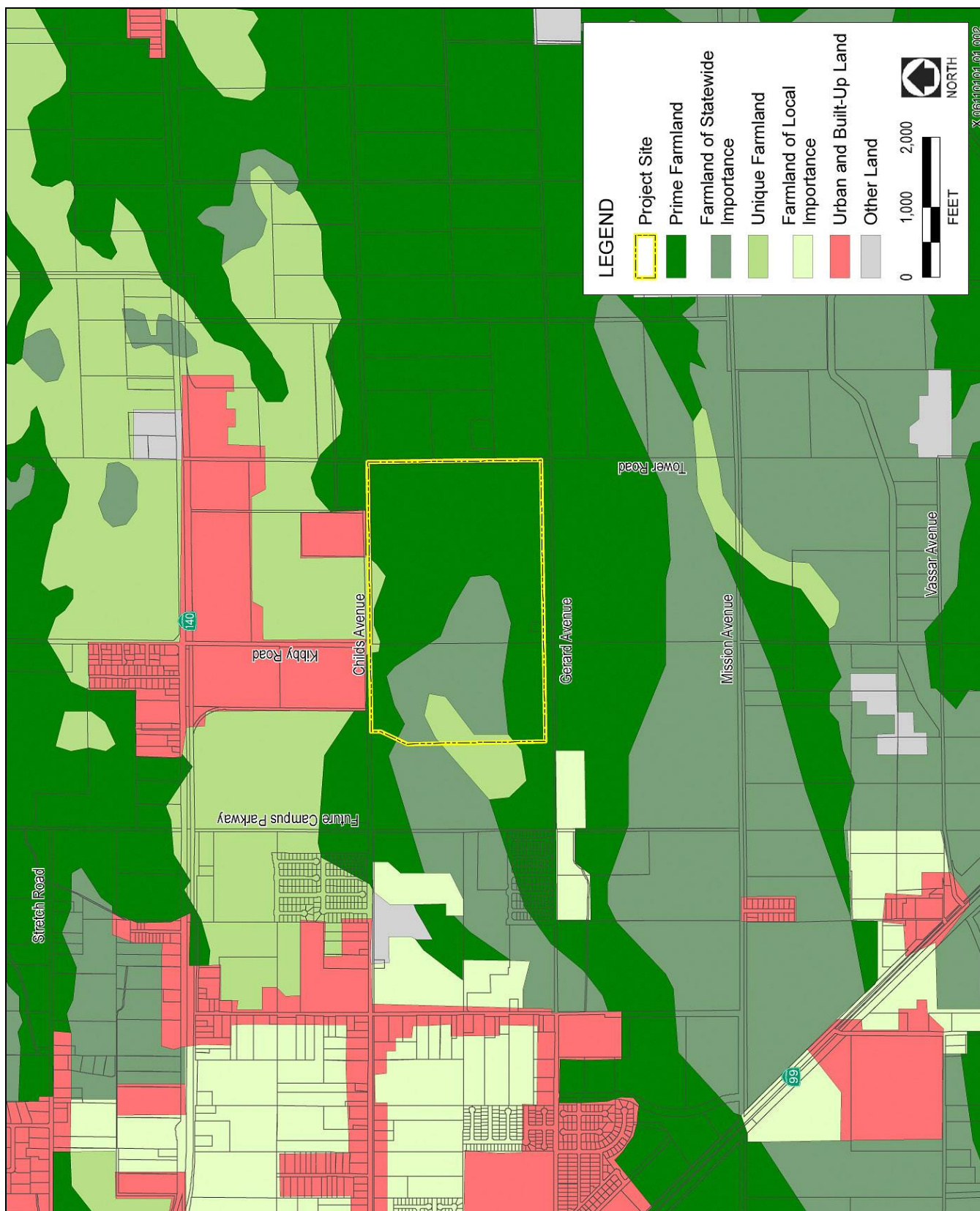
WILLIAMSON ACT PROGRAM

The Williamson Act establishes a mechanism for contracts between local governments and private landowners, restricting parcels of land to agricultural or related open space use. Landowners are taxed on the capitalization of the income from the land rather than the fair market value, and local governments receive an annual subvention of forgone property tax revenues from the state via the Open Space Subvention Act of 1971. In return, the landowner retains their land in open space or agricultural use for at least 10 years. Land can be withdrawn from a Williamson Act contract through a 10-year process beginning with a nonrenewal filing, during which taxes gradually increase to full levies. In extraordinary, unforeseen situations, immediate termination is sometimes granted. No Williamson Act contract currently applies to the project site, but, as can be seen in Exhibit 4.1-2, a Williamson Act property is adjacent to the site to the east.

CITY AGRICULTURAL POLICIES

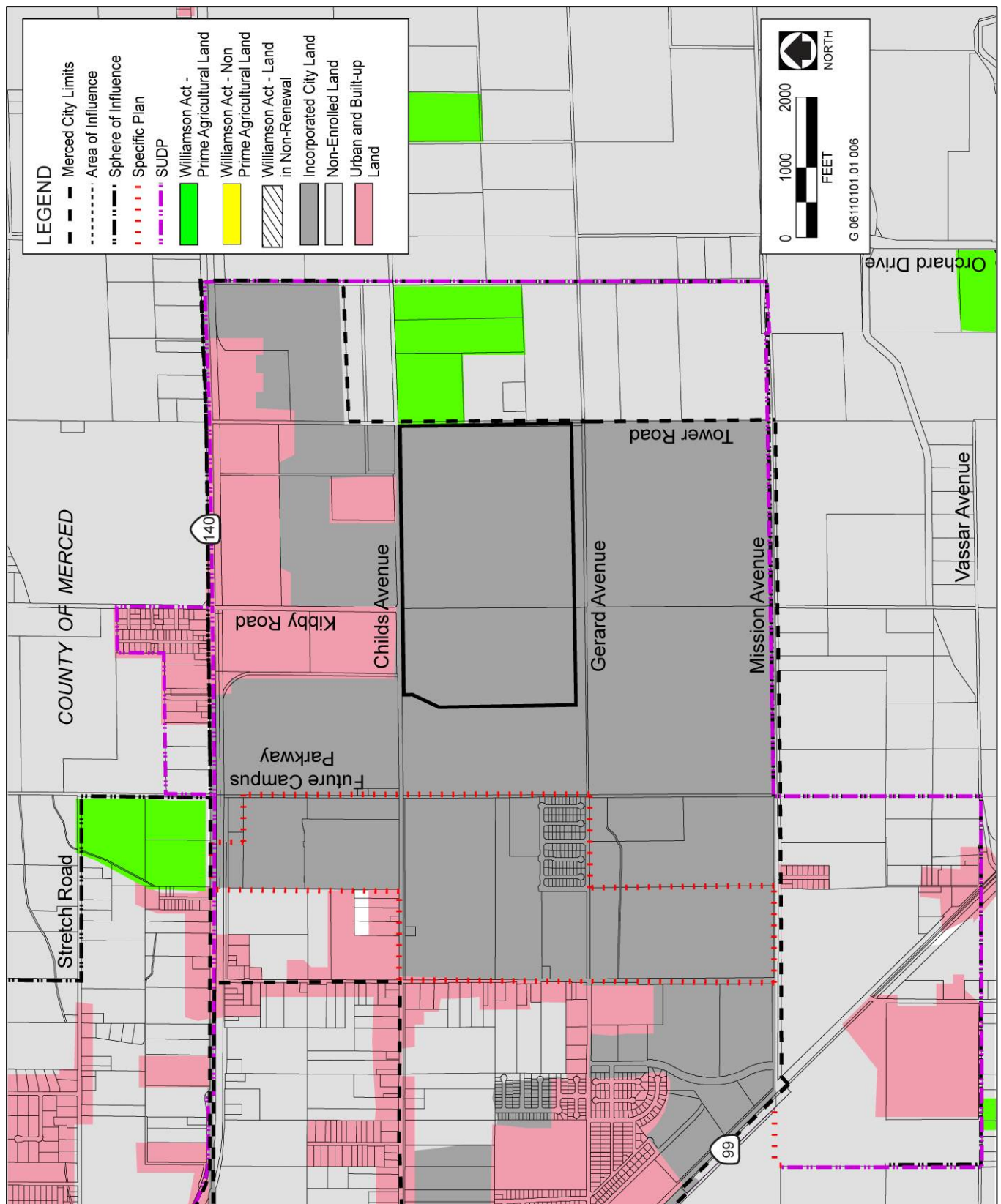
Neither the project site nor any of the land within the city limits surrounding or near the project site is designated agricultural by the City General Plan or zoning ordinance., but there is land on the south side of Childs Avenue approximately 1,500 feet west of the site that is zoned Restricted Agriculture (A-1-20); this land, however, is designated Business Park by the *Merced Vision 2015 General Plan* (City of Merced 1997).

The following are goals and policies from the *Merced Vision 2015 General Plan* related to agriculture.



Important Farmland in the Project Area

Exhibit 4.1-1



Source: Adapted by EDAW 2007

Williamson Act Lands in Project Vicinity

Exhibit 4.1-2

Conversion of Prime Agricultural Land to Nonagricultural Uses (Various Policies)

- ▶ Promote a compact urban form to minimize loss of agricultural crop land in the region. (Chapter 2, “Urban Expansion,” Policies UE-1.1 and 1.2; Chapter 3, “Land Use,” Policy 3.2; Chapter 6, “Urban Design,” Policies UD-1.1, 1.4, 1.5, 2.1 and 2.2; Chapter 7, “Open Space,” Policies OS-2.2 and 4.1)

Urban Expansion Element Goals

- ▶ Designate areas for new urban development that recognize the physical characteristics and environmental constraints of the planning area. (Policy UE-1.1)

Open Space, Conservation, and Recreation Element Goals

Protect agricultural areas outside the City’s SUDP [specific urban development plan] from urban impacts. (Policy OS 2.1)

Relieve pressures on converting areas containing large concentrations of “prime” agricultural soils to urban uses by providing adequate urban development land within the Merced City SUDP. *(Generally, overly restrictive growth and development policies within a city can translate into increased development pressure on rural areas. The City of Merced is committed to providing adequate and economically competitive development land within its urban growth area in order to reduce rural development pressures on the valuable agricultural lands outside the City’s SUDP and in the surrounding region.)* (Policy OS-2.2)

MERCED VISION 2015 GENERAL PLAN ENVIRONMENTAL IMPACT REPORT

The Merced Vision 2015 General Plan EIR specifically evaluated the adverse environmental impacts that would result if agricultural land at the project site were converted to urban uses. The General Plan Program EIR states that implementation of the existing City General Plan could have a significant adverse impact on the environment if it substantially reduces agricultural production capacity of the region or results in the substantial loss of prime agricultural soil production capability. Specifically, for purposes of the General Plan Program EIR, an impact is considered significant if the City General Plan would:

- ▶ convert economically viable concentrations of prime agricultural land to nonagricultural use,
- ▶ impair the agricultural productivity of prime agricultural land in the region, or
- ▶ conflict with adopted agricultural resource plans and goals of the City of Merced.

Chapter 7 of the General Plan Program EIR, “Significant Unavoidable Effects Which Cannot Be Avoided If the Project Is Implemented,” cites a significant and unavoidable impact related to loss of Agricultural Soils. Population growth in Merced County, and the San Joaquin Valley, will create pressure to convert “prime” and other productive agricultural soils to urban uses. Due to the historical location of the Valley’s urban centers, any growth or population expansion can be expected to affect productive agricultural land.

The EIR for the *Merced Vision 2015 General Plan* states that the plan reduces the potential adverse effects of regional growth by providing a compact urban setting where growth and development can occur, thus reducing the amount of agricultural land that is consumed by the urbanization process. The EIR also states the General Plan designates growth areas that exhibit characteristics associated with less productive agricultural lands. The General Plan EIR acknowledges the loss of farmland as a result of urban development with the SUDP, as indicated in the following statement.

The implementation of the ***Merced Vision 2015 General Plan*** will result in the loss of approximately 7,286 acres of crop land with a productive capability projected to be approximately \$4.1 million. The total 1995 economic impact of the loss productive capability is estimated to be \$15 million (1995 dollars) or roughly 0.66% of the economic agriculturally-related activity of Merced County. At the same time, the

urban expansion of the Merced city limits, through various policy provisions, impacts agricultural lands outside the urban development area of the City. As a final consideration, development of support activities and services are essential to the long-term viability of the agricultural productive capacity of the region. Industrial, residential and service area needs must be met through the provision of urban land uses with adequate infrastructure, such as will occur in the City of Merced. Compact urban development, as concluded by a report prepared by the American Farmland Trust, (Alternatives for Future Urban Growth in California's Central Valley) results in less agricultural land conversion than low density "sprawl" type of development.

On the basis of this analysis, it has been determined that the conversion of "prime" agricultural soils non-productive agricultural uses is a "significant" adverse impact under CEQA. In order to achieve the goals of maintaining a compact urban form, and other types of land-use compatibility issues, mitigation which would eliminate this loss is not possible.

While these areas designated for urban growth include some "prime" and other important soils, the conversion of these areas to urban uses minimizes impacts to agricultural resources when compared to alternative growth and development scenarios in the region. The main reason for this conclusion is that a more condensed urban development plan that results in (or allows) the conversion of some agricultural land is better than a plan that does not contain development and allows for leapfrog developments into unplanned and undeveloped areas, which would thereby result in a higher conversion of agricultural lands. Nonetheless, the loss of any "prime" agricultural soil resource is, however, a significant and unavoidable adverse impact on the environment. In particular, the General Plan Program EIR found that the urbanization of the project site would result in a significant and unavoidable impact to agricultural resources, but that impact would be less extensive than impacts to agricultural resources that result under alternative growth scenarios.

COUNTY AGRICULTURAL POLICIES

Despite the extensive growth of the City of Merced and other cities in Merced County in the last several decades, Merced County still has thousands of acres of agricultural land. Merced County has designated property east of the site for agriculture (see Exhibit 3-5). The Merced County General Plan Agricultural Element provides extensive background on the character and importance of agriculture as an economic activity and agricultural lands as a resource, as well as a strong policy base for protecting agriculture and agricultural resources.

Although the proposed project is fully within the Merced city limits, it borders existing agricultural land in unincorporated Merced County. There is no right-to-farm ordinance in unincorporated Merced County applying extra protections to agricultural operations from nuisance complaints and other potential hindrances of agricultural activity that can result from urban development occurring in or near agricultural areas.

According to the Merced County Zoning Code, the agricultural zones were established for the purposes discussed in the code section below. The purposes given for each zone also illustrate the difference in minimum acreage among the three agricultural zones (Merced County Zoning Code, Section 18.02.010).

A. The purpose of this chapter is to achieve the following:

1. Provide a suitable environment for the preservation, development, and growth of agriculture.
2. Protect the agricultural industrial community and its related uses from encroachments of non-related or incompatible uses.
3. Preserve and encourage the economic stability of agriculture.
4. Ensure compatibility of adjacent land uses with agricultural zones.

B. The purpose of each agricultural zone is to achieve the following:

1. General Agricultural (A-1) Zone. The purpose of the general agricultural zone (A-1) is to provide for areas for more intensive farming operations dependent on higher quality soils, water availability and relatively flat topography, and agricultural commercial and/or industrial uses dependent on proximity to urban areas or location in sparsely populated low traffic areas. Parcels smaller than forty (40) acres down to a minimum of twenty (20) acres can be considered where agricultural productivity of the property will not be reduced.
2. General Agricultural (A-1-40) Zone. The purpose of the general agricultural zone (A-1-40) is to provide areas where the forty (40) acre minimum parcel size of the zone allows for the widest variety of farming operations including agricultural commercial/industrial uses which are dependent on medium to higher quality soils, water availability and larger parcel sizes away from urban areas.
3. Exclusive Agricultural (A-2) Zone. The purpose of the exclusive agricultural zone (A-2) is to allow for considerably expanded agricultural enterprises, due mainly to the requirement of larger size land parcels which are more economically suitable to support farming activities occurring in the area. The one hundred sixty (160) acre minimum parcel size of the zone allows for farming and ranching operations and a variety of open space functions that are typically less dependent on soil quality and water for irrigation and are often connected more with foothill and wetlands locations, grazing and pasture land and wildlife habitat and recreational areas. (Ord. 1586 [part], 1977).

The land bordering the project site to the east in the unincorporated Merced County is zoned General Agricultural (A-1).

4.1.3 ENVIRONMENTAL IMPACTS

THRESHOLDS OF SIGNIFICANCE

Based on Appendix G of the State CEQA Guidelines, an agricultural resources impact is considered significant if implementation of the proposed project would do any of the following:

- ▶ 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 nonagricultural use;
- ▶ conflict with existing zoning for agricultural use, or a Williamson Act contract;
- ▶ involve other changes in the existing environment that, because of their location or nature, could result in conversion of Farmland, to nonagricultural use; or
- ▶ is inconsistent with City General Plan goals and policies relevant to protection of agriculture.

IMPACT ANALYSIS

IMPACT 4.1-1	Conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. <i>The proposed project would result in the conversion of Prime Farmland. The project would result in a significant impact.</i>

As previously described, a large area of Prime Farmland is located in southeast Merced (where the project is located). Of the Prime soil areas in southeast Merced, the General Plan designates nearly all for industrial development (see Exhibits 4.1-1 and 4.1-2). Conversion of Prime soils to nonagricultural production uses is

considered a significant adverse impact under CEQA. The General Plan EIR further states that future industrial, residential, and service area needs must be met through the provision of urban land uses with adequate infrastructure. Compact urban development, as concluded by a report prepared by the American Farmland Trust (Alternatives for Future Urban Growth in California’s Central Valley), results in less agricultural land conversion than low-density “sprawl” type of development. The General Plan EIR concludes that to achieve the goals of maintaining a compact urban form, and other types of land-use compatibility issues, mitigation that would eliminate this loss is not possible.

EVALUATING FARMLAND CONVERSION IMPACTS

Impacts related to direct conversion of farmland have been quantified according to several criteria using the California Land Evaluation and Site Assessment model, as described below. Using methodology recommended by DOC, the LESA model is used to assess the significance of agricultural land conversion resulting from implementation of the proposed project. In Section IV of the LESA Instructional Manual, the significance of project impacts is characterized in the following manner.

The LESA model is used by many lead agencies to assess agricultural land conversions quantitatively in the environmental review process (Public Resources Code Section 21095), including in CEQA review. The LESA is a point-based approach for rating the relative importance of agricultural land resources. LESA considers soil quality, parcel size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands. For a given project, these criteria are rated, weighted, and combined, resulting in a single numeric score. The score associated with the agricultural resource becomes the basis for making a determination of a project’s potential significance.

Using methodology recommended by DOC, the LESA model was used to assess the significance of agricultural land conversion resulting from implementation of the proposed project. In Section IV of the LESA Instructional Manual, the significance of a project’s impacts is characterized in the following manner:

0–39 points	Not considered significant.
40–59 points	Considered significant only if LE (Land Evaluation) and SA (Site Assessment) are each greater than or equal to 20 points.
60–79 points	Considered significant unless either [the Land Evaluation] or [Site Assessment] subscore is less than 20 points.
80–100 points	Considered significant.

The LESA model was used to analyze the project site. As shown in Table 4.1-3, the project scored an 88.4 with subtotals of 43.4 and 45 for the land evaluation and site assessment portions, respectively.

Table 4.1-3 LESA Scoresheet for the Project Site			
Factor Name	Factor Rating	Factor Weighting	Score
Land Evaluation			
Land Capability Classification	87.2	0.25	21.8
Storie Index Rating	86.5	0.25	21.6
Subtotal			43.4

Table 4.1-3 LESA Scoresheet for the Project Site			
Factor Name	Factor Rating	Factor Weighting	Score
Site Assessment			
Project Size	100	0.15	15
Water Resource Availability	100	0.15	15
Surrounding Agricultural Lands	100	0.15	15
Protected Resource Lands	0	0.05	0
Subtotal			45.0
Total			88.4
Source: Calculated by EDAW using methods of the California Department of Conservation provided in <i>California Agricultural Land Evaluation and Site Assessment Model Instruction Manual</i> (1997).			

The project scored an 88.4 with subtotals of 43.4 and 45 for the land evaluation and site assessment portions, respectively (please see Table 4.1-3 above or Appendix B for more information). Based on the scoring established by the state, this is considered significant. Furthermore, as shown on Table 4.1-2, the project would result in the conversion of approximately 228.68 acres of farmland, as defined by CEQA, which is also considered a significant impact.

Because of the project would result in the conversion of 228.68 acres of Farmland and the significant LESA score, the effect on Farmland soils is considered a significant impact. Furthermore, industrial uses adjacent to agricultural land can result in land use conflicts and create incentives for agricultural producers to discontinue agricultural operations and sell their land for development.

The proposed project would be within the Merced city limits on the fringe of existing development in the southeast portion of the City, with a large amount of the surrounding land uses in agriculture, but the area also includes adjacent industrial uses. The proposed project would be located in an area that is planned for future industrial development, according to the General Plan. The site is surrounded to the east, south, and west by other agricultural uses. To the north are two existing industrial businesses. Further to the northwest is the City of Merced, which is primarily urbanized.

As mentioned previously, placing industrial adjacent to agriculture can produce land use conflicts and can lead to increased conversion of agricultural land. Approximately 70% of the project site consists of Prime Farmland, the conversion of which would be considered a **significant** impact. The City's General Plan EIR further concludes that to achieve the goals of maintaining a compact urban form, and other types of land-use compatibility issues, mitigation that would eliminate the loss of agricultural land to urban development is not possible. Therefore, because no mitigation is available to reduce this impact, the impact would remain **significant and unavoidable**. This conclusion is consistent with the conclusion of the EIR prepared for the Merced Vision 2015 General Plan. It should be noted that the City considered the significant impact associated with the conversion of farmland resulting from buildout of the General Plan and adopted a Statement of Overriding Considerations (Resolution No. 97-22).

IMPACT **Conflict with Existing Zoning for Agricultural Use, or a Williamson Act Contract.** *The project site is*
4.1-2 *neither zoned for agriculture nor is it in a Williamson Act contract; therefore, the proposed project would*
 have no impact.

The site is currently and has historically been used for agricultural purposes, and is located in an area in southern Merced where large amounts of agricultural properties exist. However, the project site is neither zoned for agriculture nor is it in a Williamson Act contract. The project site is located on incorporated land adjacent along the western boundary of unincorporated land currently under Williamson Act contract. However, the site is currently designated in the City General Plan as Industrial, is zoned Heavy Industrial District, and has adjacent industrial use to the north of the site. Therefore, the proposed project would not conflict with existing zoning for agricultural use or a Williamson Act contract and would have **no impact**.

Mitigation Measure

No mitigation is required.

IMPACT **Other Changes in the Environment that Could Result in Conversion of Farmland to Nonagricultural**
4.1-3 **Use.** *The proposed project could foster future farmland conversions; however, the project conforms to the*
 City's plans and designations. This impact would be considered less than significant.

The project site is located in the City's planned buildout area and currently designated Industrial and zoned Heavy Industrial. The proposed project would be consistent with the City's zoning and land use policies and plans. However, the southeast area of Merced has historically been used for agricultural production, and existing agricultural practices are currently taking place on-site and in the immediate vicinity, and extending east, west, and south into surrounding Merced County territory.

Upon development of the site, surrounding agricultural operations that have long been adapted to being adjacent to an agricultural site, would be instead adjacent to an urban site. Urban and agricultural conflicts generally arise with the location of residential uses close to agricultural uses because of dust, noise, smell, and other by-products of agricultural production, and can lead to land use changes and conversion of agricultural land. However, industrial use, depending on the type, can be compatible with agricultural activities, if the industrial use is not sensitive to noise, dust, unfavorable smell, and other nuisances, and therefore can exist in proximity to one another without significant impacts.

The proposed 1.1-million-square-foot Wal-Mart distribution center requires a large amount of space because of extensive parking needs and building configuration; it requires separation from residential areas and sensitive receptors, and close proximity to arterial streets because truck traffic to and from the site would be constant, creating noise and increased traffic volume. The conversion of 228.68 acres of agricultural lands could eventually lead to conversion of nearby agricultural properties to urban use in the project vicinity. However, the proposed site is located within the City's planned build-out boundary. The impact is therefore **less than significant**.

Mitigation Measure

No mitigation is required.

IMPACT **Potential for Inconsistency with Merced General Plan Goals and Policies Relevant to Protection of**
4.1-4 **Agriculture.** *The proposed project conforms to the City's planning documents and designations, making this*
 impact less than significant.

According to the *Merced Vision 2015 General Plan* EIR, roughly 94% of the land in Merced County is usable for agricultural purposes, whether that use is intense farm production or grazing land. The project site is located in the

southeast portion of Merced, with Merced County territory adjacent to the south and east. For the *Merced Vision 2015 General Plan*, the *City of Merced Commercial and Industrial Land Study (1994–2010)* was completed. This study attempted to identify future commercial and industrial sites to be included in the City General Plan. This action was necessary because the City’s inventory of readily available commercial and industrial sites was low. As has been mentioned previously, the proposed project site is currently zoned Heavy Industrial in the City’s zoning ordinance and has a land use designation of Industrial in the *Merced Vision 2015 General Plan*.

The City General Plan contains several sections that contain goals and policies relevant to the protection of agriculture, including Sustainable Development; Open Space, Conservation and Recreation; Urban Expansion; and Land Use. Goals related to agriculture protection found in these sections, and including the City General Plan EIR are summarized in Section 4.1.2, “Regulatory Setting.” Most of the goals included in this section relate to the pursuit of economic development activities while minimizing the loss of agricultural cropland, establishing buffer areas along the urban interface with prime agricultural lands, and preserving agriculturally significant areas. The City General Plan promotes economic development activities in the City. As mentioned previously, the project is located in a planned buildout area, according to the City General Plan. Therefore, the proposed project would be consistent with the City’s General Plan and related policies, and the project would have a ***less-than-significant*** impact.

Mitigation Measure

No mitigation is required.

4.2 AIR QUALITY

This section includes a description of existing air quality conditions, summary of applicable regulations, and an analysis of potential short-term and long-term air quality impacts of the proposed project. The method of analysis for short-term construction, long-term regional (operational), local mobile source, odor, and toxic air contaminant (TAC) emissions in accordance with the recommendations of the San Joaquin Valley Air Pollution Control District (SJVAPCD). The analysis also includes consideration of the potential impact of the project on global climate change through the production of greenhouse gas emissions. In addition, mitigation measures are recommended, as necessary, to reduce significant air quality impacts.

4.2.1 ENVIRONMENTAL SETTING

The project site is located in Merced County, which is within the San Joaquin Valley Air Basin (SJVAB). The SJVAB also comprises all of Fresno, Kings, Madera, San Joaquin, Stanislaus, and Tulare counties, and the valley portion of Kern. The ambient concentrations of air pollutant emissions are determined by the amount of emissions released by pollutant sources and the atmosphere's ability to transport and dilute such emissions. Natural factors which affect transport and dilution include terrain, wind, atmospheric stability, and the presence of sunlight. Therefore, existing air quality conditions in the area are determined by such natural factors as topography, meteorology, and climate, in addition to the amount of emissions released by existing air pollutant sources, as discussed separately below.

TOPOGRAPHY, METEOROLOGY, AND CLIMATE

The SJVAB, which occupies the southern half of the Central Valley, is approximately 400 miles long (north-south) and, on average, 50 miles wide (east-west). The SJVAB is a well-defined climatic region, with distinct topographic features on three sides. The Coast Ranges, which have an average elevation of 3,000 feet, are located on the western border of the SJVAB. The San Emigdio Mountains, which are part of the Coast Ranges, and the Tehachapi Mountains, which are part of the Sierra Nevada, are both located on the south side of the SJVAB. The Sierra Nevada forms the eastern border of the SJVAB. The northernmost portion of the SJVAB is San Joaquin County. There is no topographic feature delineating the northern edge of the basin. The SJVAB is basically flat with a downward gradient in terrain to the northwest. Air flows into the SJVAB through the Carquinez Strait, the only breach in the western mountain barrier, and moves across the Sacramento–San Joaquin River Delta from the San Francisco Bay area. The mountains surrounding the SJVAB create a barrier to airflow, which leads to the entrapment of air pollutants when meteorological conditions are unfavorable for transport and dilution.

The inland Mediterranean climate type of the SJVAB is characterized by hot, dry summers and cool, rainy winters. The climate is a result of the topography and the strength and location of a semi-permanent, subtropical high-pressure cell. During summer, the Pacific high-pressure cell is centered over the northeastern Pacific Ocean, resulting in stable meteorological conditions and a steady northwesterly wind flow. Upwelling of cold ocean water from below to the surface as a result of the northwesterly flow produces a band of cold water off the California coast. Daily summer high temperatures often exceed 100° F, averaging in the low 90s in the north and high 90s in the south. In the entire SJVAB, daily summer high temperatures average 95° F. Over the last 30 years, temperatures in the SJVAB averaged 90° F or higher for 106 days a year, and 100° F or higher for 40 days a year. The daily summer temperature variation can be as high as 30° F (SJVAPCD 2002). In winter, the Pacific high-pressure cell weakens and shifts southward, resulting in wind flow offshore, the absence of upwelling, and the occurrence of storms. Average high temperatures in the winter are in the 50s, but lows in the 30s and 40s can occur on days with persistent fog and low cloudiness. The average daily low winter temperature is 45° F (SJVAPCD 2002).

A majority of the precipitation in the SJVAB occurs as rainfall during winter storms. The rare occurrence of precipitation during the summer is in the form of convective rain showers. The amount of precipitation in the SJVAB decreases from north to south primarily because of the Pacific storm track that often passes through the

northern part while the southern part remains protected by the Pacific high-pressure cell. Stockton in the north receives about 20 inches of precipitation per year, Fresno in the center receives about 10 inches per year, and Bakersfield at the southern end of the valley receives less than 6 inches per year. Average annual rainfall for the entire SJVAB is approximately 9.25 inches on the valley floor (SJVAPCD 2002).

The winds and unstable atmospheric conditions associated with the passage of winter storms result in periods of low air pollution and excellent visibility. Precipitation and fog tend to reduce or limit some pollutant concentrations. For instance, clouds and fog block sunlight, which is required to fuel photochemical reactions that form ozone. Because carbon monoxide (CO) is partially water-soluble, precipitation and fog also tend to reduce concentrations in the atmosphere. In addition, respirable particulate matter with an aerodynamic diameter of 10 micrometers or less (PM₁₀) can be washed from the atmosphere through wet deposition processes (e.g., rain). However, between winter storms, high pressure and light winds lead to the creation of low-level temperature inversions and stable atmospheric conditions resulting in the concentration of air pollutants (e.g., CO and PM₁₀).

Summer is considered the ozone season in the SJVAB. This season is characterized by poor air movement in the mornings and longer daylight hours which provides a plentiful amount of sunlight to fuel photochemical reactions between reactive organic gases (ROG) and nitrogen oxides (NO_x), which result in ozone formation. During the summer, wind speed and direction data indicate that summer wind usually originates at the north end of the San Joaquin Valley and flows in a south-southeasterly direction through the San Joaquin Valley, through Tehachapi pass, and into the Southeast Desert Air Basin (SJVAPCD 2002).

OZONE TRANSPORT

Ozone transport refers to the movement of ozone and precursors from other basins to the SJVAB, from the SJVAB to other air basins, and within the SJVAB. Transport can occur at ground level and also at higher altitudes (e.g., movement up mountain slopes during the day).

According to the SJVAB Extreme Ozone Attainment Demonstration Plan, the transport of pollutants within the SJVAB significantly contributes to high ozone concentrations (SJVAPCD 2005). As discussed above, prevailing winds blow from the northern part of the SJVAB to the south, and can transport pollutants from San Joaquin, Stanislaus, and Merced counties to the Fresno area. Pollutants transported from the San Francisco Bay area south to Fresno and Bakersfield are combined with those in the northern portion of the SJVAB because of the passage of air movement. Further south, eddy currents can transport pollutants along the east side of the SJVAB from Tulare County and northern Kern County to the Fresno area.

Ozone and precursors are transported from other basins to the SJVAB. On some days, according to an California Air Resources Board (ARB) assessment of ozone transport, pollutants transported from the San Francisco Bay area affect ozone air quality in the northern SJVAB, mixing with local emissions to contribute to violations of the national 1-hour ozone standard¹ (ARB 2001). On other days, violations of the standard are entirely from local emissions. The effect of San Francisco Bay area transport diminishes with distance so that ambient ozone concentrations in Fresno and Bakersfield are affected less. Overall, ARB rates the San Francisco Bay area's impact on SJVAB ozone air quality as ranging from inconsequential to overwhelming (i.e., alone can cause violations) depending on meteorological conditions occurring at the time of transport evaluation and in the receptor area. ARB also identifies the broader Sacramento area as a source of ozone and precursor transport to the SJVAB, but the effect only ranges from significant (i.e., contributes to a violation when combined with local emissions) to inconsequential. ARB's assessment of ozone transport found that pollutants transported from other air basins affect the SJVAB's ozone air quality, but the magnitude of the effect declines from north to south (ARB 2001). Local emissions are thought to be primarily responsible for the SJVAB's worst ozone air quality.

EXISTING AIR QUALITY—CRITERIA AIR POLLUTANTS

Concentrations of the following air pollutants: ozone, CO, nitrogen dioxide (NO₂), sulfur dioxide (SO₂), respirable and fine particulate matter (PM₁₀ and PM_{2.5}), and lead are used as indicators of ambient air quality conditions. Because these are the most prevalent air pollutants known to be deleterious to human health and extensive health-effects criteria documents are available, they are commonly referred to as “criteria air pollutants.”

A brief description of each criteria air pollutant including source types, health effects, and future trends is provided below along with the most current attainment area designations and monitoring data for the project area.

Ozone

Ozone is a photochemical oxidant, a substance whose oxygen combines chemically with another substance in the presence of sunlight, and the primary component of smog. Ozone is not directly emitted into the air, but is formed through complex chemical reactions between precursor emissions of ROG and NO_x in the presence of sunlight. ROG are volatile organic compounds that are photochemically reactive. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. NO_x are a group of gaseous compounds of nitrogen and oxygen that results from the combustion of fuels.

Ozone located in the upper atmosphere (stratosphere) acts in a beneficial manner by shielding the earth from harmful ultraviolet radiation that is emitted by the sun. However, ozone located in the lower atmosphere (troposphere) is a major health and environmental concern. Meteorology and terrain play a major role in ozone formation. Generally, low wind speeds or stagnant air coupled with warm temperatures and clear skies provide the optimum conditions for formation. As a result, summer is generally the peak ozone season. Because of the reaction time involved, peak ozone concentrations often occur far downwind of the precursor emissions. Therefore, ozone is a regional pollutant that often affects large areas. In general, ozone concentrations over or near urban and rural areas reflect an interplay of emissions of ozone precursors, transport, meteorology, and atmospheric chemistry (Godish 2004).

The adverse health effects associated with exposure to ozone pertain primarily to the respiratory system. Scientific evidence indicates that ambient levels of ozone affect not only sensitive receptors, such as asthmatics and children, but healthy adults as well. Exposure to ambient levels of ozone ranging from 0.10 to 0.40 parts per million (ppm) for 1 to 2 hours has been found to significantly alter lung functions by increasing respiratory rates and pulmonary resistance, decreasing tidal volumes, and impairing respiratory mechanics. Ambient levels of ozone above 0.12 ppm are linked to symptomatic responses that include such symptoms as throat dryness, chest tightness, headache, and nausea. In addition to the above adverse health effects, evidence also exists relating ozone exposure to an increase in the permeability of respiratory epithelia; such increased permeability leads to an increase in responsiveness of the respiratory system to challenges, and the interference or inhibition of the immune system's ability to defend against infection (Godish 2004). Ground level ozone also damages forests, agricultural crops, and some human-made materials, such as rubber, paint, and plastics (City of Merced 1997).

Emissions of ozone precursors ROG and NO_x have decreased over the past several years because of more stringent motor vehicle standards and cleaner burning fuels. The ozone problem in the San Joaquin Valley ranks among the most severe in the State. Peak levels have not declined as much as the number of days that standards are exceeded. From 1985 to 2004, the maximum peak 8-hour indicator decreased only 2%. The number of national 8-hour standard exceedance days has been quite variable over the years. This variability is due, in part, to the influence of meteorology as well as changes to the monitoring network. The monitoring network was not as extensive during the 1980's as it has been during the last 14 years. For this reason, the period of 1990 to 2005 provides a better indication of trends. During this period, there has been an 8% decrease in the three-year average of the number of exceedance days of the national 8-hour standard (ARB 2006x).

Carbon Monoxide

CO is a colorless, odorless, and poisonous gas produced by incomplete burning of carbon in fuels, primarily from mobile (transportation) sources. In fact, 77% of the nationwide CO emissions are from mobile sources. The other 23% consists of CO emissions from wood-burning stoves, incinerators, and industrial sources.

CO enters the bloodstream through the lungs by combining with hemoglobin, which normally supplies oxygen to the cells. However, CO combines with hemoglobin much more readily than oxygen does, resulting in a drastic reduction in the amount of oxygen available to the cells. Adverse health effects associated with exposure to CO concentrations include such symptoms as dizziness, headaches, and fatigue. CO exposure is especially harmful to individuals who suffer from cardiovascular and respiratory diseases (EPA 2006x).

The highest concentrations are generally associated with cold stagnant weather conditions that occur during the winter. In contrast to ozone, which tends to be a regional pollutant, CO problems tend to be localized.

Nitrogen Dioxide

Nitrogen dioxide (NO₂) is a brownish, highly reactive gas that is present in all urban environments. The major human-made sources of NO₂ are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO₂ (EPA 2006x). The combined emissions of NO and NO₂ are referred to as NO_x, which are reported as equivalent NO₂. Because NO₂ is formed and depleted by reactions associated with photochemical smog (ozone), the NO₂ concentration in a particular geographical area may not be representative of the local NO_x emission sources.

Inhalation is the most common route of exposure to NO₂. Because NO₂ has relatively low solubility in water, the principal site of toxicity is in the lower respiratory tract. The severity of the adverse health effects depends primarily on the concentration inhaled rather than the duration of exposure. An individual may experience a variety of acute symptoms, including coughing, difficulty with breathing, vomiting, headache, and eye irritation during or shortly after exposure. After a period of approximately 4 to 12 hours, an exposed individual may experience chemical pneumonitis or pulmonary edema with breathing abnormalities, cough, cyanosis, chest pain, and rapid heartbeat. Severe, symptomatic NO₂ intoxication after acute exposure has been linked on occasion with prolonged respiratory impairment with such symptoms as chronic bronchitis and decreased lung functions.

Sulfur Dioxide

SO₂ is produced by such stationary sources as coal and oil combustion, steel mills, refineries, pulp and paper mills. The major adverse health effects associated with SO₂ exposure pertain to the upper respiratory tract. SO₂ is a respiratory irritant with constriction of the bronchioles occurring with inhalation of SO₂ at 5 ppm or more. On contact with the moist mucous membranes, SO₂ produces sulfuric acid, which is a direct irritant. Concentration rather than duration of the exposure is an important determinant of respiratory effects. Exposure to high SO₂ concentrations may result in edema of the lungs or glottis and respiratory paralysis.

Particulate Matter

Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less is referred to as PM₁₀. PM₁₀ consists of particulate matter emitted directly into the air, such as fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires and natural windblown dust, and particulate matter formed in the atmosphere by condensation and/or transformation of SO₂ and ROG (EPA 2006x). Fine particulate matter (PM_{2.5}) includes a subgroup of smaller particles that have an aerodynamic diameter of 2.5 micrometers or less (ARB 2006x).

The adverse health effects associated with PM₁₀ depend on the specific composition of the particulate matter. For example, health effects may be associated with metals, polycyclic aromatic hydrocarbons, and other toxic substances adsorbed onto fine particulate matter, which is referred to as the piggybacking effect, or with fine dust particles of silica or asbestos. Generally, adverse health effects associated with PM₁₀ may result from both short-term and long-term exposure to elevated concentrations and may include breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, alterations to the immune system, carcinogenesis, and premature death (EPA 2006x). PM_{2.5} poses an increased health risk because the particles can deposit deep in the lungs and may contain substances that are particularly harmful to human health.

Direct emissions of PM₁₀ have remained relatively unchanged between 1975 and 2005 and are projected to remain unchanged through 2020. PM₁₀ emissions in the San Joaquin Valley are dominated by emissions from areawide sources, primarily fugitive dust from vehicle travel on unpaved and paved roads, waste burning, and residential fuel combustion. Direct emissions of PM_{2.5} decreased from 1975 to 2005 and are projected to continue decreasing through 2020. PM_{2.5} emissions in the San Joaquin Valley are dominated by emissions from areawide sources, primarily fugitive dust from vehicle travel on unpaved and paved roads, waste burning, and residential fuel combustion (ARB 2006x).

Lead

Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phase-out of leaded gasoline, as discussed in detail below, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers.

Twenty years ago, mobile sources were the main contributor to ambient lead concentrations in the air. In the early 1970s, the U.S. Environmental Protection Agency (EPA) set national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. EPA banned the use of leaded gasoline in highway vehicles in December 1995 (EPA 2006x).

As a result of EPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector have declined dramatically (95% between 1980 and 1999), and levels of lead in the air decreased by 94% between 1980 and 1999. Transportation sources, primarily airplanes, now contribute only 13% of lead emissions. A recent National Health and Nutrition Examination Survey reported a 78% decrease in the levels of lead in people's blood between 1976 and 1991. This dramatic decline can be attributed to the move from leaded to unleaded (EPA 2006x).

The decrease in lead emissions and ambient lead concentrations over the past 25 years is California's most dramatic success story. The rapid decrease in lead concentrations can be attributed primarily to phasing out the lead in gasoline. This phase-out began during the 1970s, and subsequent ARB regulations have virtually eliminated all lead from gasoline now sold in California. All areas of the state are currently designated as attainment for the state lead standard (EPA does not designate areas for the national lead standard). Although the ambient lead standards are no longer violated, lead emissions from stationary sources still pose "hot spot" problems in some areas. As a result, ARB identified lead as a toxic air contaminant.

Emissions Inventory

Table 4.2-1 summarizes emissions of criteria air pollutants within Merced County for various source categories. According to Merced County's emissions inventory, mobile sources are the largest contributor to the estimated annual average air pollutant levels of CO and NO_x accounting for approximately 57% and 78%, respectively, of the total emissions. Areawide sources account for approximately 58%, 91%, and 85% of the County's ROG, PM₁₀ and PM_{2.5} emissions, respectively. Stationary sources account for approximately 67% of the County's oxides of sulfur emissions.

Table 4.2-1 Summary of 2005 Estimated Emissions Inventory for Merced County						
Source Type/Category	Estimated Annual Average Emissions (Tons per Day)					
	ROG	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}
Stationary Sources						
Fuel Combustion	0.55	11.25	3.33	0.79	0.24	0.24
Waste Disposal	0.02	0.00	0.00	—	0.00	0.00
Cleaning and Surface Coating	1.17	—	—	—	—	—
Petroleum Production and Marketing	0.62	—	—	—	—	—
Industrial Processes	1.57	0.62	3.10	0.08	1.71	0.90
Subtotal (Stationary Sources)	3.93	11.87	6.43	0.87	1.96	1.13
Areawide Sources						
Solvent Evaporation	5.02	—	—	—	—	—
Miscellaneous Processes	13.02	60.60	0.92	0.04	30.70	11.19
Subtotal (Areawide Sources)	18.04	60.60	0.92	0.04	30.70	11.19
Mobile Sources						
On-Road Motor Vehicles	6.67	78.33	15.98	0.12	0.48	0.34
Other Mobile Sources	2.55	16.35	9.98	0.28	0.63	0.57
Subtotal (Mobile Sources)	9.22	94.68	25.96	0.40	1.11	0.92
Grand Total for Merced County	31.19	167.15	33.31	1.30	33.77	13.24
Notes: ROG = reactive organic gases; CO = carbon monoxide; NO _x = oxides of nitrogen; SO _x = oxides of sulfur; PM ₁₀ = respirable particulate matter; PM _{2.5} = fine particulate matter Source: ARB 2007x						

Monitoring Station Data and Attainment Area Designations

Criteria air pollutant concentrations are measured at several monitoring stations in the SJVAB. The monitoring station closest to the proposed project site is located just west of the project site at 385 South Coffee Avenue and measures ozone and NO₂. The closest monitoring station that measures PM₁₀ and PM_{2.5} is located at 2334 M Street, which is approximately 3.7 miles northwest of the project site. Table 4.2-2 summarizes the air quality data from these two stations for the most recent 4 years, 2003 through 2006. The data is not necessarily representative of the project site, because of the distance from the monitor to the site and the monitor location was meant to measure the highest urban ozone concentrations (SJVAPCD 2005).

Both ARB and EPA use this type of monitoring data to designate areas according to attainment status for criteria air pollutants established by the agencies. The purpose of these designations is to identify those areas with air quality problems and thereby initiate planning efforts for improvement. The three basic designation categories are nonattainment, attainment, and unclassified. Unclassified is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards. In addition, the California designations include a subcategory of the nonattainment designation, called nonattainment-transitional. The nonattainment-transitional designation is given to nonattainment areas that are progressing and nearing attainment. The most current attainment designations for the Merced County portion of the SJVAB are shown in Table 4.2-3 for each criteria air pollutant.

**Table 4.2-2
Summary of Annual Ambient Air Quality Data (2003–2006) – Merced Stations¹**

	2005	2006	2007
Ozone			
Maximum concentration (1-hr/8-hr, ppm)	0.100/0.093	0.102/0.091	0.105/0.096
Number of days state standard exceeded (1-hr)	6	4	5
Number of days national standard exceeded (1-hr/8-hr)	0/20	0/23	0/18
Nitrogen Dioxide (NO₂)			
Maximum concentration (1-hr, ppm)	0.062	0.062	0.050
Number of days state standard exceeded (1-hr)	0	0	0
Annual Average (ppm)	0.011	0.010	0.009
Fine Particulate Matter (PM_{2.5})			
Maximum concentration (µg/m ³)	54	56	82
Number of days national standard exceeded (measured ²)	1	1	1
Respirable Particulate Matter (PM₁₀)			
Maximum concentration (µg/m ³)	75	98	69
Number of days state standard exceeded (calculated ²)	29	47.4	36.5
Number of days national standard exceeded (calculated ²)	0	0	0
Notes: ppm = parts per million; µg/m³ = micrograms per cubic meter ¹ Measurements of ozone and NO₂ are from the Coffee Avenue station, and measurements of PM₁₀ and PM_{2.5} are from the M Street station. ² Measured days are those days that an actual measurement was greater than the level of the state daily standard or the national daily standard. Measurements are typically collected every 6 days. Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year. Sources: ARB 2008x, EPA 2006x			

Table 4.2-3 Ambient Air Quality Standards and Merced County Attainment Status						
Pollutant	Averaging Time	California		National Standards ¹		
		Standards ^{2,3}	Attainment Status ⁴	Primary ^{3,5}	Secondary ^{3,6}	Attainment Status ⁷
Ozone	1-hour	0.09 ppm (180 µg/m ³)	N (Severe)	- ⁹	-	-
	8-hour	0.070 ppm ⁸ (137 µg/m ³)	N	0.075 ppm (147 µg/m ³)	Same as Primary Standard	N(Serious)
Carbon Monoxide (CO)	1-hour	20 ppm (23 mg/m ³)	U ¹¹	35 ppm (40 mg/m ³)	—	U/A
	8-hour	9 ppm (10 mg/m ³)		9 ppm (10 mg/m ³)		
Nitrogen Dioxide (NO ₂) ¹²	Annual Arithmetic Mean	0.030 ppm (57 µg/m ³)	—	0.053 ppm (100 µg/m ³)	Same as Primary Standard	U/A
	1-hour	0.18 ppm (339 µg/m ³)	A	—		—
Sulfur Dioxide (SO ₂)	Annual Arithmetic Mean	—	—	0.030 ppm (80 µg/m ³)	—	U
	24-hour	0.04 ppm (105 µg/m ³)	A	0.14 ppm (365 µg/m ³)	—	
	3-hour	—	—	—	0.5 ppm (1300 µg/m ³)	
	1-hour	0.25 ppm (655 µg/m ³)	A	—	—	
Respirable Particulate Matter (PM ₁₀)	Annual Arithmetic Mean	20 µg/m ³	N(Serious)	— ¹³	Same as Primary Standard	A ¹⁴
	24-hour	50 µg/m ³		150 µg/m ³		
Fine Particulate Matter (PM _{2.5})	Annual Arithmetic Mean	12 µg/m ³	N ¹⁵	15 µg/m ³	Same as Primary Standard	N
	24-hour	—	—	35 µg/m ³		
Lead ¹⁰	30-day Average Calendar Quarter	1.5 µg/m ³	A	—	Same as Primary Standard	—
		—	—	1.5 µg/m ³		
	Rolling 3-Month Average	—		0.15 µg/m ³		
Sulfates	24-hour	25 µg/m ³	A	No National Standards		
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m ³)	U			
Vinyl Chloride ¹⁰	24-hour	0.01 ppm (26 µg/m ³)	A			

**Table 4.2-3
Ambient Air Quality Standards and Merced County Attainment Status**

Pollutant	Averaging Time	California		National Standards ¹		
		Standards ^{2,3}	Attainment Status ⁴	Primary ^{3,5}	Secondary ^{3,6}	Attainment Status ⁷
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient of 0.23 per kilometer — visibility of 10 miles or more (0.07—30 miles or more for Lake Tahoe) because of particles when the relative humidity is less than 70%.	U			

¹ National standards (other than ozone, PM, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. The PM₁₀ 24-hour standard is attained when 99% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. The PM_{2.5} 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact EPA for further clarification and current federal policies.

² California standards for ozone, CO (except Lake Tahoe), SO₂ (1- and 24-hour), NO₂, PM, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations. The California ambient air quality standard for NO₂ was amended on February 22, 2007 to lower the 1-hour standard to 0.18 ppm and establish a new annual standard of 0.030 ppm.

³ Concentration expressed first in units in which it was promulgated [i.e., parts per million (ppm) or micrograms per cubic meter (µg/m³)]. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

⁴ Unclassified (U): a pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or nonattainment.

Attainment (A): a pollutant is designated attainment if the state standard for that pollutant was not violated at any site in the area during a 3-year period.

Nonattainment (N): a pollutant is designated nonattainment if there was a least one violation of a state standard for that pollutant in the area.

Nonattainment/Transitional (NT): is a subcategory of the nonattainment designation. An area is designated nonattainment/transitional to signify that the area is close to attaining the standard for that pollutant.

⁵ National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

⁶ National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

⁷ Nonattainment (N): any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant.

Attainment (A): any area that meets the national primary or secondary ambient air quality standard for the pollutant.

Unclassifiable (U): any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

⁸ This concentration effective May 17, 2006.

⁹ The 1-hour ozone NAAQS was revoked on June 15, 2005.

¹⁰ ARB has identified lead and vinyl chloride as toxic air contaminants with no threshold of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

¹¹ Designation for Merced County; the designation is different for one or more other counties in the SJVAB.

¹² The CAAQS were amended on February 22, 2007, to lower the 1-hour standard to 0.18 ppm and establish a new annual standard of 0.03 ppm. These changes become effective after regulatory changes are submitted and approved by the Office of Administrative Law, expected later this year.

¹³ Because of a lack of evidence linking health problems to long-term exposure to coarse particle pollution, EPA revoked the annual PM₁₀ standard on September 21, 2006.

¹⁴ On September 25, 2008, EPA redesignated the San Joaquin Valley to attainment for the PM₁₀ NAAQS and approved the PM₁₀ Maintenance Plan.

¹⁵ The SJVAB is designated nonattainment for the 1997 PM 2.5 federal standards. EPA designations for the 2006 PM 2.5 standards will be finalized in December 2009. The District has determined, as of the 2004-06 PM 2.5 data, that the Valley has attained the 1997 24-Hour PM 2.5 standard.

¹⁶ National lead standard, rolling 3-month average: final rule signed October 15, 2008.

Source: SJVAPCD 2006x; ARB 2008x, 2006d; SJVAPCD 2008

EXISTING AIR QUALITY—TOXIC AIR CONTAMINANTS

Concentrations of TACs are also used as indicators of ambient-air-quality conditions. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

According to the 2005 edition of the California Almanac of Emissions and Air Quality (ARB 2006x), the majority of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being PM from diesel-fueled engines (diesel PM). Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present. Unlike the other TACs, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. However, ARB has made preliminary concentration estimates based on a PM exposure method. This method uses ARB emissions inventory's PM₁₀ database, ambient PM₁₀ monitoring data, and the results from several studies to estimate concentrations of diesel PM. In addition to diesel PM, benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, *para*-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene pose the greatest existing ambient risk, for which data are available, in California.

Diesel PM poses the greatest health risk among these ten TACs mentioned. Based on receptor modeling techniques, ARB estimated the diesel PM health risk in 2000 to be 390 excess cancer cases per million people in the SJVAB. Since 1990, the health risk caused by diesel PM in the SJVAB has been reduced by 50%. Overall, levels of most TACs have gone down since 1990 except for *para*-dichlorobenzene and formaldehyde (ARB 2006x).

Existing Sources of TACs

Existing sources in the project vicinity include mobile-source emissions from surrounding freeways, McLane Pacific Grocery, and Central Valley Processing. Stationary TAC emission sources associated with McLane Pacific Grocery and Central Valley Processing may include boilers, backup emergency diesel generators, and above-ground fuel storage. According to ARB, there are no major existing stationary sources of TACs near the project site (ARB 2007x).

Naturally Occurring Asbestos

Naturally occurring asbestos may be found in at least 44 of California's 58 counties. Asbestos is the name for a group of naturally occurring silicate minerals. Exposure to asbestos may result in inhalation or ingestion of asbestos fibers, which over time may result in damage to the lungs or membranes that cover the lungs, leading to illness or even death.

According to the *General Location Guide for Ultramafic Rocks in California—Areas More Likely to Contain Naturally Occurring Asbestos* (Churchill and Hill 2000), the project site and off-site program elements are not located in areas that are more likely to contain naturally occurring asbestos.

EXISTING AIR QUALITY – ODORS

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

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell very minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor and in fact an odor that is offensive to one person may be perfectly acceptable to another (e.g., fast food restaurant). It is important to also note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word strong to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

There are no discrete sources of odor in the vicinity of the project site. The agricultural lands located to the south and east of the project site do include dairy cattle, livestock, or other operations that involve large quantities of animal waste. The facilities operated by McLane Pacific Grocery and Central Valley Processing north of the project site sometimes harbor high volumes of diesel trucks. Exhaust odors from diesel engines operating at these nearby facilities were not noticeable during the 1-day site visit to the proposed project site. Typically, exhaust odors from diesel engines disperse rapidly with distance from the source.

EXISTING AIR QUALITY—GREENHOUSE GASES AND LINKS TO GLOBAL CLIMATE CHANGE

Various gases in the earth's atmosphere, classified as atmospheric greenhouse gases (GHGs), play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space. A portion of the radiation is absorbed by the earth's surface, and a smaller portion of this radiation is reflected back toward space. This absorbed radiation is then emitted from the earth, not as high-frequency solar radiation, but lower frequency infrared radiation. The frequencies at which bodies emit radiation are proportional to temperature. The earth has a much lower temperature than the sun; therefore, the earth emits lower frequency radiation. Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the Greenhouse Effect, is responsible for maintaining a habitable climate on Earth. Without the Greenhouse Effect, Earth would not be able to support life as we know it.

Prominent GHGs contributing to the Greenhouse Effect are carbon dioxide (CO₂), methane (CH₄), ozone, nitrous oxide, hydrofluorocarbons, chlorofluorocarbons, and sulfur hexafluoride. Human-caused emissions of these GHGs in excess of natural ambient concentrations are responsible for intensifying the Greenhouse Effect and have led to a trend of unnatural warming of the earth's climate, known as global climate change or global warming (Ahrens 2003). It is *extremely unlikely* that global climate change of the past 50 years can be explained without the contribution from human activities (Intergovernmental Panel on Climate Change [IPCC] 2007). Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors (CEC 2006x). In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (CEC 2006x). Emissions of CO₂ are byproducts of fossil fuel combustion. Methane, a highly potent GHG, results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) associated with agricultural practices and landfills. CO₂ sinks, or reservoirs, include vegetation and the ocean, which absorb CO₂ through sequestration and dissolution, respectively, two of the most common processes of CO₂ sequestration.

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and TACs, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about 1 day), GHGs have long atmospheric lifetimes (1 year to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule is dependent on multiple variables and cannot be pinpointed, it is understood that more CO₂ is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO₂ emissions, approximately 54% is sequestered through ocean uptake, uptake by northern hemisphere forest regrowth, and other terrestrial sinks within a year, whereas the remaining 46% of human-caused CO₂ emissions remains stored in the atmosphere (Seinfeld and Pandis 1998).

Similarly, impacts of GHGs are borne globally, as opposed to localized air quality effects of CAPs and TACs. The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; suffice to say, the quantity is enormous, and no single project alone would be expected to measurably contribute to a noticeable incremental change in the global average temperature, or to global, local, or micro climate. From the standpoint of CEQA, GHG impacts to global climate change are inherently cumulative.

Atmospheric Persistence in the Global Carbon Cycle

Unlike diurnal criteria air pollutants such as ozone, CO₂ emissions persist in the atmosphere for much longer periods, on the order of tens to hundreds of years. Although the exact lifetime of any particular CO₂ molecule is dependent on multiple variables and cannot be pinpointed, it is understood that more CO₂ is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO₂ emissions, approximately 54% is sequestered through ocean uptake, uptake by northern hemisphere forest regrowth, and other terrestrial sinks within a year, whereas the remaining 46% of human-caused CO₂ emissions remains stored in the atmosphere (Seinfeld and Pandis 1998).

Feedback Mechanisms and Uncertainty

Many complex mechanisms interact within Earth's energy budget to establish the global average temperature and global and regional climate conditions. For example, increases in atmospheric temperature would lead to increases in ocean temperature. As atmospheric and ocean temperatures increase, sea ice and glaciers are expected to melt, adding more fresh water to the ocean and altering salinity conditions. Both increases in ocean temperature and changes in salinity would be expected to lead to changes in circulation of ocean currents. Changes in current circulation would further alter ocean temperatures and alter terrestrial climates where currents have changed. Several interacting atmospheric, climatic, aquatic, and terrestrial factors affecting global climate change are described below. These factors result in feedback mechanisms that could potentially increase or decrease the effects of global climate change. There is uncertainty about how some factors may affect global climate change because they have the potential to both intensify and neutralize future climate warming. Examples of these conditions are described below.

Direct and Indirect Aerosol Effects

Aerosols, including particulate matter, reflect sunlight back to space. As air quality goals for particulate matter are met and fewer emissions of particulate matter occur, the cooling effect of aerosols would be reduced, and the Greenhouse Effect would be further intensified. Similarly, aerosols act as cloud condensation nuclei, aiding in cloud formation and increasing cloud lifetime. Under some circumstances (see discussion of the cloud effect below), clouds efficiently reflect solar radiation back to space. With a reduction in emission of particulate matter, including aerosols, the indirect positive effect of aerosols on clouds would be reduced, potentially further amplifying the Greenhouse Effect.

The Cloud Effect

As global temperature rises, the ability of the air to hold moisture increases, facilitating cloud formation. As stated above, clouds can efficiently reflect solar radiation back to space. If an increase in cloud cover occurs at low or middle altitudes, resulting in clouds with greater liquid water content, such as stratus or cumulus clouds, more radiation would be reflected back to space than under current conditions. This would result in a negative feedback mechanism, in which the increase in cloud cover resulting from global climate change acts to balance the amount of further warming. If clouds form at higher altitudes in the form of cirrus clouds, however, these clouds allow more solar radiation to pass through than they reflect and ultimately act as a GHG themselves. This results in a positive feedback mechanism, in which the side effect of global climate change (an increase in cloud cover) acts to intensify the warming process. Because of the conflicting feedback mechanisms to which increasing cloud cover can contribute, this cloud effect is an area of relatively high uncertainty for scientists when projecting future global climate change conditions.

Other Feedback Mechanisms

As global temperature continues to rise, CH₄ gas trapped in permafrost is expected to be released into the atmosphere. As identified above in the description of CO₂ equivalents, CH₄ is approximately 21 times as efficient a GHG as CO₂; therefore, this release of CH₄ would accelerate and intensify global climate change if current trends continue. Additionally, as the surface area of polar and sea ice continues to diminish, Earth's albedo, or reflectivity, also is anticipated to decrease. More incoming solar radiation likely will be absorbed by the earth rather than be reflected back into space, further intensifying the Greenhouse Effect and associated global climate change. These and other both positive and negative feedback mechanisms are still being studied by the scientific community to better understand their potential effects on global climate change. It is not known at this time how much of an increase in global average temperature may result from the interaction of all the pertinent variables. Although the amount and rate of increase in global average temperature are uncertain, there is no longer much debate within the scientific community that global climate change is occurring and that human-caused GHG emissions are contributing to this phenomenon.

ATTRIBUTING CLIMATE CHANGE—GREENHOUSE GAS EMISSION SOURCES

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors (California Energy Commission [CEC] 2006x). In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (CEC 2006x). Emissions of CO₂ are byproducts of fossil fuel combustion. CH₄, a highly potent GHG, results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) is largely associated with agricultural practices and landfills. CO₂ sinks, or reservoirs, include vegetation and the ocean, which absorb CO₂ through sequestration and dissolution, respectively, two of the most common processes of CO₂ sequestration.

California is the 12th to 16th largest emitter of CO₂ in the world (CEC 2006x). California produced 499 million gross metric tons of CO₂ equivalent (CO₂e) in 2004 (ARB 2007x). CO₂e is a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the Greenhouse Effect. This potential, known as the global warming potential (GWP) of a GHG, is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, as described in Appendix C, "Calculation References," of the General Reporting Protocol of the California Climate Action Registry (CCAR 2007), 1 ton of CH₄ has the same contribution to the Greenhouse Effect as approximately 23 tons of CO₂. Therefore, CH₄ is a much more potent GHG than CO₂. Expressing emissions in CO₂e takes the contributions of all GHG emissions to the Greenhouse Effect and converts them to a single unit equivalent to the effect that would occur if only CO₂ were being emitted.

Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2004, accounting for 40.7% of total GHG emissions in the state (CEC 2006x). This sector was followed by the electric power sector (including both in-state and out-of-state sources) (22.2%) and the industrial sector (20.5%) (CEC 2006x).

4.2.2 REGULATORY SETTING

Air quality within Merced County is regulated by EPA, ARB, and SJVAPCD. Each of these agencies develops rules, regulations, policies, and/or goals to comply with applicable legislation. Although EPA regulations may not be superseded, both state and local regulations may be more stringent.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

U.S. Environmental Protection Agency

At the federal level, EPA has been charged with implementing national air quality programs. EPA's air quality mandates are drawn primarily from the federal Clean Air Act (CAA), which was enacted in 1970. The most recent major amendments made by Congress were in 1990.

The CAA required EPA to establish national ambient air quality standards (NAAQS). As shown in Table 4.2-2, EPA has established primary and secondary NAAQS for the following criteria air pollutants: ozone, CO, NO₂, SO₂, PM₁₀, PM_{2.5}, and lead. The primary standards protect the public health and the secondary standards protect public welfare. The CAA also required each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The federal Clean Air Act Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. EPA has responsibility to review all state SIPs to determine conformation to the mandates of the CAA, and the amendments thereof, and determine if implementation will achieve air quality goals. If EPA determines a SIP to be inadequate, a Federal Implementation Plan may be prepared for the nonattainment area that imposes additional control measures. Failure to submit an approvable SIP or to implement the plan within the mandated timeframe may result in sanctions being applied to transportation funding and stationary air pollution sources in the air basin.

In April 2007 the Supreme Court of the United States ruled that CO₂ is an air pollutant as defined under the CAA, and that EPA has the authority to regulate emissions of GHGs. However, there are no federal regulations or policies regarding GHG emissions applicable to the proposed project.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

California Air Resources Board

ARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA). The CCAA, which was adopted in 1988, required ARB to establish California ambient air quality standards (CAAQS) (Table 4.2-3). ARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above mentioned criteria air pollutants. In most cases the CAAQS are more stringent than the NAAQS. Differences in the standards are generally explained by the health effects studies considered during the standard setting process and the interpretation of the studies. In addition, the CAAQS incorporate a margin of safety to protect sensitive individuals.

The CCAA requires that all local air districts in the state endeavor to achieve and maintain the CAAQS by the earliest practical date. The act specifies that local air districts should focus particular attention on reducing the

emissions from transportation and areawide emission sources, and provides districts with the authority to regulate indirect sources.

Other ARB responsibilities include, but are not limited to, overseeing local air district compliance with California and federal laws, approving local air quality plans, submitting SIPs to EPA, monitoring air quality, determining and updating area designations and maps, and setting emissions standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels. There are 15 nonattainment areas for the national ozone standard and two nonattainment areas for the PM_{2.5} standard. The Ozone SIP and PM_{2.5} SIP must be adopted and sent to EPA by June 2007 and April 2008, respectively. The SIP must show how each area will attain the federal standards. To do this, the SIP will identify the amount of pollution emissions that must be reduced in each area to meet the standard and the emission controls needed to reduce the necessary emissions.

ARB and local air pollution control districts are currently developing plans for meeting new national air quality standards for ozone and PM_{2.5}. The Draft Statewide Air Quality Plan was released in April 2007 (ARB 2007x).

Airborne Toxic Control Measures (ATCM) to Limit Diesel-Fueled Commercial Motor Vehicle Idling

As part of its diesel risk reduction plan, ARB has developed an air toxic control measure that limits stationary idling by diesel-fueled commercial trucks to 5 minutes (13 CCR Chapter 10 Section 2485).

Assembly Bill 1493

In 2002, then-Governor Gray Davis signed Assembly Bill (AB) 1493. AB 1493 requires that ARB develop and adopt, by January 1, 2005, regulations that achieve “the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks and other vehicles determined by ARB to be vehicles whose primary use is noncommercial personal transportation in the state.”

To meet the requirements of AB 1493, in 2004 ARB approved amendments to the California Code of Regulations (CCR) adding GHG emissions standards to California’s existing standards for motor vehicle emissions. Amendments to CCR Title 13, Sections 1900 and 1961 (13 CCR 1900, 1961), and adoption of Section 1961.1 (13 CCR 1961.1) require automobile manufacturers to meet fleet-average GHG emissions limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes (i.e., any medium-duty vehicle with a gross vehicle weight rating less than 10,000 pounds that is designed primarily for the transportation of persons), beginning with the 2009 model year. Emissions limits are reduced further in each model year through 2016. Emissions requirements adopted as part of 13 CCR 1961.1 are shown in Table 4.2-4. For passenger cars and light-duty trucks with a loaded vehicle weight (LVW) of 3,750 pounds or less, the GHG emission limits for the 2016 model year are approximately 37% lower than the limits for the first year of the regulations, the 2009 model year. For light-duty trucks with LVW of 3,751 pounds to gross vehicle weight (GVW) of 8,500 pounds, as well as medium-duty passenger vehicles, GHG emissions are reduced approximately 24% between 2009 and 2016.

Table 4.2-4 Fleet-Average Greenhouse Gas Exhaust Emission Limits Included in CCR 13 1961.1		
Vehicle Model Year	Fleet-Average Greenhouse Gas Emissions (carbon dioxide equivalents in grams per mile)	
	Light-Duty Trucks 0–3,750 Pounds LVW and Passenger Cars	Light-Duty Trucks 3,751 Pounds LVW to 8,500 Pounds GVW and Medium-Duty Passenger Vehicles*
2009	323	439
2010	301	420
2011	267	390

**Table 4.2-4
Fleet-Average Greenhouse Gas Exhaust Emission Limits Included in CCR 13 1961.1**

Vehicle Model Year	Fleet-Average Greenhouse Gas Emissions (carbon dioxide equivalents in grams per mile)	
	Light-Duty Trucks 0–3,750 Pounds LVW and Passenger Cars	Light-Duty Trucks 3,751 Pounds LVW to 8,500 Pounds GVW and Medium-Duty Passenger Vehicles*
2012	233	361
2013	227	355
2014	222	350
2015	213	341
2016	205	332

Notes: GVW = gross vehicle weight, LVW = loaded vehicle weight.

* Specific characteristics of passenger cars, light-duty trucks, and medium-duty passenger vehicles are provided in Title 13, Section 1900 of the California Code of Regulations as amended to comply with Assembly Bill 1493.

Source: California Code of Regulations, Title 13, Section 1961.1

In December 2004, a group of car dealerships, automobile manufacturers, and trade groups representing automobile manufacturers filed suit against ARB to prevent enforcement of 13 CCR Sections 1900 and 1961 as amended by AB 1493 and 13 CCR 1961.1 (*Central Valley Chrysler-Jeep et al. v. Catherine E. Witherspoon, in Her Official Capacity as Executive Director of the California Air Resources Board, et al.*). The suit, still in process, in the U.S. District Court for the Eastern District of California, contends that California’s implementation of regulations that, in effect, regulate vehicle fuel economy violates various federal laws, regulations, and policies. To date, the suit has not been settled, and the judge has issued an injunction stating that ARB cannot enforce the regulations in question before receiving appropriate authorization from EPA. In January 2007, the judge hearing the case accepted a request from the State Attorney General’s office that the trial be postponed until a decision is reached by the U.S. Supreme Court on a separate case addressing GHGs. In the Supreme Court case, *Massachusetts, et al., v. Environmental Protection Agency, et al.*, the primary issue in question was whether the CAA provides authority for EPA to regulate CO₂ emissions. EPA contended that the CAA does not authorize regulation of CO₂ emissions, whereas Massachusetts and 10 other states, including California, sued EPA to begin regulating CO₂. The U.S. Supreme Court ruled on April 2, 2007 that GHGs are “air pollutants” as defined under the CAA, and EPA is granted authority to regulate CO₂ (*Massachusetts v. U.S. Environmental Protection Agency* [2007] 549 U.S. 05-1120).

Executive Order S-3-05

Executive Order S-3-05, which was signed by Governor Schwarzenegger in 2005, proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra’s snowpack, further exacerbate California’s air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the Executive Order established total greenhouse gas emission targets. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80% below the 1990 level by 2050.

The Executive Order directed the Secretary of the California Environmental Protection Agency (CalEPA) to coordinate a multi-agency effort to reduce greenhouse gas emissions to the target levels. The Secretary will also submit biannual reports to the governor and state legislature describing: (1) progress made toward reaching the emission targets; (2) impacts of global warming on California’s resources; and (3) mitigation and adaptation plans to combat these impacts. To comply with the Executive Order, the Secretary of the CalEPA created the California Climate Action Team (CCAT) made up of members from various state agencies and commission. CAT released its first report in March 2006. The report proposed to achieve the targets by building on voluntary actions of

California businesses, local government and community actions, as well as through state incentive and regulatory programs.

Assembly Bill 32, the California Climate Solutions Act of 2006

In September 2006, Governor Arnold Schwarzenegger signed AB 32, the California Climate Solutions Act of 2006. AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. This reduction will be accomplished through an enforceable statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs ARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then ARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

AB 32 requires that ARB adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrives at the cap; institute a schedule to meet the emissions cap; and develop tracking, reporting, and enforcement mechanisms to ensure that the state achieves the reductions in GHG emissions necessary to meet the cap. AB 32 also includes guidance to institute emissions reductions in an economically efficient manner and conditions to ensure that businesses and consumers are not unfairly affected by the reductions.

AB 32 does not explicitly apply to emissions from land development, though emissions associated with land development projects are closely connected to the utilities, transportation, and commercial end-use sectors. Further, because AB 32 imposes a statewide emissions cap, land development-related emissions will ultimately factor in to considerations of GHG emissions in the state.

Senate Bill 1368

SB 1368 is the companion bill of AB 32 and was signed by Governor Schwarzenegger in September 2006. SB 1368 requires the California Public Utilities Commission (PUC) to establish a greenhouse gas emission performance standard for baseload generation from investor owned utilities by February 1, 2007. The California Energy Commission (CEC) must establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the greenhouse gas emission rate from a baseload combined-cycle natural gas fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the PUC and CEC.

Senate Bills 1771 and 527 and the California Climate Action Registry

The California Climate Action Registry (CCAR) was established in 2001 by Senate Bills 1771 and 527 as a nonprofit voluntary registry for GHG emissions. The purpose of CCAR is to help companies and organizations with operations in the state to establish GHG emissions baselines against which any future GHG emissions reduction requirements may be applied. CCAR has developed a general protocol and additional industry-specific protocols that provide guidance on how to inventory GHG emissions for participation in the registry.

Senate Bill 97

Senate Bill (SB) 97, signed August 2007, acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. This bill directs the State Office of Planning and Research (OPR) to prepare, develop, and transmit to the Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA by July 1, 2009. The Resources Agency is required to certify or adopt those guidelines by January 1, 2010. This bill also removes inadequate CEQA analysis of effects of GHG emissions from projects (retroactive and future) funded by the Highway Safety, Traffic Reduction, Air Quality

and Port Security Bond Act of 2006, or the Disaster Preparedness and Flood Protection Bond Act of 2006 (Proposition 1B or 1E) as a legitimate cause of action. This provision will be repealed on January 1, 2010, wherein inadequate CEQA analysis for those projects could then become a legitimate cause of action. This bill would only protect a handful of public agencies from CEQA challenges on certain types of projects for a few years time.

LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

San Joaquin Valley Air Pollution Control District

The SJVAPCD seeks to improve air quality conditions in Merced County through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean air strategy of the SJVAPCD includes the preparation of plans and programs for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations, and issuance of permits for stationary sources. The SJVAPCD also inspects stationary sources, responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements other programs and regulations required by the CAA, CAAA, and the CCAA.

In January 2002, the SJVAPCD released a revision to the previously adopted guidelines document. This revised Guide for Assessing and Mitigation Air Quality Impact (GAMAQI) (SJVAPCD 2002) is an advisory document that provides lead agencies, consultants, and project applicants with uniform procedures for addressing air quality in environmental documents. The guide contains the following applicable components:

- ▶ criteria and thresholds for determining whether a project may have a significant adverse air quality impact;
- ▶ specific procedures and modeling protocols for quantifying and analyzing air quality impacts;
- ▶ methods available to mitigate air quality impacts; and
- ▶ information for use in air quality assessments that will be updated more frequently such as air quality data, regulatory setting, climate, and topography.

Air Quality Plans

The SJVAPCD prepares and submits Air Quality Attainment Plans in compliance with the requirements set forth in the CCAA. The CCAA also requires a triennial assessment of the extent of air quality improvements and emission reductions achieved through the use of control measures. As part of the assessment, the attainment plans must be reviewed and, if necessary, revised to correct for deficiencies in progress and to incorporate new data or projections. As a nonattainment area, the region is also required to submit rate-of-progress milestone evaluations in accordance with the CAAA. These milestone reports include compliance demonstrations that the requirements have been met for the nonattainment area. The air quality attainment plans and reports present comprehensive strategies to reduce ROG, NO_x, and PM₁₀ emissions from stationary, area, mobile, and indirect sources. Such strategies include the adoption of rules and regulations; enhancement of CEQA participation; implementation of a new and modified indirect source review program (Rule 9510); adoption of local air quality plans; and stationary-, mobile-, and indirect-source control measures. In the formulation of its attainment plans, SJVAPCD accounts for all future projected growth and development in the SJVAB as provided by local governments, including the City of Merced, through the Merced County Association of Governments (MCAG). (More details about MCAG are provided under its own heading later in this section.) Table 4.2-5 summarizes SJVAPCD's most current Air Quality Attainment Plans.

Table 4.2-5 Summary of San Joaquin Valley Air Pollution Control District Air Quality Plans			
Pollutant	Plan Title	Date	Status
Ozone	Extreme Ozone Attainment Demonstration Plan for the Revoked Federal 1-Hour Ozone Standard	October 2004, Amended October 2005, Clarifications adopted August 2008	On April 30, 2007 the Governing Board of the SJVAPCD voted to request EPA to reclassify the SJVAB as extreme nonattainment for the federal 8-hour ozone standards. On June 14, 2007, ARB approved this request. On October 16, 2008 EPA proposed to approve the plan [73 FR 613781].
	8-hour Ozone Reasonably Available Control Technology – State Implementation Plan (RACT SIP) Analysis	April 2006	Adopted by SJVAPCD in August 2006.
	8-hour Ozone Attainment Demonstration Plan for the San Joaquin Valley	April 2007	Adopted by SJVAPCD in April 2007. This request must be forwarded to EPA by ARB and would become effective upon EPA final rulemaking after a notice and comment process; it is not yet in effect.
Carbon Monoxide (CO)	2004 Revision to the California State Implementation Plan for Carbon Monoxide Updated Maintenance Plan For Ten Federal Planning Areas	July 2004	Adopted by ARB July 2004.
Respirable and Fine Particulate Matter (PM ₁₀ and PM _{2.5})	2007 PM ₁₀ Maintenance Plan and Request for Redesignation.	September 2007	Adopted by SJVAPCD in February 2006. EPA issued a Final Rule determining that the SJVAB had attained the NAAQS for PM ₁₀ [71 FR 63642] in October 2006.
	2008 PM _{2.5} Plan	April 2008	The SJVAB is designated nonattainment for the 1997 PM _{2.5} federal standards. EPA designations for the 2006 PM 2.5 standards will be finalized in December 2009. SJVAPCD has determined, as of the 2004-06 PM _{2.5} data, that the SJVAB has attained the 1997 24-Hour PM _{2.5} standard.
	Natural Events Action Plan for High Wind Events in the San Joaquin Valley	February 2006	Adopted by SJVAPCD in February 2006; Submitted to ARB
Source: SJVAPCD 2005, 2006a, 2007x, 2006x 2007x			

Rules and Regulations

As mentioned above, the SJVAPCD adopts rules and regulations. All projects are subject to SJVAPCD rules and regulations in effect at the time of construction. Specific rules applicable to the construction and operation of the proposed project may include, but are not limited to:

- ▶ Rule 2201 New and Modified Stationary Source Review
- ▶ Rule 2280 Portable Equipment Registration
- ▶ Rule 3135 Dust control Plan Fee
- ▶ Rule 4002 National Emission Standards for Hazardous Air Pollutants
- ▶ Rule 4101 Visible Emissions

- ▶ Rule 4102 Nuisance
- ▶ Rule 4103 Open Burning
- ▶ Rule 4601 Architectural Coatings
- ▶ Rule 4641 Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations
- ▶ Rule 4901 Wood Burning Fireplaces and Wood Burning Heaters
- ▶ Regulation VIII Fugitive PM₁₀ Prohibitions includes the following rules:
 - *Rule 8021*: Construction, demolition, excavation, and extraction; and other earthmoving activities;
 - *Rule 8031*: Handling and storage of bulk materials;
 - *Rule 8041*: Trackout/Carryout of dirt and other materials onto paved public roads;
 - *Rule 8051*: Open Areas;
 - *Rule 8061*: Construction and use of paved and unpaved roads; and
 - *Rule 8071*: Use of unpaved vehicle and/or equipment traffic areas; and
 - *Rule 8081*: Agricultural Sources.
- ▶ Rule 9510 Indirect Source Review. Indirect Source Review (ISR) applies to development and transportation or transit projects that have not yet gained discretionary approval. A discretionary permit is a permit from a public agency, such as a city or county that requires some amount of deliberation by that agency, including the potential to require modifications or conditions on the project. The purpose of the ISR program is to reduce emissions of NO_x and PM₁₀ from new development projects. In general, new development contributes to the air-pollution problem in the basin by increasing the number of vehicles and vehicle miles traveled and by associated construction activity. When a development project cannot reduce its emissions of NO_x and PM₁₀ to the level required by the rule, then the difference must be mitigated through the payment of a fee. The monies collected from each project fee is used by SJVAPCD to reduce emissions in the SJVAB on behalf of the respective project, with the goal of offsetting the emissions increase from the project by decreasing emissions elsewhere in the SJVAB. More specifically, the fees received are used in SJVAPCDs existing Emission Reduction Incentive Program to fund emission reduction projects. With regard to the development of light industrial facilities, this rule applies to any development project that would need a final discretionary approval and upon full buildout would include a minimum of 25,000 square feet of light industrial space. Thus, the proposed project would be subject to requirements set forth in the ISR rule.

City of Merced

Merced Vision 2015 General Plan

Air quality is addressed in the Sustainable Development element of the *Merced Vision 2015 General Plan* (City of Merced 1997). The following goals are included in the Sustainable Development Element as Goal Area SD-1:

- ▶ clean air with minimal toxic substances and odor,
- ▶ clean air with minimal particulate content,
- ▶ effective and efficient transportation infrastructure, and
- ▶ coordinated and cooperative inter-governmental air quality programs.

The policies and implementing actions of for the above-listed goals are presented below:

- ▶ Policy SD-1.1. Accurately determine and fairly mitigate the local and regional air quality impacts of projects proposed in the City of Merced.
 - Implementing Action 1.1.a. Develop uniform standards for mitigating air quality impacts resulting from development.
 - Implementing Action 1.1.b. Ensure that significant air quality impacts identified during CEQA review are consistently and fairly mitigated.

- Implementing Action 1.1.c. All air quality mitigation measures should be feasible, implementable, and cost effective.
- Implementing Action 1.1.d. Work with the [SJVAPCD] to identify regional cumulative transportation and air quality impacts.
- Implementing Action 1.1.e. Reduce the air quality impacts of development projects that may be insignificant by themselves, but cumulatively are significant.
- Implementing Action 1.1.f. Encourage innovative measures to reduce air quality impacts.
- ▶ Policy SD-1.2. Coordinate local air quality programs with regional programs and those of neighboring jurisdictions.
 - Implementing Action 1.2.a. Work with neighboring jurisdictions and affected agencies to address cross-jurisdictional and regional transportation and air quality issues.
 - Implementing Action 1.2.b. Consult with [SJVAPCD] during CEQA review for discretionary projects.
 - Implementing Action 1.2.c. Coordinate with other jurisdictions and other regional agencies in the San Joaquin Valley to establish consistent and uniform implementation measures (trip reduction ordinances, indirect source programs, etc.).
 - Implementing Action 1.2.d. Support cost-effective multi-use modeling and geographic information system (GIS) technology.
- ▶ Policy SD-1.3. Integrate land use planning, transportation planning, and air quality planning for most efficient use of public resources and for a healthier environment.
 - Implementing Action 1.3.a. The City of Merced will consider air quality when planning the land uses and transportation systems to accommodate the expected growth in this community.
 - Implementing Action 1.3.b. Transportation improvement should be consistent with the air quality goals and policies of the General Plan.
 - Implementing Action 1.3.c. The City of Merced will consult with transit providers to determine project impacts on long range transit plans and ensure that impacts are mitigated.
 - Implementing Action 1.3.d. Encourage the construction of low income housing developments that use transit-oriented and pedestrian-oriented design principles.
 - Implementing Action 1.3.e. The City of Merced will work with Caltrans and the Merced County Association of Governments (MCAG) and the Regional Transportation Planning Agency to minimize the air quality, and mobility impacts of large scale transportation projects on existing neighborhoods.
- ▶ Policy SD-1.4. Educate the public on the impact of individual transportation, lifestyle, and land use decisions.
 - Implementing Action 1.4.a. Work to improve the public's understanding of the land use, transportation, and air quality link.
 - Implementing Action 1.4.b. Support [SJVAPCD] efforts to encourage formation of local groups that provide air quality education programs.

- ▶ Policy SD-1.5. Provide public facilities and operations which can serve as a model for the private sector in implementation of air quality programs.
 - Implementing Action 1.5.a. Study implementing innovative employer-based trip reduction programs for their employees.
 - Implementing Action 1.5.b. Fleet vehicle operators should evaluate alternatives which include replacing or converting conventional fuel vehicles with clean fuel vehicles.
 - Implementing Action 1.5.c. Support the use of teleconferencing in lieu of employee travel to conferences and meetings when feasible.
 - Implementing Action 1.5.d. Make use of telecommuting programs as part of their trip reduction strategies.
 - Implementing Action 1.5.e. Encourage the development of state of the art communication infrastructure linked to the rest of the world.
- ▶ Policy SD-1.6. Reduce emissions of PM₁₀ and other particulates with local control potential.
 - Implementing Action 1.6.a. Work with the [SJVAPCD] to reduce, to the maximum extent feasible, particulate emissions from construction, grading, excavation, and demolition.
 - Implementing Action 1.6.b. Reduce PM₁₀ emissions from City maintained roads to the maximum extent feasible.
- ▶ Policy SD-3.1: Promote the use of solar energy technology.
 - Implementing Action 3.1.a: Encourage the use of solar energy in design and management of all new construction in the City.
 - Implementing Action 3.1.c: Encourage developers and builders to properly design all structures on each building lot in the City to take fullest advantage of solar use in heating and cooling.
 - Implementing Action 3.1.d: Encourage developers and builders to maximize “passive” solar design, such as large south-facing windows for winter heat gains and overhangs for shading for summer heat protection.

In addition, Implementation Action 3.1.h of the Land Use element states that the city shall consider air quality and mobility when reviewing any proposed change to the land use pattern of this community.

- ▶ Policy SD-3.2: Encourage the use of energy conservation features and low emission equipment for all new residential and commercial development.
 - Implementing Action 3.4.c: Encourage new residential, commercial, and industrial development to reduce air quality impacts from area sources and from energy consumption.
- ▶ Policy OS-1.4. Maintain and expand the City’s urban forest and reduce the heat island effects of urban development.
- ▶ Implementing Action 1.4.b: Continue to require new development to plant street trees approximately 40 feet apart, at a maximum, along City streets.

Merced County Association of Governments

The Merced County Association of Governments (MCAG) was formed through a Joint Powers Agreement (JPA) signed by member jurisdictions on November 28, 1967, and the Governing Board is composed of all five members of the Merced County Board of Supervisors and one elected official from each of the six incorporated cities located within the political boundary of Merced County.

The Overall Budget and Work Program is a product of a cooperative effort of the MCAG Technical Planning Committee for Regional Transportation Planning (TPC), composed of local governmental technical staff members; the Citizens' Advisory Committee for Regional Transportation Planning (CAC), composed of citizens appointed by the MCAG Governing Board, the MCAG Technical Review Board (TRB), composed of the chief administrative officers of all local governments within Merced County; the MCAG Executive Committee; and the MCAG Board.

The MCAG participates in air quality planning for which the purpose of the program is to inform and advise MCAG and member agencies on air quality issues and policies; to ensure that MCAG's transportation plans, programs, and projects conform to the most recent air quality requirements; and to coordinate effectively with other government agencies on these matters.

Air quality conformity is the process wherein plans, programs, and projects are shown to meet the requirements of the CAA and CAAA, and the applicable SIP. Specific procedures for fulfilling the requirements of the CAAA are given in the Final Conformity Rule published by EPA in 1993 and updated in 2004. MCAG is responsible for fulfilling these requirements. Similar work is performed by the seven other Transportation Planning Agencies (TPAs) in the SJVAB. All SJVAB TPAs work closely with each other and with the SJVAPCD on air quality issues, conformity determinations, and the development and implementation of Transportation Control Measures, with the ultimate goal of improving the air quality in the SJVAB. A Memorandum of Understanding exists between the Air District and the eight valley TPAs, for the purpose of ensuring coordinated and consistent valley-wide air quality planning.

MCAG recently prepared the final draft of the PM_{2.5} Air Quality Conformity Analysis for the Federally Approved 2004 Federal Transportation Improvement Program (FTIP) for Merced County (Merced County Association of Governments 2006). MCAG is also involved with the following activities, plans and programs:

- ▶ Air Quality Conformity Determinations for the Regional Transportation Plan (RTP) and FTIP;
- ▶ monitor State and Federal air quality regulations and plans, and advise the MCAG Governing Board and member jurisdictions;
- ▶ coordinate with the SJVAPCD and TPAs on air quality issues;
- ▶ ensure timely implementation of all required transportation control measures;
- ▶ collaborate with ARB and SJVAPCD on emission inventory development;
- ▶ provide vehicle miles travel (VMT) data to ARB for use in emission budgets; and
- ▶ prepare air quality conformity analyses for the RTP and FTIP amendments.

TOXIC AIR CONTAMINANTS

Air quality regulations also focus on TACs, or in federal parlance hazardous air pollutants (HAPs). In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. In other words, there is no threshold level below which adverse health impacts may not be expected to occur. This contrasts with the

criteria air pollutants for which acceptable levels of exposure can be determined and for which the ambient standards have been established (Table 4.2-3). Instead, EPA and ARB regulate HAPs and TACs, respectively, through statutes and regulations that generally require the use of the maximum or best available control technology for toxics (MACT and BACT) to limit emissions. These in conjunction with additional rules set forth by the SJVAPCD establish the regulatory framework for TACs.

Federal Hazardous Air Pollutant Programs

EPA has programs for identifying and regulating HAPs. Title III of the CAAA directed EPA to promulgate national emissions standards for HAPs (NESHAP). The NESHAP may differ for major sources than for area sources of HAPs. Major sources are defined as stationary sources with potential to emit more than 10 tons per year (TPY) of any HAP or more than 25 TPY of any combination of HAPs; all other sources are considered area sources. The emissions standards are to be promulgated in two phases. In the first phase (1992–2000), EPA developed technology-based emission standards designed to produce the maximum emission reduction achievable. These standards are generally referred to as requiring MACT. For area sources, the standards may be different, based on generally available control technology. In the second phase (2001–2008), EPA is required to promulgate health risk–based emissions standards where deemed necessary to address risks remaining after implementation of the technology-based NESHAP standards.

The CAAA also required EPA to issue vehicle or fuel standards containing reasonable requirements that control toxic emissions, at a minimum to benzene and formaldehyde. Performance criteria were established to limit mobile-source emissions of toxics, including benzene, formaldehyde, and 1,3-butadiene. In addition, Section 219 required the use of reformulated gasoline in selected areas with the most severe ozone nonattainment conditions to further reduce mobile-source emissions.

State and Local Toxic Air Contaminant Programs

TACs in California are primarily regulated through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). AB 1807 sets forth a formal procedure for ARB to designate substances as TACs. This includes research, public participation, and scientific peer review before ARB can designate a substance as a TAC. To date, ARB has identified over 21 TACs, and adopted EPA’s list of HAPs as TACs. Most recently, diesel PM was added to the ARB list of TACs.

Once a TAC is identified, ARB then adopts an Airborne Toxics Control Measure for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate BACT to minimize emissions (e.g., the Airborne Toxic Control Measure limits truck idling to 5 minutes [13 CCR Chapter 10 Section 2485]).

The Hot Spots Act requires that existing facilities that emit toxic substances above a specified level prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures.

ARB has adopted diesel exhaust control measures and more stringent emission standards for various on-road mobile sources of emissions, including transit buses, and off-road diesel equipment (e.g., tractors, generators). In February 2000, ARB adopted a new public transit bus fleet rule and emission standards for new urban buses. These new rules and standards provide for 1) more stringent emission standards for some new urban bus engines beginning with 2002 model year engines; 2) zero-emission bus demonstration and purchase requirements applicable to transit agencies; and 3) reporting requirements with which transit agencies must demonstrate compliance with the urban transit bus fleet rule. Upcoming milestones include the low sulfur diesel fuel requirement, and tighter emission standards for heavy-duty diesel trucks (2007) and off-road diesel equipment (2011) nationwide. Over time, the replacement of older vehicles will result in a vehicle fleet that produces substantially less TACs than under current conditions. Mobile-source emissions of TACs (e.g., benzene, 1-3-

butadiene, diesel PM) have been reduced significantly over the last decade, and will be reduced further in California through a progression of regulatory measures [e.g., Low Emission Vehicle (LEV)/Clean Fuels and Phase II reformulated gasoline regulations) and control technologies. With implementation of ARB's Risk Reduction Plan, it is expected that diesel PM concentrations will be reduced by 75% in 2010 and 85% in 2020 from the estimated year 2000 level. Adopted regulations are also expected to continue to reduce formaldehyde emissions from cars and light-duty trucks. As emissions are reduced, it is expected that risks associated with exposure to the emissions will also be reduced.

ARB published the Air Quality and Land Use Handbook: A Community Health Perspective, which provides guidance concerning land use compatibility with TAC sources (ARB 2005). While not a law or adopted policy, the Handbook offers advisory recommendations for the siting of sensitive receptors near uses associated with TACs such as freeways and high-traffic roads, commercial distribution centers, rail yards, ports, refineries dry cleaners, gasoline stations, and industrial facilities to help keep children and other sensitive populations out of harm's way.

At the local level, air pollution control or management districts may adopt and enforce ARB control measures. Under SJVAPCD regulations II and VII, all sources that possess the potential to emit TACs are required to obtain permits from the district. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including new source review standards and air toxics control measures. The SJVAPCD limits emissions and public exposure to TACs through a number of programs. The SJVAPCD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors.

Sources that require a permit are analyzed by the SJVAPCD (e.g., health risk assessment) based on their potential to emit toxics. If it is determined that the project would emit toxics in excess of SJVAPCD's threshold of significance for TACs, as identified below, sources have to implement the best available control technology for TACs (T-BACT) to reduce emissions. If a source cannot reduce the risk below the threshold of significance even after T-BACT has been implemented, the SJVAPCD will deny the permit required by the source. This helps to prevent new problems and reduces emissions from existing older sources by requiring them to apply new technology when retrofitting with respect to TACs. It is important to note that SJVAPCD's air quality permitting process applies to stationary sources; and properties, which are exposed to elevated levels of nonstationary type sources of TACs, and the nonstationary type sources themselves (e.g., on-road vehicles) are not subject to air quality permits. Further, because of feasibility and practicality reasons, mobile sources (cars, trucks, etc.) are not required to implement T-BACT, even if they do have the potential to expose adjacent properties to elevated levels of TACs. Rather, emissions controls on such sources (e.g., vehicles) are subject to regulations implemented on the state and federal level.

ODORS

The SJVAPCD has determined some common types of facilities that have been known to produce odors, including wastewater treatment facilities, chemical manufacturing plants, painting/coating operations, feed lots/dairies, composting facilities, landfills, and transfer stations. Because offensive odors rarely cause any physical harm and no requirements for their control are included in state or federal air quality regulations, the SJVAPCD has no quantitative rules or standards related to odor emissions other than its nuisance rule. Any actions related to odors are based on citizen complaints to local governments and the SJVAPCD. According to the SJVAPCD, significant odor problems occur when there is more than one confirmed complaint per year averaged over a 3-year period or when there are three unconfirmed complaints per year averaged over a 3-year period (SJVAPCD 2002).

Two situations increase the potential for odor problems. The first occurs when a new odor source is located near existing sensitive receptors. The second occurs when new sensitive receptors are developed near existing sources of odor. In the first situation, the SJVAPCD recommends operational changes, add-on controls, process changes,

or buffer zones where feasible to address odor complaints. In the second situation, the potential conflict is considered significant if the project site is at least as close as any other site that has already experienced significant odor problems related to the odor source. For projects locating near a source of odors where there is no nearby development that may have filed complaints, and for odor sources locating near existing sensitive receptors, the SJVAPCD requires the determination of potential conflict to be based on the distance and frequency at which odor complaints from the public have occurred in the vicinity of a similar facility (SJVAPCD 2002).

4.2.3 ENVIRONMENTAL IMPACTS

METHOD OF ANALYSIS

Emissions of short-term construction-related and long-term operation-related (i.e., regional and local) criteria air pollutants and precursors, odors, and TACs were assessed in accordance with SJVAPCD-recommended methodologies (SJVAPCD 2002, 2006x, 2007x, 2007x, 2007x, 2007x).

Project-generated, construction-related emissions of criteria air pollutants (e.g., PM₁₀) and precursors (ROG and NO_x) were assessed in accordance with SJVAPCD-recommended methods. Where quantification was required, emissions were modeled using the URBEMIS 2007 Version 9.2.2 computer model (ARB 2007x). Modeling was based on SJVAPCD-recommended parameters for composition of the construction equipment fleet (SJVAPCD 2007x, 2007x). Modeled project-generated, construction-related emissions were compared with applicable SJVAPCD thresholds for determination of significance.

Project-generated, operation-related (i.e., regional) emissions of criteria air pollutants and precursors (e.g. mobile- and area-sources) were also quantified using the URBEMIS 2007 Version 9.2.2 computer model (ARB 2007x). Modeling was based on project-specific data (e.g., size and type of proposed use) and vehicle trip information from the traffic analysis prepared for this project (DKS Associates 2008). No adjustments were made to account for increased fuel efficiency of Wal-Mart's truck fleet due to its participation in the U.S. EPA's SmartWay Transport Partnership. The Partnership is a voluntary program; therefore, although the current Wal-Mart fleet would have better than average fuel efficiency, nothing mandates them to continue to stay in the program. Thus, this EIR uses a conservative, reasonably foreseeable scenario that considers that Wal-Mart could use a fleet that is more reflective of the average fleet. To the extent Wal-Mart continues to participate in the program, the analysis likely over-states actual emissions from Wal-Mart's truck fleet. Long-term stationary-source emissions were qualitatively assessed in accordance with SJVAPCD-recommended methodologies. Modeled project-generated, long-term operation-related emissions were compared with applicable SJVAPCD thresholds for determination of significance.

At this time, SJVAPCD has not adopted a methodology for analyzing short-term construction-related emissions of TACs and does not recommended the completion of health risk assessments (HRAs) for such emissions, with a few exceptions (e.g., where construction phase is the only phase of project) (Reed, pers. comm., 2007). Therefore, project-generated, construction-related emissions of TACs were assessed in a qualitative manner.

With respect to long-term operation-related exposure of sensitive receptors to emissions of TACs, a HRA was performed in accordance with *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* (OEHHA 2003) and SJVAPCD's *Guidance for Air Dispersion Modeling* (SJVAPCD 2007x). Refer to Appendix C for a copy of the HRA prepared for this project (ENSR 2007).

To date, SJVAPCD has not adopted a method for evaluating impacts associated with emissions of PM_{2.5}. However, because project-generated, construction- and operation-related emissions of PM_{2.5}, by definition, would be a subset of PM₁₀ emissions, SJVAPCD-recommended methodologies and mitigation measures for PM₁₀ would also be relevant to emissions of PM_{2.5}.

Project-generated emissions of GHGs would predominantly be in the form of CO₂. While emissions of other GHGs, such as methane, are important with respect to global climate change, the project is not expected to emit

significant quantities of GHGs other than CO₂. The reason for this conclusion is that most emissions from the project are associated with vehicular emissions and, though vehicles also emit small quantities of N₂O and CH₄, the primary GHG emitted during fuel combustion is CO₂, even considering the higher global warming potential of N₂O and CH₄ (21 and 310 times that of CO₂, respectively [CCAR 2007]). Thus, project-generated emissions of CO₂ were used as a proxy for total emissions GHGs, unless otherwise noted.

With respect to the proposed project, the net increase in emissions of CO₂ would be primarily associated with an increase in truck and passenger vehicle activity, off-site and on-site, and consumption of electricity. Construction- and operation-related emissions of CO₂ were quantified using the URBEMIS 2007 Version 9.2.2 computer model (ARB 2007x). Modeling was based on project-specific data (e.g., size and type of proposed use) and vehicle trip information from the traffic analysis prepared for this project (DKS Associates 2008) and truck trip information from an existing Wal-Mart distribution centers in California (McAlexander, pers. comm., 2007). Indirect emissions of CO₂ associated with electricity consumption were estimated according to methodologies of the California Climate Action Registry General Reporting Protocol, Version 2.2 (CCAR 2007).

THRESHOLDS OF SIGNIFICANCE

Based on Appendix G of the State CEQA Guidelines and SJVAPCD, an air quality impact is considered significant if implementation of the proposed project would do any of the following:

- ▶ 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 nonattainment under an applicable NAAQS or CAAQS (including releasing emissions which exceed quantitative thresholds for ozone precursors),
- ▶ expose sensitive receptors to substantial pollutant concentrations, or
- ▶ create objectionable odors affecting a substantial number of people.

As stated in Appendix G, the significance of criteria established by the applicable air quality management or air pollution control district may be relied upon to make the above determinations. Thus, as contained in the GAMAQI, implementation of the proposed project would result in significant air quality impacts if:

- ▶ all control measures in compliance with the requirements of Regulation VIII-Fugitive Dust Prohibition are not incorporated into project design or implemented during project construction;
- ▶ construction-related emissions of ROG or NO_x exceed SJVAPCD-recommended mass emissions threshold of 10 TPY;
- ▶ long-term operation-related regional emissions of ROG or NO_x exceed SJVAPCD-recommended mass emissions threshold of 10 TPY;
- ▶ construction- or operation-related emissions (i.e., regional and local) of criteria air pollutants or precursor emissions violate or substantially contribute to a violation of the NAAQS and/or CAAQS (e.g., 8-hour CO standard of 9 ppm);
- ▶ exposure of sensitive receptors to a substantial incremental increase in emissions of TACs that exceed 10 in 1 million for the carcinogenic risk (i.e., the risk of contracting cancer) and/or a noncarcinogenic Hazard Index (HI) of 1 for the Maximally Exposed Individual (MEI), as recommended in SJVAPCD's *Guidance for Air Dispersion Modeling* (SJVAPCD 2007x); or

- ▶ project implementation would locate receptors near an existing odor source where one confirmed complaint per year averaged over a three year period, or three unconfirmed complaints per year averaged over a three year period has been experienced by existing receptors as close as the project to the odor source; or by existing receptors in the vicinity of a similar facility considering distance, frequency, and odor control, where there is currently no nearby development and for proposed odor sources near existing receptors.

In addition, the following thresholds of significance have been used to determine whether implementation of the proposed project would result in significant impacts with respect to global climate change. A global climate change impact is considered significant if implementation of the proposed project under consideration would do any of the following:

- ▶ conflict with or obstruct state or local policies or ordinances established for the purpose of reducing greenhouse gas emissions, or
- ▶ result in a considerable net increase in greenhouse gases.

With regard to emissions of GHGs, no air district in California, including the SJVAPCD, has identified a significance threshold for analyzing project-generated emissions or a methodology for analyzing air quality impacts related to global warming. Nonetheless, by adoption of AB 32, California has identified that global climate change is a serious environmental issue, and has identified GHG reduction goals.

To meet AB 32 goals, California as a whole will ultimately need to generate substantially less GHG than current levels. It is recognized, however, that for most projects there is no simple metric available to determine if a single project would substantially increase or decrease overall emission levels of GHGs.

While AB 32 focuses on stationary sources of emissions, the primary objective of AB 32 is to reduce California's contribution to global warming by reducing California's total annual production emissions. The impact that emissions of GHGs have on global climate change is not dependent on whether they were generated by stationary, mobile, or area sources; or whether they were generated in one region or another. Thus, the net change in total levels of GHGs generated by a project or activity is the best metric for determining whether the proposed project would contribute to global warming.

The effect of GHG emissions as they relate to global climate change is inherently a cumulative impact issue. While the emissions of one single project will not cause global climate change, GHG emissions from multiple projects throughout the world could result in a cumulative impact with respect to global climate change. In the case of the proposed project, if the size of the increase in emissions from the project is considered to be substantial, then the impact of the project would be cumulatively considerable. Please refer to Chapter 6, "Cumulative and Growth-Inducing Impacts," of this EIR for a description of GHG related and other cumulative impacts of the project.

IMPACT ANALYSIS

IMPACT 4.2-1	Generation of Short-Term Construction-Related Emissions of Criteria Air Pollutants and Precursors. <i>Project-generated, construction-related emissions of ROG and NO_x would exceed SJVAPCD's significance threshold of 10 TPY. In addition, with respect to construction-related emissions of PM₁₀, SJVAPCD-recommended control measures beyond compliance with Regulation VIII-Fugitive Dust Prohibition are not incorporated into the project design. Thus, project-generated, construction-related emissions of criteria air pollutants and precursors could violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations, especially considering the nonattainment status of Merced County. As a result, this would be a significant impact.</i>

Construction-related emissions are described as “short term” or temporary in duration and have the potential to represent a significant impact with respect to air quality. Construction of the proposed project could begin as early as 2008 and would take 12 months for completion. Construction-related activities would result in project-generated emissions of criteria air pollutants (e.g., PM₁₀) and precursors (e.g., ROG and NO_x) from site preparation (e.g., excavation, grading, and clearing); off-road equipment, material delivery, and worker commute exhaust emissions; vehicle travel on unpaved roads, and other miscellaneous activities (e.g., asphalt paving and the application of architectural coatings).

Emissions of Ozone Precursors

Emissions of ozone precursors (e.g., ROG and NO_x) are primarily associated with off-road equipment exhaust. Worker commute trips and other construction-related activities (e.g., asphalt paving and the application of architectural coatings) also contribute to short-term increases in such emissions.

Project-generated, construction-related emissions of ROG and NO_x were modeled using the ARB-approved URBEMIS 2007 Version 9.2.2 computer program (ARB 2007x). URBEMIS is designed to model construction emissions for land use development projects based on building size and type and allows for the input of project-specific information. Detailed information about the number and types of construction equipment needed, maximum daily acreage disturbed, number of workers, and hours of operation is not currently known at this time. Thus, values for these parameters were estimated using the default values of URBEMIS 2007, including vehicle emission factors that are specific to the SJVAB, and SJVAPCD's Recommended Construction Fleet spreadsheet (SJVAPCD 2007x). SJVAPCD's spreadsheet provides estimates for the amount of maximum daily acreage disturbed and number and type of construction equipment that would be used on a project based on its total acreage and type (e.g., commercial, residential). SJVAPCD formulated this methodology to provide an accurate set of assumptions about the input parameters of a construction project while erring on the conservative side so as not to underestimate construction-generated emissions. The exhaust emissions of two off-road water trucks were also included as part of initial site preparation activity (e.g., grading). Table 4.2-6 summarizes the modeled project-generated, construction-related emissions of criteria air pollutants and ozone precursors from initial site preparation (e.g., grading) and building construction activities for the proposed project. Construction-related air quality effects were determined by comparing these modeling results with applicable SJVAPCD significance thresholds. Refer to Appendix C for detailed modeling input parameters, including the SJVAPCD-Recommended Construction Fleet spreadsheet, as well as modeling results.

Table 4.2-6 Summary of Modeled Project-Generated, Construction-Related Emissions of Criteria Air Pollutants and Precursors				
Source	Emissions (Tons/Year)			
	ROG	NO _x	PM ₁₀ (Total) ¹	PM _{2.5} (Total) ¹
Grading				
Fugitive Dust	0.0	0.0	16.7	3.5
Off-Road Diesel Exhaust	1.3	11.4	0.6	0.5
On-Road Diesel Exhaust	0.0	0.0	0.0	0.0
Worker Trips	0.0	0.0	0.0	0.0
Subtotal Unmitigated	1.4	11.4	17.3	4.0
Asphalt				
Off-Gas Emissions	0.1	0.0	0.0	0.0
Off-Road Diesel Exhaust	0.1	0.3	0.0	0.0
On-Road Diesel Exhaust	0.0	0.4	0.0	0.0
Worker Trips	0.0	0.0	0.0	0.0
Subtotal Unmitigated	0.2	0.7	0.1	0.0

Table 4.2-6 Summary of Modeled Project-Generated, Construction-Related Emissions of Criteria Air Pollutants and Precursors				
Source	Emissions (Tons/Year)			
	ROG	NO _x	PM ₁₀ (Total) ¹	PM _{2.5} (Total) ¹
Building Construction				
Off-Road Diesel Exhaust	1.0	11.9	0.4	0.4
Vendor Trips	1.0	11.8	0.6	0.5
Worker Trips	0.6	1.0	0.1	0.1
Subtotal Unmitigated	2.6	24.7	1.1	0.9
Architectural Coatings				
Off-Gas Emissions	12.9	0.0	0.0	0.0
Worker Trips	0.0	0.0	0.0	0.0
Subtotal Unmitigated	12.9	0.0	0.0	0.0
Total Unmitigated	17.0	36.8	18.4	5.0
Total with ISR Compliance	16.8	32.1	17.9	— ²
SJVAPCD Significance Threshold	10	10	— ³	— ³
Notes: See Appendix C for detailed input parameters and modeling results.				
¹ Shown for informational purposes only.				
² This estimate does not account for dust control mitigation measures. Fugitive PM dust emissions are discussed separately below.				
³ SJVAPCD has not identified mass emissions thresholds for construction-related emissions of PM ₁₀ or PM _{2.5} .				
Sources: Modeling performed by EDAW 2007				

As shown in Table 4.2-6, construction-related activities would result in project-generated annual unmitigated emissions of approximately 17 TPY of ROG and 37 TPY of NO_x. PM₁₀ emissions from diesel equipment and worker commute trip exhaust are also shown in Table 4.2-6 because of their applicability to SJVAPCD Rule 9510, ISR rule, as discussed in detail below.

Based on the modeling conducted, construction-related activities would result in project-generated emissions of ROG and NO_x that exceed SJVAPCD's significance threshold of 10 TPY (refer to Table 4.2-6). Thus, project-generated, construction-related emissions of ozone precursors could violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations, especially considering the nonattainment status of Merced County. As a result, this would be a **significant** impact.

Emissions of Fugitive PM Dust

Emissions of fugitive PM dust (e.g., PM₁₀ and PM_{2.5}), are associated primarily with ground disturbance activities during initial site preparation (e.g., grading) and vary as a function of such parameters as soil silt content, soil moisture, wind speed, acreage of disturbance area, and vehicle miles traveled (VMT) on- and off-site. Exhaust emissions from diesel equipment and worker commute trips also contribute to short-term increases in PM emissions, but to a much lesser extent (see Table 4.2-6).

SJVAPCD's approach to CEQA analyses of construction-related fugitive PM₁₀ dust emissions is to require implementation of effective and comprehensive control measures rather than a detailed quantification. SJVAPCD-recommended control measures beyond compliance with Regulation VIII-Fugitive Dust Prohibition, which is required by law, are not incorporated into the project design. Thus, project-generated, construction-related emissions of fugitive dust could violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations, especially considering the nonattainment status of Merced County. As a result, this would be a **significant** impact.

Mitigation Measure 4.2-1a: Comply with SJVAPCD's Indirect Source Review Rule (Rule 9510). Construction of the proposed project shall comply with SJVAPCD's ISR rule (Rule 9510), as required by law. The applicant shall submit and have approved an Air Impact Assessment (AIA) application to SJVAPCD no later than applying for a final discretionary approval with the City of Merced. The AIA application shall be submitted on a form provided by the SJVAPCD and contain, but not be limited to, the applicant's name and address, detailed project description, on-site emission reduction checklist, monitoring and reporting schedule, and an AIA. The AIA shall quantify construction NO_x and PM₁₀ emissions associated with the project. This assessment shall include: an estimate of construction emissions prior to the implementation of mitigation measures; a list of the mitigation measures to be applied to the project; an estimate of emissions for each applicable pollutant for the project, or each phase thereof, following the implementation of mitigation; and a calculation of the applicable off-site fee, if required by Rule 9510. The general mitigation requirements in the assessment, as contained in the ISR rule, shall include the following:

- ▶ Exhaust emissions for construction equipment greater than 50 horsepower used or associated with the development project shall be reduced by 20% of the total NO_x and by 45% of the total PM₁₀ emissions from the statewide average as estimated by ARB.
- ▶ Methods employed by the applicant to reduce construction emissions to the degree noted above include using less polluting construction equipment, including the use of add-on controls, cleaner fuels, or newer lower emitting equipment. The emissions reduction targets listed above shall be met through any combination of on-site emission reduction measures or offset fees, including those required and additional measures listed in Mitigation Measure 4.2-1b below.

The requirements listed above can be met through any combination of on-site emission reduction measures or offset fees, including those required and additional measures listed in Mitigation Measures 4.2-1b and 4.2-1c below; however, any on-site emission reductions must be both quantifiable and verifiable to be credited towards the requirements of the ISR Rule.

Mitigation Measure 4.2-1b: Implement Measures to Reduce Construction-Related Diesel Equipment Exhaust Emissions. The following required mitigation measures shall be implemented by the project applicant to reduce construction-related diesel equipment exhaust emissions regardless of whether the emission reductions can be quantified and documented. However, any emissions reductions attained by these measures that can be quantified and documented can be credited to achieve the ISR reduction goals discussed in Mitigation Measure 4.2-1a. These required measures are listed below.

Required Measures to Reduce Construction-Related Diesel Equipment Exhaust Emission

- ▶ Cease construction activity on forecasted Spare the Air Days.
- ▶ Staging areas for heavy-duty construction equipment shall be located as far as possible from sensitive receptors. They shall be located on site and not be within 1,000 feet of the project boundary.
- ▶ Before construction contracts are issued, the project applicant shall perform a review of new technology in consultation with SJVAPCD, as it relates to heavy-duty diesel equipment, to determine what (if any) advances in emissions reductions are available for use and are economically feasible. Construction contract and bid specifications shall require contractors to utilize the available and economically feasible technology on a percentage of the equipment fleet, as determined by SJVAPCD.
- ▶ When not in use, idling of on-site equipment shall be minimized. Under no conditions shall on-site equipment be left idling for more than 5 minutes.
- ▶ Prohibit the use of trucks with off-road engines to haul materials on-site. Use trucks with on-road engines instead.

In addition, measures implemented to achieve the above ISR reduction goals required by Mitigation Measure 4.2-1a may include, but are not limited to the additional measures listed below.

Additional Operational Emission Reduction Measures

- ▶ Use alternate fuels and emission controls to further reduce NO_x and PM₁₀ exhaust emissions above the minimum requirements set forth in the ISR rule.
- ▶ Replace/substitute fossil-fueled (e.g., diesel) equipment with electrically driven equivalents (provided they are not run via a portable generator set).
- ▶ Use ARB-certified alternative fueled engines in construction equipment. Alternative fueled equipment may be powered by compressed natural gas, liquid propane gas, electric motors, or other ARB-certified off-road technologies. (To find engines certified by ARB, see <http://www.arb.ca.gov/msprog/offroad/cert/cert.php>.)
- ▶ Provide commercial electric power to the project site in adequate capacity to avoid or minimize the use of portable electric generators and equipment.
- ▶ Limit the hours of operation of heavy duty diesel equipment and/or the amount of equipment in use at any one time.

Mitigation Measure 4.2-1c: Implement an Emissions Reduction Agreement with SJVAPCD to Reduce Construction Emissions of ROG and NO_x. The Applicant shall enter into an emissions reduction agreement with SJVAPCD to reduce net ROG and NO_x emissions to less than 10 TPY. This agreement includes an emission reduction program, whereby the Applicant funds projects in the SJVAB, such as replacement and destruction of old engines with new more efficient engines. The agreement requires the Applicant to identify and propose opportunities for the reduction of emissions to fully mitigate the project's construction emissions to less than significant, and includes opportunities for removal or retrofication of stationary, transportation, indirect, and/or mobile-source equipment. Each proposal requires SJVAPCD approval and verification of emission reduction prior to receiving final discretionary approval of the project from the City of Merced. The emissions reduction agreement must be implemented *in addition to* the Required Measures to Reduce Construction-Related Diesel Equipment Exhaust Emission listed in Mitigation Measure 4.2-1b. Development and implementation of the emissions reduction agreement shall be fully funded by the Applicant. To the extent feasible, preference shall be given to off-site emission reduction projects that are located in or in close proximity to the City of Merced. If approved by SJVAPCD, the Applicant may develop an emissions reduction agreement that also fulfills the compliance requirements of SJVAPCD's ISR Rule (Rule 9510).

Mitigation Measure 4.2-1d: Comply with SJVAPCD's Regulation VIII-Fugitive Dust Prohibitions and Implement All Applicable Control Measures. Construction of the proposed project shall comply with SJVAPCD's Regulation VIII-Fugitive Dust Prohibitions and implement all applicable control measures, as required by law. Regulation VIII contains, but is not limited to, the following required control measures:

- ▶ Prewater site sufficient to limit visible dust emissions (VDE) to 20% opacity.
- ▶ Phase work to reduce the amount of disturbed surface area at any one time.
- ▶ During active operations, apply water or chemical/organic stabilizers/suppressants sufficient to limit VDE to 20% opacity.
- ▶ During active operations, construct and maintain wind barriers sufficient to limit VDE to 20% opacity.
- ▶ During active operations, apply water or chemical/organic stabilizers/suppressants to unpaved haul/access roads and unpaved vehicle/equipment traffic areas sufficient to limit VDE to 20% opacity and meet the conditions of a stabilized unpaved road surface.

- ▶ An owner/operator shall limit the speed of vehicles traveling on uncontrolled unpaved access/haul roads within construction sites to a maximum of 15 miles per hour (mph).
- ▶ An owner/operator shall post speed limit signs that meet State and Federal Department of Transportation standards at each construction site's uncontrolled unpaved access/haul road entrance. At a minimum, speed limit signs shall also be posted at least every 500 feet and shall be readable in both directions of travel along uncontrolled unpaved access/haul roads.
- ▶ When handling bulk materials, apply water or chemical/organic stabilizers/suppressants sufficient to limit VDE to 20% opacity.
- ▶ When handling bulk material, construct and maintain wind barriers sufficient to limit VDE to 20% opacity and with less than 50% porosity.
- ▶ When storing bulk materials, comply with the conditions for a stabilized surface as listed above.
- ▶ When storing bulk materials, cover bulk materials stored outdoors with tarps, plastic, or other suitable material and anchor in such a manner that prevents the cover from being removed by wind action.
- ▶ When storing bulk materials construct and maintain wind barriers sufficient to limit VDE to 20% opacity and with less than 50% porosity. If utilizing fences or wind barriers, apply water or chemical/organic stabilizers/suppressants to limit VDE to 20% opacity or utilize a 3-sided structure with a height at least equal to the height of the storage pile and with less than 50% porosity.
- ▶ Limit vehicular speed while traveling on the work site sufficient to limit VDE to 20% opacity.
- ▶ Load all haul trucks such that the freeboard is not less than 6 inches when material is transported across any paved public access road sufficient to limit VDE to 20% opacity.
- ▶ Apply water to the top of the load sufficient to limit VDE to 20% opacity.
- ▶ Cover haul trucks with a tarp or other suitable cover.
- ▶ Clean the interior of the cargo compartment or cover the cargo compartment before the empty truck leaves the site; and prevent spillage or loss of bulk material from holes or other openings in the cargo compartment's floor, sides, and/or tailgate; and load all haul trucks such that the freeboard is not less than 6 inches when material is transported on any paved public access road, and apply water to the top of the load sufficient to limit VDE to 20% opacity; or cover haul trucks with a tarp or other suitable cover.
- ▶ Owners/operators shall remove all visible carryout and trackout at the end of each workday.
- ▶ An owner/operator of any site with 150 or more vehicle trips per day, or 20 or more vehicle trips per day by vehicles with three or more axles shall take actions for the prevention and mitigation of carryout and trackout.
- ▶ Within urban areas, an owner/operator shall prevent carryout and trackout, or immediately remove carryout and trackout when it extends 50 feet or more from the nearest unpaved surface exit point of a site.
- ▶ Within rural areas, construction projects 10 acres or more in size, an owner/operator shall prevent carryout and trackout, or immediately remove carryout and trackout when it extends 50 feet or more from the nearest unpaved surface exit point of a site.
- ▶ For sites with paved interior roads, an owner/operator shall prevent and mitigate carryout and trackout.

- ▶ Cleanup of carryout and trackout shall be accomplished by manually sweeping and picking-up; or operating a rotary brush or broom accompanied or preceded by sufficient wetting to limit VDE to 20% opacity; or operating a PM₁₀-efficient street sweeper that has a pick-up efficiency of at least 80%; or flushing with water, if curbs or gutters are not present and where the use of water would not result as a source of trackout material or result in adverse impacts on storm water drainage systems or violate any National Pollutant Discharge Elimination System permit program.
- ▶ An owner/operator shall submit a Dust Control Plan to the Air Pollution Control Officer (APCO) before the start of any construction activity on any site that will include 10 acres or more of disturbed surface area for residential developments, or 5 acres or more of disturbed surface area for nonresidential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least 3 days. Construction activities shall not commence until the APCO has approved or conditionally approved the Dust Control Plan. An owner/operator shall provide written notification to the APCO within 10 days before the commencement of earthmoving activities via fax or mail. The requirement to submit a dust control plan shall apply to all such activities conducted for residential and nonresidential (e.g., commercial, industrial, or institutional) purposes or conducted by any governmental entity.

Mitigation Measure 4.2-1e: Implement SJVAPCD-Recommended Enhanced and Additional Dust Control Measures. The following SJVAPCD-recommended enhanced and additional control measure shall be implemented to further reduce emissions of fugitive PM₁₀ dust.

- ▶ Install sandbags or other erosion control measures to prevent silt runoff to public roadways from adjacent project areas with a slope greater than 1%.
- ▶ Suspend excavation and grading activity when winds exceed 20 mph.
- ▶ Limit area subject to excavation, grading, and other construction activity at any one time.

Implementation of Mitigation Measures 4.2-1a and -1b would result in the required minimum 20% reduction in NO_x emissions and a 45% reduction in PM₁₀ emissions from heavy-duty diesel equipment, as compared with statewide average emissions. In addition, implementation of these measures would also result in a 5% reduction in ROG emissions from heavy-duty diesel equipment. All or part of the reductions may result from on-site equipment and fuel selection; the remainder would result from off-site reductions achieved through the payment of fees. Implementation of Mitigation Measure 4.2-1c would ensure the additional emissions reduction necessary to reduce construction-generated ROG and NO_x emissions to levels below 10 TPY. As a result, this impact (generation of construction-related ROG and NO_x emissions) would be reduced to a **less-than-significant level**.

With respect to fugitive PM₁₀ dust emissions, implementation of Mitigation Measures 4.2-1d and 4.2-1e would ensure compliance with Regulation VIII, which is required by law, and include additional SJVAPCD-recommended control measures. As a result, this impact (generation of construction-related fugitive PM₁₀ dust emissions) would be reduced to a **less-than-significant level**.

IMPACT 4.2-2	Generation of Long-Term Operation-Related (Regional) Emissions of Criteria Air Pollutants and Precursor Emissions. <i>Operation-related activities would result in project-generated emissions of ROG and NO_x that exceed SJVAPCD's significance threshold of 10 TPY (refer to Table 4.2-7). Thus, project-generated, operation-related emissions of criteria air pollutants and precursors could violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations, especially considering the nonattainment status of Merced County. In addition, because SJVAPCD's significance thresholds approximately correlate with reductions from heavy-duty vehicles and land use project emission reduction requirements in the SIP, project-generated emissions could also conflict with any air quality planning efforts. As a result, this would be a significant impact.</i>

Area- and Mobile-Source Emissions

Project-generated, regional area- and mobile-source emissions of ROG, NO_x, PM₁₀, and PM_{2.5} were estimated using URBEMIS 2007 Version 9.2.2 computer program (ARB 2007x), which is designed to model emissions for land use development projects. URBEMIS allows land use selections that include project location and trip generation rates. URBEMIS accounts for area-source emissions from the usage of natural gas, landscape maintenance equipment, and consumer products; and mobile-source emissions associated with vehicle trips. Regional area- and mobile-source emissions were estimated based on the proposed land uses type and size identified in Chapter 3, "Project Description," the increase in trip generation from the traffic analysis prepared for this project (DKS Associates 2008), Section 4.11 "Traffic and Transportation," and default and SJVAPCD-recommended settings and parameters attributable to land use type and site location (SJVAPCD 2007x). This analysis does account for the fact that some outbound delivery truck trips from the Merced Distribution Center to the 49 existing Wal-Mart stores that it would serve would replace outbound delivery truck trips that are currently based at other existing Wal-Mart distribution centers. Results of the URBEMIS modeling, including the net results, are shown in Table 4.2-7.

Table 4.2-7 Summary of Modeled Project-Generated, Operation-Related Emissions of Criteria Air Pollutants and Precursors				
Source	Emissions (Tons/Year) ¹			
	ROG	NO _x	PM ₁₀	PM _{2.5}
Area Source²				
Natural Gas	0.0	0.3	0.0	0.0
Landscaping	0.0	0.0	0.0	0.0
Architectural Coatings	1.3	0.0	0.0	0.0
Mobile Source				
Employee Commute Trips	5.1	3.6	1.6	0.4
Outbound Delivery Truck Trips³				
Proposed Project ⁴	11.7	176.1	104.5	22.9
Existing ⁵	6.7	122.5	73.9	16.0
Net ⁶	5.0	53.6	30.6	6.9
Inbound Receivable Truck Trips³				
Proposed Project ⁷	12.0	220.5	133.1	28.8
Existing ⁷	12.0	220.5	133.1	28.8
Net Change ⁶	0.0	0.0	0.0	0.0
On-Site Truck Activity				
Haul Truck Idling ⁸	0.5	2.9	0.2	0.2
Haul Truck Travel ⁸	0.6	4.9	0.1	0.1
Yard Truck Idling ⁹	0.8	6.1	0.4	0.3
Yard Truck Travel ⁹	0.2	1.4	0.1	0.1
Total (Net) Unmitigated	13.5	72.7	32.9	8.0
Total with ISR Compliance) ¹⁰	No ISR requirement	48.7	16.5	No ISR requirement
SJVAPCD Significance Threshold	10	10	— ¹¹	— ¹¹
¹ Except for emissions generated by on-site haul truck activity, all emissions were modeled using the URBEMIS 2007 Version 9.2.2 computer model, based on trip generation rates obtained from the traffic analysis, and implementing SJVAPCD's Recommended Standard Changes to URBEMIS Default Values (SJVAPCD 2007x). ² Emissions from the periodic testing of the back-up generator and fire-water pump are not included because the amount of operation from periodic testing and maintenance would be nominal at an estimated 52 hours per year. Refer to stationary-source emissions discussion below. ³ According to the traffic analysis, a total of 644 truck trips would be generated by the proposed Merced Distribution Center. It is assumed that half of these truck trips would be associated with truck deliveries from the distribution center to retail stores (322 <i>outbound</i> delivery truck trips) and that the other half of trips would be associated with deliveries of goods to the distribution center (322 <i>inbound</i> receivable truck trips). The				

Table 4.2-7
Summary of Modeled Project-Generated, Operation-Related Emissions
of Criteria Air Pollutants and Precursors

Source	Emissions (Tons/Year) ¹			
	ROG	NO _x	PM ₁₀	PM _{2.5}
emission estimates for outbound and inbound truck trips do not account for Wal-Mart's participation in EPA's SmartWay Transport Partnership or installation of auxiliary power units on its overnight truck fleet, which aim to increase energy efficiency and reduce emissions from ground freight carriers (EPA 2007). ⁴ It is assumed that the average trip distance for all 322 outbound delivery truck trips would be equal to the average trip distance (in the San Joaquin Valley Air Basin) from the proposed distribution center to the 49 existing Wal-Mart stores that would be served by the Merced Distribution Center, which is 83.0 miles per trip, as provided by Wal-Mart (McAlexander, pers. comm., 2007). ⁵ The trip generation rate and average trip distance (106.2 miles in the San Joaquin Valley Air Basin per trip) for existing outbound delivery trucks are based on existing conditions data provided by Wal-Mart for the 49 existing stores that would be supplied by the Merced Distribution Center (McAlexander, pers. comm., 2007). ⁶ Net emissions are equal to emissions generated by the proposed project minus existing emissions. ⁷ It is assumed that the average trip distance in the San Joaquin Valley Air Basin for all inbound receivable truck trips, with and without the proposed project, would be equal to the average existing trip distance of 106.2 miles between the 49 existing Wal-Mart stores that would be served by the Merced Distribution Center and their exist distribution center currently used by such trucks; these existing centers are located in Red Bluff and Porterville. ⁸ Emissions generated by on-site travel and idling by haul trucks were estimated separately using emission factors from the EMFAC2007 Version 2.3 model (ARB 2006x). ⁹ Emissions generated by on-site travel and idling by off-road yard trucks were estimated using emission factors derived from URBEMIS 2007 Version 9.2.2 (ARB 2007x). ¹⁰ SJVAPCD's ISR Rule (Rule 9510) requires a 33% reduction in operational emissions of NO_x and a 50% reduction in PM₁₀ over 10 years. ¹¹ The SJVAPCD has not identified mass emissions thresholds for operational emissions of PM₁₀ and PM_{2.5}. See Appendix C for detailed input parameters and modeling results. Sources: Modeling performed by EDAW 2007				

In addition, emissions from on-site activity by on-road haul trucks and off-road yard trucks were estimated separately using emission factors from EMFAC2007 Version 2.3 (ARB 2006x) and project-specific assumptions for on-site travel distances and idling times used in the HRA prepared for this project (Refer to Impact 4.2-4).

Results of the URBEMIS modeling, including the net results of changes in regional truck operations and emissions from on-site truck activity, are shown in Table 4.2-7. As shown in the Table 4.2-7, operation-related activities would result in project-generated annual unmitigated emissions of approximately 14 TPY of ROG, 73 TPY of NO_x, 33 TPY of PM₁₀ and 8 TPY of PM_{2.5}. Based on the modeling conducted, operation-related activities would result in project-generated emissions of ROG and NO_x that exceed SJVAPCD's significance threshold of 10 TPY (refer to Table 4.2-7). Thus, project-generated, operation-related emissions of criteria air pollutants and precursors could violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations, especially considering the nonattainment status of the San Joaquin Valley Air Basin within (and outside of) Merced County. In addition, because SJVAPCD's significance thresholds approximately correlate with reductions from heavy-duty vehicles and land use project emission reduction requirements of the SIP, project-generated emissions could also conflict with current air quality planning efforts. As a result, this would be a **significant** impact.

Stationary-Source Emissions

The proposed project would include stationary sources of pollutants that would be required to obtain permits to operate under SJVAPCD Rule 2201-New and Modified Stationary Sources. These sources could include, but not be limited to, diesel-engine generators for emergency power generation and a charcoal grill at the employee cafeteria. The permit process would assure that these sources would be equipped with the required emission controls, and that individually, these sources would not cause a significant environmental impact. These sources

would not be subject to the ISR rule. An HRA for these sources, as well as on-site activity by diesel-engine trucks is discussed in Impact 4.2-4. Nonetheless, the emissions from these sources would be additive to modeled area- and mobile-source emissions described above.

Mitigation Measure 4.2-2a: Comply with SJVAPCD's Indirect Source Review Rule (Rule 9510)

Similar to Mitigation Measure 4.2-1a, which addresses construction-related emissions, operation of the proposed project shall comply with SJVAPCD's ISR rule (Rule 9510), as required by law. The applicant shall submit an AIA application to SJVAPCD no later than applying for a final discretionary approval with the City of Merced. The AIA application shall be submitted on a form provided by the SJVAPCD and contain, but not be limited to, the applicant's name and address, detailed project description, on-site emission reduction checklist, monitoring and reporting schedule, and an AIA. The AIA shall quantify operational NO_x and PM₁₀ emissions associated with the project. This shall include the estimated operational baseline emissions (i.e., before mitigation), and the mitigated emissions for each applicable pollutant for the project, or each phase thereof, and shall quantify the off-site fee, if applicable. General mitigation requirements, as contained in the ISR rule, include the following:

- ▶ Applicants shall reduce 33.3%, of the project's operational baseline NO_x emissions over a period of ten years as quantified in the approved AIA.
- ▶ Applicants shall reduce 50% of the project's operational baseline PM₁₀ emissions over a period of ten years as quantified in the approved AIA.

The requirements listed above can be met through any combination of on-site emission reduction measures or offset fees, including those required and additional measures listed in Mitigation Measures 4.2-2b, 4.2-2c, 4.2-2d, and 4.2-2e for emissions of CAPs; and Mitigation Measures 4.2-6b and 4.2-6d for emissions of GHGs below; however, any on-site reductions of CAP emissions must be both quantifiable and verifiable to be credited towards the requirements of the ISR Rule.

Mitigation Measure 4.2-2b: Develop and Implement an Employee Trip Reduction Program to Reduce Operational Emissions.

The applicant shall develop and implement an employee trip reduction program that minimizes the percentage of employee commute trips in single occupancy vehicles. At a minimum, the program shall ensure that at least 25% of employee commute trips occur by some other transportation mode than a single occupancy vehicle. This program shall be fully funded by the applicant and be developed in consultation with the City of Merced, the Transit Joint Powers Authority for Merced County, and SJVAPCD. Measures that result in quantifiable trip reductions can also be counted as reductions in NO_x and PM₁₀ emissions with respect to compliance with the ISR rule mentioned in Mitigation Measure 4.2-2a. The program shall be managed by an on-site Employee Transportation Coordinator employed and appointed by the applicant. A designated Transportation Manager shall also be on duty during each shift to manage the program. The 25% reduction in single occupancy vehicle trips by employees shall be achieved within 3 years of the opening of the distribution center. The reduction program and its effectiveness shall be evaluated annually and reported to the City of Merced. As part of the program, the applicant shall provide a display case or kiosk that displays all of the program information in a prominent area accessible to employees (e.g., break room, cafeteria, or entrance). Elements of the employee trip reduction program may include, but are not limited to, the following measures:

- ▶ Provide carpool ride matching assistance for employees, assistance with vanpool formation, and provisions of vanpool vehicles.
- ▶ Provide a separate site entrance exclusively for employee shuttles, carpools, vanpools, public transit, and cyclists that allows for more convenient and expedient access to and from the site during peak turnover periods (i.e., shift changes).

- ▶ Design and provide preferential parking for carpool and vanpool vehicles. Design features may include a separate parking lot for carpool and vanpool vehicles that is closer to the employee building entrance than the parking lot for single occupancy vehicles and/or covered parking spaces for carpool and vanpool vehicles. Other potential design features include connecting the preferential parking lot to the employee entrance of the building with shaded, landscaped walkways or with open-air, covered walkways.
- ▶ Implement parking fees for single occupancy vehicle commuters or a parking cash-out program for employees.
- ▶ Make available free public transit passes to all employees if public transit service is expanded to serve the project site.
- ▶ Provide adequate bicycle parking/racks in a covered, secure area.
- ▶ Provide an adequate number of showers, changing areas, and locker facilities to accommodate employees who bike to work (typically one shower and 3 lockers for every 25 employees of a shift).
- ▶ Fund the design and installation of bikeways or bike lanes along local roads that provide access to the site.
- ▶ Implement compressed work schedules for employees (e.g., 4 shifts per week for full time employees).
- ▶ Operate free employee shuttle or vanpool system that serves employees according to their shift times and places of residence. Low-emissions shuttle or vanpool vehicles shall be used (e.g., hybrid, CGN, or electric). Provide a covered area for the on-site employee shuttle stop or vanpool parking lot and an open-air covered walkway connection to the employee entrance of the building to provide summertime shade and protection from rain.
- ▶ Provide incentives for employees who take their children to child daycare centers to select nearby centers and designate these centers as official stops of the free employee shuttle or vanpool system. Incentives may include, but are not limited to, the subsidization of daycare rates or the negotiation of group discounts for children of employees at these childcare providers. An on-site child daycare center shall be provided only if supported by the findings of a comprehensive HRA performed in consultation with SJVAPCD.
- ▶ Time employee work shifts according to the class times at nearby K–12 schools and/or have employee shuttles or vanpools make stops at nearby K–12 schools.

Mitigation Measure 4.2-2c: Implement Recommended Mitigation Measures to Reduce Operational Emissions.

The following required mitigation measures shall be implemented by the project applicant to reduce operation-related emissions regardless of whether the emission reductions can be quantified and documented for compliance with the ISR rule required by Mitigation Measure 4.2-2a or whether they result in a quantifiable reduction of employee commute trips in single occupancy vehicles. However, any emissions reductions attained by these measures that can be quantified and documented can be credited to achieve the ISR reduction goals discussed in Mitigation Measure 4.2-2a or employee trip reduction goals discussed in Mitigation Measure 4.2-2b. These required measures are listed below.

- ▶ The applicant's participation in EPA's SmartWay Transport Partnership (EPA 2007) shall include the portion of its haul truck fleet that is based at or serves the Merced distribution center and shall continue participation of this truck fleet in the Partnership for as long as the Partnership or a similar successor program exists.
- ▶ The Applicant shall fully fund or contribute its fair share of funding for the development of a Class II Bike Lanes along Childs Avenue and Gerard Avenue from Parsons Avenue to the project's eastern boundary line that would connect the proposed project to nearby land uses, including the residential neighborhoods to the

west along Childs Avenue and Gerard Avenue. Building bicycle lanes at these locations is consistent with the City of Merced Bicycle Plan, which was adopted on October 20, 2008 and meets requirements of the California Bicycle Transportation Act (1994) and qualifies the City of Merced to receive state funding for bicycle projects. The City shall determine the Applicant's fair share monetary contribution to the development of these bicycle lanes and the Applicant shall pay its fair share at the same time building permit fees are due to the City.

- ▶ Provide on-site shops and services for employees including a cafeteria and a bank/ATM.
- ▶ Use only electric-powered landscape maintenance equipment to care for landscaped areas. If this work is hired out to a landscaping company, then the contract shall prohibit the use of gasoline or diesel powered landscape maintenance equipment.
- ▶ Building and site design shall include electrical outlets around the exterior of the units to enable use of electric landscape maintenance equipment.

Mitigation Measure 4.2-2d: Implement Additional Operational On-Site Emission Reduction Measures.

- ▶ Where feasible, additional measures shall be implemented to reduce operational emissions. Such measures shall include, but are not limited to the additional measures listed below. If, however, the additional measures listed below are technologically or economically infeasible, the Applicant shall submit a written report to the City of Merced Planning & Permitting demonstrating such infeasibility. Approval of this report shall be received by the Applicant prior to receiving final discretionary approval of the project from the City of Merced Planning & Permitting. Purchase and operate electric or hybrid-powered yard tractors (e.g., Volk-brand tractors) to serve as "yard trucks" that move trailers to and from the trailer yard and loading docks.
- ▶ Provide electric maintenance equipment, install solar, low-emission, or central water heaters, increase building insulation beyond Title 24 requirements, orient buildings to take advantage of solar heating and natural cooling and use passive solar designs, energy efficient windows (double pane and/or Low-E), highly reflective roofing materials, cool pavement, radiant heat barrier, install photovoltaic cells, programmable thermostats for all heating and cooling systems, awnings or other shading mechanisms for windows, patio, and walkway overhangs, ceiling fans, utilize passive solar cooling and heating designs, utilize day lighting systems such as skylights, light shelves, and interior transom windows.
- ▶ The project shall include as many clean alternative energy features as possible to promote energy self-sufficiency (e.g., photovoltaic cells, solar thermal electricity systems, small wind turbines).

Mitigation Measure 4.2-2e: Implement an Emissions Reduction Agreement with SJVAPCD to Reduce Operational Emissions of ROG and NO_x.

The Applicant shall enter into an emissions reduction agreement with SJVAPCD to reduce net ROG and NO_x emissions to less than 10 TPY. This agreement includes an emission reduction program, whereby the applicant funds projects in the SJVAB, such as replacement and destruction of old engines with new more efficient engines. The agreement requires the Applicant to identify and propose opportunities for the reduction of emissions to fully mitigate the project's operational emissions of ROG and NO_x to less than 10 TPY, and includes opportunities for removal or retrofit of stationary, transportation, indirect, and/or mobile-source equipment. Each proposal requires SJVAPCD approval and verification of emission reduction prior to receiving final discretionary approval of the project from the City of Merced. The emissions reduction agreement shall be implemented *in addition to* the Employee Trip Reduction Program required by Mitigation Measure 4.2-2b, the set of Recommended Mitigation Measures to Reduce Operational Emissions required by Mitigation Measure 4.2-2c, and the set of Additional Operational On-Site Emission Reduction Measures required by Mitigation Measure 4.2-d. However, any emission reductions achieved through these measures that are quantifiable and verifiable could effectively reduce the amount of additional, off-site reductions that must be obtained through the emissions reduction agreement. (Furthermore,

any quantifiable and verifiable emissions of CAPs that would result as an added benefit from implementation of Mitigation Measures 4.2-6b and 4.2-6d, which are designed to achieve GHG reductions as discussed under Impact 4.2-6 below, could also effectively reduce the amount of additional, off-site reductions that must be obtained through the emissions reduction agreement.) To the extent feasible, the selection of program for reducing operational emissions of CAPs established in the agreement shall give preference to off-site emission reduction projects that are located in or in close proximity to the City of Merced. If approved by SJVAPCD the Applicant may develop an emissions reduction agreement that also fulfills the compliance requirements of SJVAPCD's ISR Rule (Rule 9510) discussed in Mitigation Measure 4.2-2a. Development and implementation of the emissions reduction agreement shall be fully funded by the Applicant.

Implementation of Mitigation Measure 4.2-2a would result in at least the required minimum 33.3% reduction in NO_x emissions and a 50% reduction in PM₁₀. If these reductions are not attained by the on-site measures described above, they would occur through off-site reductions as a result of payment of fees collected by SJVAPCD. Implementation of Mitigation Measure 4.2-2b would result in emissions generated by employee commute trips. (Implementation of Mitigation Measure 4.2-2b may also have the added benefit of lessening traffic congestion and traffic noise levels on area roads.) Implementation of these measures as well as Mitigation Measures 4.2-2c and 4.2-2d would reduce project-generated, operational emissions of ROG and NO_x. Implementation of Mitigation Measure 4.2-2e would ensure the additional emissions reduction necessary to reduce operational emissions of ROG and NO_x to levels below 10 TPY. As a result, this impact would be reduced to a ***less-than-significant*** level.

IMPACT 4.2-3 *Generation of Long-Term, Operation-Related (Local) Mobile-Source Emissions of CO. Based on SJVAPCD's screening criteria, project-generated long-term operational local mobile-source emissions of CO would not result in or substantially contribute to emissions concentrations that exceed the 1-hour ambient air quality standard of 20 ppm or the 8-hour standard of 9 ppm, respectively. As a result, this impact would be less than significant.*

CO concentration is a direct function of motor vehicle activity, particularly during peak commute hours, and meteorological conditions. Under specific meteorological conditions, CO concentrations may reach unhealthy levels with respect to local sensitive land-uses such as residential areas, schools, and hospitals. As a result, the SJVAPCD recommends analysis of CO emissions at a local rather than a regional level. Because of the fact that increased CO concentrations are usually associated with roadways that are congested and with heavy traffic volume, the SJVAPCD has established preliminary screening criteria to determine with fair certainty that, if not violated, project-generated long-term operational local mobile-source emissions of CO would not result in or substantially contribute to emissions concentrations that exceed the 1-hour ambient air quality standard of 20 ppm or the 8-hour standard of 9 ppm, respectively. SJVAPCD's preliminary screening criteria consist of the following:

- ▶ 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 would be reduced to LOS E or F, or
- ▶ A traffic study for the project indicates that implementation would substantially worsen an already existing LOS F on one or more streets or at one or more intersections in the project vicinity (SJVAPCD 2002).

According to the traffic analysis prepared for this project, all affected signalized intersections would operate at LOS D or better under 2010 background plus project conditions and under cumulative plus project (2030) conditions during both AM and PM peak hours. The intersections of SR 140 and Baker Drive, Childs Avenue and the SR 99 southbound off-ramp, and Childs Avenue and the SR 99 northbound off-ramp are projected to be at LOS E or F during the AM and/or PM peak hours under 2010 background conditions with or without the project (DKS Associates 2008). However, these intersections are unsignalized (all-way stop controlled) and would not serve heavy traffic volumes that could generate substantial localized concentrations of CO. Also, traffic generated by the project would not result in excessive idling or substantially worsen any area street segments in any other way.

Intersections controlled by stop signs do not experience high enough traffic volumes and associated congestion to result in violations of the AAQS; therefore, CO modeling is not recommended for unsignalized intersections (Garza et al. 1997). Because the intersections controlled by stop signs would accommodate fewer vehicles than signalized intersections, it is reasonable to conclude that congestion at the intersections controlled by stop signs would not result in CO concentrations that exceed the AAQS.

Some signalized intersections in the vicinity of the project area are predicted to operate at an unacceptable LOS (i.e., LOS E or F) under cumulative conditions in the year 2030 with or without the traffic that would be generated by the proposed project (DKS Associates 2008). Because of stricter vehicle emissions standards in newer cars, new technology, and increased fuel economy, future CO emission factors under cumulative conditions (analysis year 2030) would be substantially lower than those under existing conditions.

Thus, based on the screening criteria above, project-generated long-term operational local mobile-source emissions of CO would not result in or substantially contribute to emissions concentrations that exceed the 1-hour ambient air quality standard of 20 ppm or the 8-hour standard of 9 ppm, respectively. As a result, this impact would be ***less than significant***.

Mitigation Measure

No mitigation is required.

IMPACT 4.2-4 *Exposure of Sensitive Receptors to Emissions of Toxic Air Contaminants. Construction and operation of the proposed project would result in increased health risk levels associated with short-and long-term emissions of diesel PM and other TACs. However, the incremental increase in health risk levels, including cancer risk and noncancer chronic risk, would not exceed applicable thresholds at nearby sensitive receptors. As a result, this impact would be less than significant.*

The exposure of sensitive receptors to emissions of TACs from on-site sources during construction and operation of the proposed project are discussed separately below.

Short-term Construction-Related Emissions

Construction-related activities would result in temporary, short-term project-generated emissions of diesel PM from the exhaust of off-road heavy-duty diesel equipment for site preparation (e.g., demolition, excavation, grading, and clearing); paving; application of architectural coatings; and other miscellaneous activities. As shown in Table 4.2-6, off-road diesel-powered equipment operated during project construction would generate approximately 2 tons of diesel PM exhaust emissions at the project site during the one-year construction effort (i.e., off-road diesel exhaust during site preparation, actual building construction, and asphalt paving). This amount would be lower with implementation of Mitigation Measure 4.2-1a because the NO_x and PM₁₀ reduction measures required by the ISR rule would also result in reduced emissions of diesel PM. Diesel PM was identified as a TAC by ARB in 1998. The potential cancer risk from the inhalation of diesel PM, as discussed below, outweighs the potential for all other health impacts (ARB 2003). At this time, SJVAPCD has not adopted a methodology for analyzing such impacts and does not recommended the completion of HRAs for construction-related emissions of TACs, with a few exceptions (e.g., where construction phase is the only phase of project) (Reed, pers. comm., 2007).

In January 2001, EPA promulgated a Final Rule to reduce emission standards for 2007 and subsequent model year heavy-duty diesel engines. These emission standards represent a 90% reduction in NO_x, 72% reduction of nonmethane hydrocarbon emissions, and 90% reduction of PM emissions in comparison to the 2004 model year emission standards. In December 2004, ARB adopted a fourth phase of emission standards (Tier 4) in the Clean Air Non-road Diesel Rule that are nearly identical to those finalized by EPA on May 11, 2004. As such, engine manufacturers are now required to meet after treatment-based exhaust standards NO_x and PM starting in 2011

that are more than 90% lower than current levels, putting emission factors from off-road engines virtually on par with those from on-road heavy-duty diesel engines.

The dose to which receptors are exposed is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the maximally exposed individual. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment, health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the proposed project (Salinas, pers. comm., 2004). Thus, because the use of off-road heavy-duty diesel equipment would be temporary in combination with the highly dispersive properties of diesel PM (Zhu and Hinds 2002) and further reductions in exhaust emissions, project-generated, construction-related emissions of TACs would not expose sensitive receptors to substantial emissions of TACs. Compliance with the ISR rule, as required by law, would also reduce diesel PM exhaust emissions. As a result, this impact would be less than significant.

Long-Term Operation-Related Emissions

A HRA was performed to assess the potential health risk associated with TACs generated by the operation of the proposed project, which would occur for an indefinite length of time. This HRA was performed, according to the recommendation of the SJVAPCD, to determine the exposure (i.e., risk levels) of existing nearby sensitive-receptors (e.g., residences, worker locations, and schools) from on-site TAC emission sources. The need to conduct a site-specific HRA was also supported by the recommendations of ARB in its Air Quality and Land Use Handbook, which suggest that an HRA be performed before locating a distribution center and sensitive receptors within 1,000 feet of each other (ARB 2005).

Implementation of the proposed project would result in TAC emissions from various operation-related activities, including diesel PM from on-site travel and idling by haul trucks and yard trucks, transport refrigeration units, the diesel-powered backup generator and fire-water pump; and naphthalene and polycyclic aromatic hydrocarbons from the grill in the employee cafeteria.

For emission sources of diesel PM, air quality dispersion modeling was conducted using the EPA AERMOD model (Version 07026) with the ISC-AERMOD View interface (Version 5.6) (Lakes Environmental Software 2007) to determine the concentration levels at existing nearby sensitive receptors. Emission rates for (on-road) haul trucks, (off-road) yard trucks, transport refrigeration units, backup generator, and the fire-water pump were based on those in the SJVAPCD Modeling Guidance, equipment manufacturer specifications, or particulate matter standards for the pertinent class of diesel-powered internal combustion engines. To evaluate potential health risk associated with operation of the cafeteria, dispersion and risk modeling were performed using the Hotspots Analysis Reporting Program (HARP) software package (Version 1.3, updated October 2006) developed by ARB for conducting health risk assessments (ARB 2006x). Emissions of organic gases from the on-site cafeteria were evaluated using an air toxic pollutant surrogate for the total mass estimate for organic gases, in accordance with SJVAPCD Modeling Guidance (SJVAPCD 2007x). In addition to emission rate information, all air dispersion modeling was based on five sequential years of hourly preprocessed meteorological data provided by SJVAPCD and terrain data from the U.S. Geological Survey (U.S. Geological Survey 2006). Variable emission correction factors were incorporated into the modeling to account for proportionally higher levels of emissions activity during peak daytime hours compared to late evening hour and early morning hours when operational activity is generally lower.

The HRA evaluated increased cancer risk and chronic noncancer health hazards at specific nearby locations where people may be exposed to emissions of TACs, including residences, schools, and worker sites (A detailed map of

these discrete receptor locations is shown in Figure 2 of Appendix C. Carcinogenic risks and potential chronic noncancer health effects were assessed using the dispersion modeling, as described in the preceding sections, and numerical values of toxicity provided by OEHHA (OEHHA 2003). The HRA evaluated cancer and noncancer health effects from inhalation exposure at individual sensitive receptors, including nearby residences, worker sites, and schools. Exposure levels at both existing and future planned sensitive receptors were assessed. Because the pollutants of concern do not have published toxicity factors for short-term (acute) exposure, this HRA evaluated only potential long-term health impacts.

Health risk impacts were identified at actual locations of residential and worker receptors within a 1-mile radius of the proposed project site. A summary of maximum cancer risk and noncancer health impacts values is shown in Table 4.2-8.

Of the 10 residential locations identified (as shown in Figure 2 of the HRA in Appendix C) for evaluating the maximum increase in individual health risk impacts, the incremental increase in cancer risk at the Maximum Exposed Individual Receptor (MEIR) was determined to be 7.3 in 1 million (Table 4.2-8). The HI for increased noncancer chronic risk at the MEIR was determined to be 0.0086 (Table 4.2-8). Both the MEIR for increased cancer risk and highest HI for noncancer chronic risk occurred at the same residential receptor, an existing residence located less than a mile southwest of the proposed project site.

Table 4.2-8 Summary of Modeled Maximum Health Risk Impacts by Individual Receptor		
Individual Receptor Type	Health Risk Impact ¹	
	Cancer Risk	Noncancer Risk
Residential Receptors		
Maximum Exposed Individual Receptor (MEIR)	7.3	0.0086
Worker (Occupational) Receptors		
Maximum Exposed Individual Worker (MEIW)	2.4	0.0034
School Receptors		
Maximum Exposed Individual Child (MEIC)	0.18 ^(c) , 1.3 ^(w)	0.000054 ^(c) , 0.0019 ^(w)
Threshold	10	1.0
¹ Cancer risk shown is total cancer risk, expressed in cases per million people, from diesel particulate matter, polycyclic aromatic hydrocarbons, and naphthalene. Cancer risk for residential receptor is based on a 70-year exposure. Cancer risk for worker receptors is based on an adjusted worker exposure in accordance with OEHHA (OEHHA 2003) and the SJVAPCD Modeling Guidance (SJVAPCD 2007x). Two cancer risk impacts were estimated for the schools. The first cancer risk shown (c) is based on a 9-year student exposure using inhalation and body weight factors developed by OEHHA for children. The second (w) cancer risk is based on a 40-year worker exposure. See Appendix C for detailed input parameters and modeling results. Sources: Modeling performed by ENSR 2007		

Two worker locations were identified for evaluating the maximum increased individual health risk impacts at the Maximum Exposed Individual Worker (MEIW). As shown in Table 4.2-8, increased cancer risk at the MEIW, based on worker exposure assumptions, was determined to be 2.4 in one million. The HI for increased noncancer chronic risk at the MEIW was 0.0034. This worker receptor occurs north of the proposed project site along Childs Avenue.

Four schools were identified within 2.5 miles of the proposed project site, all of which are located to the west. For evaluating school receptors, two health risk analyses were conducted. The first was to evaluate the increase in potential health risk impacts to children that attend the schools using the 9-year exposure scenario available in the HARP model to estimate health risk for children. This exposure scenario accounts for the higher breathing rate to body mass ratio of a child compared to an adult and is appropriate for use in estimating exposure to children. The

second assessment treated the schools as worker receptors, similar to the analysis performed for identification of impacts at the MEIW, to account for adult staff employed at the schools.

The levels of increased cancer risk at all receptors estimated in this health risk analysis were less than the SJVAPCD significance level of 10 in one million. In addition, operation of the project would not result in HIs for noncancer chronic risk at any receptor that would exceed SJVAPCD's recommended threshold of 1.0. In summary, based on the results of this HRA, human health risks and effects from long-term operational on-site emissions associated with the proposed project would not result in the exposure of any off-site sensitive receptors to levels that exceed applicable thresholds. As a result, this is a ***less-than-significant*** impact.

Mitigation Measure

No mitigation is required.

IMPACT **Exposure of Sensitive Receptors to Emissions of Odors.** *Construction and operation of the proposed project would not result in the frequent exposure of receptors to substantial objectionable odor emissions. As a result, this impact would be less than significant.*

4.2-5

The project site currently consists of undeveloped and fallow farmlands and orchards with no buildings or sensitive receptors on-site. The nearest off-site sensitive receptors to the project site include the new housing development located approximately 1,250 feet west of the project site (across an existing almond orchard zoned for future industrial development), a farm house located across Gerard Avenue approximately 450 feet from the southwest corner of the project site, a farm house located over 700 feet from the project site's southeast corner, and a farm house located approximately 100 feet east of the project site (across Tower Road). The exposure of sensitive receptors to odors from project construction and operation are discussed separately below.

Short-Term Construction-Related Emissions

The predominant source of power for construction equipment is diesel engines. Exhaust odors from diesel engines, as well as emissions associated with asphalt paving and the application of architectural coatings may be considered offensive to some individuals. However, because odors would be temporary and would disperse rapidly with distance from the source, construction-generated odors would not result in the frequent exposure of off-site receptors to objectionable odor emissions.

Long-Term Operation-Related Emissions

The primary odor source from project operations would be diesel exhaust from on-site travel and idling of haul trucks and yard trucks. With the exception of trucks checking in at the truck entrance on the west side of the project site, most truck activity would occur near the center of the project site. The truck gate area would be located approximately 100 feet from the project site's west boundary and the closest off-site receptor would be the new housing development located across the almond orchard at a distance of approximately 1,350 feet. Because this is a substantial distance with respect to the rapid dispersion rate of diesel exhaust and because an ARB air toxic control measure limits truck idling to 5 minutes (13 CCR Chapter 10 Section 2485), on-site diesel emissions are not expected to generate odor complaints at off-site receptors.

Odor may also be generated by the charbroil grill in the employee cafeteria. During a 2-day site visit to the Wal-Mart distribution center in Apple Valley, CA odors from the charbroil grill were not observed from any location on the site, including indoor and outdoor areas near the employee cafeteria. In addition, because the employee cafeteria is located near the center of the project site in the warehouse building any noticeable odors would likely disperse to an unnoticeable level before reaching the site boundary.

Both project construction and project operations are not expected to result in the frequent exposure of off-site receptors to substantial objectionable odor emissions. As a result, this impact would be considered *less than significant*.

Mitigation Measure

No mitigation is required.

IMPACT 4.2-6 *Generation of Emissions of Greenhouse Gases. Construction- and operation-related activities of the proposed project would result in a considerable net increase in emissions of CO₂ and other greenhouse gases. These levels would constitute a considerable net increase in GHG emissions. In addition, this increase would conflict with the state's AB 32 goals, which require reductions in statewide emissions levels of GHGs. As a result, this impact would be considered significant.*

Construction- and operation-related emissions of CO₂ associated with implementation of the proposed project were estimated using URBEMIS 2007 Version 9.2.2 computer program (ARB 2007x), which is designed to model construction and operational emissions for land use development projects. Construction emissions were estimated based on default parameters of the URBEMIS 2007 model and SJVAPCD-recommended parameters for composition of the construction equipment fleet, ground disturbance acreage, worker trips, and material haul trips (SJVAPCD 2007x). The URBEMIS 2007 model does not account for CO₂ emissions associated with the production of concrete or other building materials used in project construction. Operation-related emissions were estimated based on the proposed land uses type and size, vehicle trip information from the traffic analysis prepared for this project (DKS Associates 2008), Section 4.11 "Traffic and Transportation," truck trip information from an existing Wal-Mart distribution centers in California (McAlexander, pers. comm., 2007), electricity and natural gas consumption from the Wal-Mart distribution center in Porterville, CA (Gordon, pers. comm., 2007), and SJVAPCD's recommended standard changes to URBEMIS Default Values (SJVAPCD 2007x). In addition, emissions from on-site activity by on-road haul trucks and off-road yard trucks were estimated separately using assumptions about on-site travel distances and idling times, and indirect-source GHG emissions were estimated using the California Climate Action Registry Protocol, Version 2.2 (CCAR 2007) and electricity consumption data for the existing Wal-Mart distribution center in Porterville, CA (Gordon, pers. comm., 2007). Modeled construction and operational emissions of CO₂ are summarized in Tables 4.2-9 and 4.2-10, respectively.

Table 4.2-9 Summary of Modeled Project-Generated Construction-Related Emissions of Carbon Dioxide	
Source	Carbon Dioxide Emissions (Tons/Year) ¹
Grading	
Fugitive Dust	0.0
Off-Road Diesel Exhaust	984.9
On-Road Diesel Exhaust	0.0
Worker Trips	30.6
Subtotal Unmitigated	1,015.4
Asphalt	
Off-Gas Emissions	0.00
Off-Road Diesel Exhaust	21.8
On-Road Diesel Exhaust	41.8
Worker Trips	1.6
Subtotal Unmitigated	65.2
Building Construction	
Off-Road Diesel Exhaust	1,329.8
Vendor Trips	1,722.09
Worker Trips	1,079.0
Subtotal Unmitigated	4,130.8

Table 4.2-9 Summary of Modeled Project-Generated Construction-Related Emissions of Carbon Dioxide	
Source	Carbon Dioxide Emissions (Tons/Year) ¹
Architectural Coatings	
Off-Gas Emissions	0.0
Worker Trips	15.3
Subtotal Unmitigated	15.3
Total	5,226.7
Notes: See Appendix C for detailed input parameters and modeling results.	
¹ Emissions generated by construction were estimated using URBEMIS 2007 Version 9.2.2 (ARB 2007x) and SJVAPCD-recommended input parameters (SJVAPCD 2007x). The URBEMIS 2007 model does not account for CO2 emissions associated with the production of concrete or other building materials used in project construction.	
Source: Modeling performed by EDAW 2007	

Table 4.2-10 Summary of Modeled Project-Generated Operation-Related Emissions of Carbon Dioxide	
Source	Carbon Dioxide Emissions (Tons/Year) ¹
Area Source²	
Natural Gas ³	344.2
Landscaping	0.0
Architectural Coatings	0.3
Mobile Source	
Employee Commute Trips	2,619.1
Outbound Delivery Truck Trips⁴	
Proposed Project ⁵	24,170.7
Existing ⁶	21,108.4
Net ⁷	3,062.3
Inbound Receivable Truck Trips⁴	
Proposed Project ⁸	37,995.2
Existing ⁸	37,995.2
Net ⁷	0.0
On-Site Truck Activity	
Haul Truck Idling ⁹	311.3
Haul Truck Travel ⁹	296.6
Yard Truck Idling ¹⁰	578.1
Yard Truck Travel ¹⁰	132.9
Indirect Sources	
Electricity Consumption ¹¹	5,363.7
Total Unmitigated¹²	12,708.4
¹ Emissions were modeled using the URBEMIS 2007 Version 9.2.2 computer model, based on trip generation rates obtained from the traffic analysis, and implementing SJVAPCD's Recommended Standard Changes to URBEMIS Default Values (SJVAPCD 2007x).	
² Emissions from the periodic testing of the back-up generator and fire-water pump are not included because the amount of operation from periodic testing and maintenance would be nominal at an estimated 52 hours per year.	
³ Emissions from natural gas usage were calculated using recent natural gas usage rates at the Porterville distribution center, as provided by Wal-Mart staff (Gordon, pers. comm., 2007).	
⁴ According to the traffic analysis, a total of 644 truck trips would be generated by the proposed Merced Distribution Center. It is assumed that half of these truck trips would be associated with truck deliveries from the distribution center to retail stores (322 <i>outbound</i> delivery truck trips) and that the other half of trips would be associated with deliveries of goods to the distribution center (322 <i>inbound</i> receivable truck trips). The emission estimates for outbound and inbound truck trips do not account for Wal-Mart's participation in EPA's SmartWay Transport Partnership, which aims to increase energy efficiency and reduce emissions from ground freight carriers (EPA 2007).	
⁵ It is assumed that the average trip distance for all 322 outbound delivery truck trips would be equal to the average trip distance (in and beyond the San Joaquin Valley Air Basin) from the proposed distribution center to the 49 existing Wal-Mart stores that would be served by the Merced Distribution Center, which is 109.1 miles per trip, as provided by Wal-Mart (McAlexander, pers. comm., 2007).	
⁶ The trip generation rate and average trip distance (171.5 miles in and beyond the San Joaquin Valley Air Basin) for existing outbound	

Table 4.2-10 Summary of Modeled Project-Generated Operation-Related Emissions of Carbon Dioxide	
Source	Carbon Dioxide Emissions (Tons/Year) ¹
delivery trucks are based on existing conditions data provided by Wal-Mart for the 49 existing stores that would be supplied by the Merced Distribution Center (McAlexander, pers. comm., 2007).	
⁷ Net emissions are equal to emissions generated by the proposed project minus existing emissions.	
⁸ It is assumed that the average trip distance for all inbound receivable truck trips (in and beyond the San Joaquin Valley Air Basin), with and without the proposed project, would be equal to the average existing trip distance of 171.5 miles between the 49 existing Wal-Mart stores that would be served by the Merced Distribution Center and their existing distribution center in Red Bluff or Porterville.	
⁹ Emissions generated by on-site travel and idling by haul trucks were estimated separately using default emission factors derived from the EMFAC2007 Version 2.3 model (ARB 2006x).	
¹⁰ Emissions generated by on-site travel and idling by off-road yard trucks were estimated using emission factors derived from URBEMIS 2007 Version 9.2.2 (ARB 2007x).	
¹¹ Carbon dioxide (CO ₂) emissions associated with electricity consumption were estimated according to methodologies of the <i>California Climate Action Registry General Reporting Protocol, Version 2.2</i> (CCAR 2007). According to the Protocol an additional 1.03 CO ₂ -equivalent/year of CH ₄ and 7.65 CO ₂ -equivalent/year of N ₂ O would be generated by electricity consumption.	
¹² The SJVAPCD has not identified mass emissions thresholds for CO ₂ emissions. This estimate total does not account for the depletion of carbon sequestration associated with the removal of the existing on-site almond orchard.	
See Appendix C for detailed input parameters, calculations, and modeling results.	
Source: Modeling performed by EDAW 2007	

As shown in Table 4.2-8, construction of the project would generate approximately 5,226.7 tons of CO₂ during the 12-month construction period. Though the construction period is projected to last for one year, the CO₂ emissions generated during that year-long period would persist in the atmosphere for much longer periods of time, on the order of tens to hundreds of years. As shown in Table 4.2-9, operation of the project would generate annual emissions of approximately 12,595 tons of CO₂ during each year of the life of the project. There are no adopted numeric thresholds above or below which a significant increase in greenhouse gas emissions would occur. Absent this type of guidance, and given the cumulative nature of contribution of these emissions to global climate change, these levels would constitute a considerable net increase in GHG emissions. In addition, this increase could conflict with the state's AB 32 goals, which require reductions in statewide GHG emission levels. As a result, this impact would be **significant**.

Mitigation Measure 4.2-6a: Implement Mitigation Measures 4.2-1a and 4.2-1b.

The applicant shall implement Mitigation Measures 4.2-1a and 4.2-1b, which will have the added benefit of reducing construction-related emissions of CO₂.

Mitigation Measure 4.2-6b: Ensure On-Site Yard Trucks are Maintained and Meet On-Road Truck Emissions Standards.

The applicant shall ensure that all on-site "yard trucks" have ARB-approved on-road truck engines that meet on-road truck emissions standards and are maintained in proper working condition according to manufacturer specifications.

Mitigation Measure 4.2-6c: Implement Mitigation Measures 4.2-2a, 4.2-2b, 4.2-2c, and 4.2-2d.

The applicant shall implement Mitigation Measures 4.2-2a, 4.2-2b, 4.2-2c, and 4.2-2d, which will have the added benefit of reducing project-generated, operation-related emissions of CO₂.

Mitigation Measure 4.2-6d: Implement Effective Mitigation Measures.

The following measures, as well as any other effective mitigation measures, shall be implemented by the project applicant to further reduce operation-related emissions of CO₂.

- ▶ Install solar panels in all available areas of the project site, including the roof of the warehouse building, the buffer areas surrounding the paved truck yards and employee parking lot, and covered parking areas, walkways and outdoor areas, to supply electricity for on-site use. This measure would be consistent with the Merced Vision 2015 General Plan Policy SD-3.1, which is to promote the use of solar energy technology (City of Merced 1995).
- ▶ Determine which local electricity provider, Pacific Gas and Electric Company or Merced Irrigation District, produces electricity with the lowest CO₂-equivalent output emission rate (lb/MWh) and select this provider to meet remaining electricity demand of on-site operations.
- ▶ Retain the portion of the existing almond orchard located between the proposed truck gate and future Campus Parkway. For all almond trees that are subject to removal, participate in an urban and community forestry program (such as the UrbanWood program managed by the Urban Forest Ecosystems Institute [Urban Forest Ecosystems Institute 2007]) in which tree wood is harvested for an end-use that would retain its carbon sequestration (e.g., furniture building, cabinet making). For all nonharvestable almond trees that are subject to removal, develop an off-site tree program that includes a level of tree planting that, at a minimum, increases carbon sequestration by an amount equivalent to what would have been sequestered by the almond orchard during its lifetime. This program shall be funded by the applicant and reviewed for comment by an independent Certified Arborist unaffiliated with the Applicant. Final approval of the program shall be provided by the City. Components of the program may include, but not be limited to, providing urban tree canopy in the City of Merced, or reforestation in suitable areas outside the City. Upon its completion, the California Urban Forestry Greenhouse Gas Reporting Protocol shall be used to assess this mitigation program. At the time of writing this document, the Center for Urban Forest Research expects to complete the California Urban Forestry Greenhouse Gas Reporting Protocol with the California Climate Action Registry sometime in 2008 (Center for Urban Forest Research 2007). All unused vegetation and tree material shall be shipped to the nearest composting facility, or landfill that is equipped with a methane collection system, or biomass power plant. Tree and vegetative material should not be burned on or off-site unless used as fuel in a biomass power plant.
- ▶ The applicant shall inventory all emissions of GHGs associated with operation of the project according to the most recently established methodologies of the CCAR or ARB. This inventory shall include mobile-source GHG emissions associated with trips by Wal-mart trucks traveling to and from the distribution center, and on-site vehicles that are part of Wal-mart's vehicle fleet. At the time of writing this report the most recently established methodology is the California Climate Action Registry's General Reporting Protocol, Version 2.2 (CCAR 2007).

Implementation of the Mitigation Measures 4.2-6a through 4.2-6d above would result in reductions of emissions of CO₂ and offsets; however, at the time of writing this EIR these reductions cannot be fully quantified. In addition, implementation of Mitigation Measure 4.2-1c and Mitigation Measure 4.2-2e, which require the Applicant to implement an emissions reduction agreement with SJVAPCD to reduce construction and operational emissions of ROG and NO_x to less than the SJVAPCD-established threshold for ROG and NO_x 10 TYP, will have the added benefit of reducing construction and operational GHG emissions. However, the size of the associated GHG reduction cannot be quantified at the time of writing this EIR and, more significantly, there is not established methodology for verifying the associated GHG reductions from emission reduction agreements. Moreover, the net increase in GHG emissions would may still be of an amount that would be considered substantial. Because the project would potentially still result in a net increase in CO₂ emission levels and conflict with the state's AB 32 goals, this impact would be remain **significant and unavoidable**.

4.3 BIOLOGICAL RESOURCES

This section addresses biological resources that could be affected by implementation of the proposed project. The evaluation presented in this section is based on review of existing documentation and field survey results. An EDAW biologist conducted a reconnaissance-level field survey of the project site on June 26, 2006. The purpose of this survey was to characterize general biological resources supported by the project site and evaluate the potential for sensitive biological resources to occur on the site and be affected by implementation of the proposed project. The biologist investigated the entire site, including on-foot evaluations of field perimeters and agricultural ditches to determine suitability for sensitive wildlife species and investigate whether the ditches were functional.

4.3.1 ENVIRONMENTAL SETTING

SOURCES OF INFORMATION

Information provided in this section is based on results of the reconnaissance field surveys and review of existing information regarding biological resources in the vicinity of the project site, including the *Biological Resource Assessment and Field Reconnaissance for the Industrial Site, Merced, California* (Carter and Burgess, Inc. 2004) and sensitive biological resource occurrences documented in the California Department of Fish and Game (DFG) California Natural Diversity Database (CNDDDB) (2006) and the online version of the California Native Plant Society's (CNPS's) Inventory of Rare and Endangered Plants of California (CNPS 2006). These sources of existing documentation were reviewed prior to the field survey to identify previously reported occurrences of special-status species in the project vicinity. During the field survey, suitability of the project site to support these and other species with potential to occur on-site was specifically evaluated.

VEGETATION AND WILDLIFE

The project site is almost entirely comprised of agricultural habitats, including almond orchards in the western portion and dry-farmed field crops in the eastern portion. Narrow corridors of weedy ruderal vegetation are present along the field boundaries and roadsides. These are dominated by introduced forbs and grasses, such as Johnson grass, bindweed, and Russian thistle. A small developed area is present along Gerard Avenue, at the boundary between the orchard and open fields.

Several irrigation ditches exist along portions of the northern, eastern, and southern boundaries of the project site and portions of the agricultural field boundaries. At the time of the EDAW reconnaissance survey, no water was in any of these ditches. None of the ditches appeared to have been used recently and flap gates connecting them to adjacent ditches or underground pipeline systems were closed.

Overall, habitats present on the project site support relatively limited wildlife diversity, and species likely to exist are limited to those that utilize agricultural habitats. The site's greatest value is the foraging habitat provided by the agricultural fields, whether cultivated or fallow. Such fields can support healthy populations of small mammals and, if so, may serve as a foraging resource for raptors, such as Swainson's hawk, red-tailed hawk, and American kestrel, if the other habitat requirements of such species (e.g., nesting sites) are also present in the vicinity. The almond orchard also provides foraging and nesting habitat for several birds that are common in agricultural habitats, such as American crow, yellow-billed magpie, and house finch. The site is unlikely to support any amphibian species, because of the lack of aquatic habitat, but it likely supports common reptiles, such as western fence lizard and gopher snake, and provides habitat for mammals such as opossum, raccoon, and striped skunk.

SENSITIVE BIOLOGICAL RESOURCES

Sensitive biological resources addressed below include those that are afforded special protection through the California Environmental Quality Act (CEQA), the California Fish and Game Code (including but not limited to CESA), ESA, and the CWA.

Special-Status Species

Special-status species are plants and animals that are legally protected or that are otherwise considered sensitive by federal, state, or local resource conservation agencies and organizations, including:

- ▶ plant and wildlife species that are listed by ESA and/or CESA as rare, threatened, or endangered;
- ▶ plant and wildlife species considered candidates for listing or proposed for listing;
- ▶ wildlife species identified by DFG as fully protected and/or species of special concern; and
- ▶ plants considered by CNPS to be rare, threatened, or endangered.

DFG applies the term “California Species of Special Concern” to animals that are not listed under the ESA or CESA but are nonetheless declining at a rate that could result in listing, or that historically occurred in low numbers and currently face known threats to their persistence. CNPS designations are used by both USFWS and DFG when considering formal species protection under the ESA and CESA.

The CNDDDB was used as the primary source to identify previously reported occurrences of special-status species in the project vicinity (CNDDDB 2006). Although the CNDDDB is the most current and reliable tool for tracking occurrences of special-status species, it contains only those records that have been reported to DFG. To identify additional special-status plant species with potential to exist in the project area, a search of the online edition of CNPS’s Inventory of Rare and Endangered Plants of California (CNPS 2006) was also conducted. CNDDDB and CNPS database searches were conducted for the Merced U.S. Geological Survey (USGS) quadrangle.

Special-Status Plants

Nine special-status plant species are documented in the CNDDDB and CNPS online inventory as existing within the Merced USGS quadrangle. The regulatory status, habitat associations, and likelihood of occurrence of these special-status plant species on the project site are summarized in Table 4.3-1. Based on the lack of suitable habitat required by these species (vernal pools, marshes and swamps, and grasslands), it was determined that none of the special-status plants has potential to occur on the project site.

Special-Status Wildlife

Seven special-status wildlife species are documented in the CNDDDB and CNPS online inventory as occurring within the Merced USGS quadrangle. The regulatory status, habitat associations, and likelihood of occurrence of these special-status wildlife species on the project site are summarized in Table 4.3-2. Four of the species listed below are restricted to vernal pools and other aquatic habitats that do not occur on the project site. Therefore, they were determined have no potential to occur on-site and are not addressed further in this document. The project site at least supports low-quality habitat for the remaining species and the potential for each of them to occur on-site is evaluated further below.

Burrowing Owl

Burrowing owl is a California Species of Special Concern, and burrowing owls and their nests are protected under Section 3503.5 of the California Fish and Game Code. Burrowing owls typically inhabit grasslands and other open habitats with low-lying vegetation. They are known to nest and forage in idle agricultural fields, ruderal fields and the edges of cultivated fields, although these areas provide lower quality habitat than native grasslands. Burrow availability is an essential component of suitable habitat. Burrowing owls are capable of digging their

**Table 4.3-1
Special-Status Plant Species Potentially Occurring on the Project Site**

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Succulent owl's clover	<i>Castilleja campestris</i> ssp. <i>succulenta</i>	Federal: Threatened State: Endangered CNPS: 1B	Vernal pools; often in acidic conditions; 160 to 2,500 feet elevation	None; no vernal pools are present on the project site
Dwarf downingia	<i>Downingia pusilla</i>	CNPS: 2	Vernal pools and mesic sites in valley and foothill grassland; 3 to 1,500 feet elevation	None; no vernal pools or grassland habitat are present on the project site
Spiny-sepaled button-celery	<i>Eryngium spinosepalum</i>	CNPS: 1B	Valley and foothill grassland and vernal pools; 260 to 840 feet elevation	None; no vernal pools or grassland habitat are present on the project site
Shining navarretia	<i>Navarretia nigelliformis</i> ssp. <i>Radians</i>	CNPS: 1B	Cismontane woodland, valley and foothill grassland, vernal pools; 295 to 3,280 feet elevation	None; no vernal pools, woodland, or grassland habitat are present on the project site
Colusa grass	<i>Neostapfia colusana</i>	Federal: Threatened State: Endangered CNPS: 1B	Deep vernal pools in Adobe clay soils; 15 to 650 feet elevation	None; no vernal pools are present on the project site
San Joaquin Valley orcutt grass	<i>Orcuttia inaequalis</i>	Federal: Threatened State: Endangered CNPS: 1B	Vernal pools; 30 to 2,500 feet elevation	None; no vernal pools are present on the project site
Hairy orcutt grass	<i>Orcuttia pilosa</i>	Federal: Endangered State: Endangered CNPS: 1B	Vernal pools; 175–650 feet elevation.	None; no vernal pools are present on the project site
Merced phacelia	<i>Phacelia ciliata</i> var. <i>opaca</i>	CNPS: 1B	Clay soils in valley and foothill grassland; 195 to 500 feet elevation	None; no grassland is present on the project site
Sanford's arrowhead	<i>Sagittaria sanfordii</i>	CNPS: 1B	Assorted shallow freshwater marshes and swamps; 0 to 2,000 feet elevation.	None; no marsh or swamp habitat are present on the project site
California Native Plant Society (CNPS) Listing Categories: 1B Plants rare, threatened, or endangered in California and elsewhere 2 Plants rare, threatened, or endangered in California but more common elsewhere Sources: CNDDB 2006; CNPS 2006; EDAW 2006 field survey				

Table 4.3-2 Special-Status Wildlife Species Potentially Occurring on the Project Site				
Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Invertebrates				
Vernal pool tadpole shrimp	<i>Lepidurus packardii</i>	Federal: Endangered	Vernal pools and swales	None; no vernal pools are present on the project site
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	Federal: Threatened	Vernal pools and other seasonal wetlands	None; no vernal pools are present on the project site
Amphibians and Reptiles				
California tiger salamander	<i>Ambystoma californiense</i>	Federal: Threatened State: Species of Special Concern	Vernal pools and seasonal wetlands in upland with burrows and other below-ground refuge	None; no vernal pools or seasonal wetlands are present on the project site
Giant garter snake	<i>Thamnophis gigas</i>	Federal: Threatened State: Threatened	Streams, sloughs, ponds, and irrigation/ drainage ditches; also require upland refugia not subject to flooding during the snake's inactive season	None; ditches on-site do not provide necessary aquatic habitat
Birds				
Burrowing owl	<i>Athene cunicularia</i>	State: Species of Special Concern	Grasslands and agricultural fields	Could occur; currently no suitable burrows, but site provides suitable foraging habitat and potentially suitable burrowing habitat
Swainson's hawk	<i>Buteo swainsoni</i>	State: Threatened	Forage in grasslands and agricultural fields; nest in open woodland or scattered trees	Likely to occur; known to nest within 5 miles of project site and could forage on-site
Mountain plover	<i>Charadrius montanus</i>	State: Species of Special Concern	Short or barren grasslands and agricultural fields	Unlikely to occur; marginally suitable vegetation is present on project site but disturbance levels and adjacent unsuitable habitats limit potential for occurrence
Mammals				
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	Federal: Endangered State: Threatened	Grasslands and open scrub with loose-textured soils for burrowing	Unlikely to occur; project site provides low-quality habitat and nearby CNDDB occurrences are restricted to grassland habitats north and east of the site
Sources: CNDDB 2006; EDAW 2006 field survey				

own burrows in areas with soft soil, but they generally prefer to adopt those excavated by other animals, typically ground squirrels. In areas where burrows are scarce, they can use pipes, culverts, debris piles, and other artificial features.

The CNDDDB includes one documented occurrence of burrowing owl within 10 miles of the project site. Evidence of owl occupation at a burrow complex in grasslands approximately 5 mile north of the project site was documented in winter of 2000. No suitable burrows for burrowing owls or evidence of burrowing occupation were observed during the field survey. However, agricultural field margins and irrigation ditches provide potential burrowing habitat and agricultural fields provide suitable foraging habitat. As a result, it is possible that burrowing owls could occupy the project site prior to project implementation, if ground squirrels or other suitable mammals become established and create suitable burrows.

Mountain Plover

Mountain plover is a California Species of Special Concern. Mountain plovers do not breed in California, but California is the primary wintering ground for the species. The species is most frequently reported in two main wintering areas: the western San Joaquin Valley and the Imperial Valley, although recent evidence suggests many mountain plovers may have shifted from Central Valley to Imperial Valley wintering sites (USFWS 2003). Mountain plovers occur in areas with flat topography and bare ground or very short vegetation, including agricultural fields and non-cultivated sites (e.g., grasslands). In the San Joaquin Valley, non-cultivated sites are preferred habitat; the suitability of cultivated sites is dependent upon factors such as vegetative structure, furrow depth, insect availability, and vegetation of surrounding land parcels (USFWS 1998).

The CNDDDB includes one documented occurrence of a small flock of mountain plovers in breeding plumage approximately 5 miles north of the project site in March of 1999, although the project vicinity is not a traditional wintering area for the species. In addition, agricultural fields on the project site provide poor-quality habitat for mountain plovers, because the area of potentially suitable habitat on-site is relatively small, and it is closely bordered by unsuitable habitat (orchards) on two sides. This configuration is inconsistent with sites typically utilized by mountain plovers, which include large open areas lacking nearby trees or other vegetation exceeding several inches in height. In addition, the site would only provide potentially suitable habitat if the fields are fallow during the winter. This was not the case at the time of the field survey, when evidence that the field had been cultivated in a winter grain crop was observed. Therefore, mountain plovers are very unlikely to occur on the project site.

San Joaquin Kit Fox

San Joaquin kit fox is federally listed as endangered and state listed as threatened. The historic range of the kit fox has been greatly reduced, and most of the remaining occupied range is restricted to portions of the San Joaquin Valley floor and the eastern foothills of the Coastal Range. The largest extant populations of kit foxes are in western Kern County and the Carrizo Plain Natural Area, San Luis Obispo County (USFWS 1998). CNDDDB occurrences from the project vicinity are restricted to grassland habitats several miles north and east of the project site.

No evidence of kit fox occurrence was observed during the field survey. The project site provides poor-quality habitat for the species, and potential for occurrence on-site is very low. In some cases, kit foxes have been documented utilizing agricultural lands if uncultivated areas that provide suitable denning sites and prey base are present (USFWS 1998). Because the project site (and surrounding areas) is actively cultivated, it does not provide suitable denning habitat and is unlikely to support a suitable prey base. Although kit foxes have been documented in grassland areas north and east of the project site, they are unlikely to range on to the site because of its poor habitat quality and lack of more suitable adjacent habitat.

Swainson's Hawk

Swainson's hawk is state listed as a threatened species. Historically, as many as 17,000 Swainson's hawk pairs may have nested throughout lowland California (DFG 1994). Currently, there are 700–1,000 breeding pairs in California, of which 600–900 are in the Central Valley (Estep 2003). Swainson's hawks are most commonly found in grasslands, low shrublands, and agricultural habitats that include large trees for nesting. Nests occur in riparian woodlands, roadside trees, trees along field borders, and isolated trees, and nesting pairs frequently return to the same nest site for multiple years and decades. Swainson's hawks typically forage in agricultural fields, grasslands, and pasture. Crops that are tall and dense enough to preclude the capture of prey do not provide suitable habitat except around field margins, but prey in even these crops are accessible during and soon after harvest. Although the most important foraging habitat for Swainson's hawks lies within a one-mile radius of each nest, Swainson's hawks have been recorded foraging up to 18.6 miles from nest sites (City of Sacramento et al. 2003). Any habitat within the foraging distance may provide food at some time in the breeding season that is necessary for reproductive success.

The CNDDDB documents six occurrences of Swainson's hawk nest sites active since 1991 within 10 miles of the project site, including one nest site within 5 miles. Fallow and cultivated field crops and ruderal field boundaries on the project site provide suitable Swainson's hawk foraging habitat. Because the site is located within 10 miles of several documented nest sites, it is within the foraging range of nesting birds and could be utilized by them during the breeding season.

Sensitive Habitats

Sensitive habitats include those that are of special concern to resource agencies or are afforded specific consideration through CEQA, Section 1602 of the California Fish and Game Code, Section 404 of the federal CWA, and the state's Porter Cologne Water Quality Control Act, as discussed under "Regulatory Setting" above. Sensitive natural habitat may be of special concern to these agencies and conservation organizations for a variety of reasons, including their locally or regionally declining status, or because they provide important habitat to common and special-status species. Many of these communities are tracked in DFG's Natural Diversity Database, a statewide inventory of the locations and conditions of the state's rarest plant and animal taxa and vegetation types.

The project site does not support any sensitive habitats. Irrigation ditches that border and traverse the eastern portion of the site are unlikely to qualify for USACE jurisdiction or protection under the state's Porter Cologne Water Quality Control Act. As indicated in the Biological Resources Assessment (Carter and Burgess, Inc. 2004), and observed during the EDAW field survey, these ditches have been excavated in uplands and do not appear to drain to jurisdictional waters of the United States. They do not support any wetland habitats and, at the time of the EDAW field survey, did not appear to have been used for an extended period of time.

4.3.2 REGULATORY SETTING

Many sensitive biological resources in California are protected and/or regulated by federal and state laws and policies. Before implementation, the proposed project must be in compliance with these regulations.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

Federal Endangered Species Act

Under the federal Endangered Species Act (ESA), the U.S. Fish and Wildlife Service (USFWS) has regulatory authority over federally listed species. Under the ESA, a permit to "take" a listed species is required for any federal action that may harm an individual of that species. Take is defined under Section 9 of the ESA as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Under federal regulation, take is further defined to include habitat modification or degradation where it

would be expected to result in death or injury to listed wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

CLEAN WATER ACT

In accordance with Section 404 of the federal Clean Water Act (CWA), the U.S. Army Corps of Engineers (USACE) regulates discharge of dredged or fill material into waters of the United States. Waters of the United States and their lateral limits are defined in Title 33, Part 328.3(a) of the Code of Federal Regulations to include navigable waters of the United States, interstate waters, all other waters where the use or degradation or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries. Waters of the United States are often categorized as “jurisdictional wetlands” (i.e., wetlands over which USACE exercises jurisdiction under Section 404) and “other waters of the United States” when habitat values and characteristics are being described. “Fill” is defined as any material that replaces any portion of a water of the United States with dry land or that changes the bottom elevation of any portion of a water of the United States. Any activity resulting in the placement of dredged or fill material within waters of the United States requires a permit from USACE.

In accordance with Section 401 of the CWA, projects that apply for a USACE permit for discharge of dredged or fill material must obtain water quality certification from the appropriate regional water quality control board (RWQCB) indicating that the proposed project would uphold State of California water quality standards.

MIGRATORY BIRD TREATY ACT

The Migratory Bird Treaty Act (MBTA), first enacted in 1918, domestically implements a series of treaties between the United States and Great Britain (on behalf of Canada), Mexico, Japan, and the former Soviet Union that provide for international migratory bird protection. The MBTA authorizes the Secretary of the Interior to regulate the taking of migratory birds; the act provides that it shall be unlawful, except as permitted by regulations, “to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird...” (U.S. Code Title 16, Section 703). This prohibition includes both direct and indirect acts, although harassment and habitat modification are not included unless they result in direct loss of birds, nests, or eggs. The current list of species protected by the MBTA includes several hundred species and essentially includes all native birds. Permits for take of nongame migratory birds can be issued only for specific activities, such as scientific collecting, rehabilitation, propagation, education, taxidermy, and protection of human health and safety and personal property.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

California Endangered Species Act

Under the California Endangered Species Act (CESA), a permit from the California Department of Fish and Game (DFG) is required for projects that could result in the take of a plant or animal species that is state-listed as threatened or endangered. Under CESA, “take” is defined as an activity that would directly or indirectly kill an individual of a species, but the CESA definition of take does not include “harming” or “harassing,” as the ESA definition does. As a result, the threshold for take is higher under CESA than under ESA (i.e., habitat modification is not necessarily considered take under CESA).

California Fish and Game Code Sections 3503 and 3503.5—Protection of Bird Nests and Raptors

Section 3503 of the California Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 specifically states that it is unlawful to take, possess, or destroy any raptors (i.e., species in the orders Falconiformes and Strigiformes), including their nests or eggs. Typical violations of these codes include destruction of active nests resulting from removal of vegetation in which the nests are located. Violation of Section 3503.5 could also include failure of active raptor nests resulting from

disturbance of nesting pairs by nearby project construction. This statute does not provide for the issuance of any type of incidental take permit.

California Fish and Game Code—Fully Protected Species

Protection of fully protected species is described in Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code. These statutes prohibit take or possession of fully protected species. DFG is unable to authorize incidental take of fully protected species when activities are proposed in areas inhabited by those species. DFG has informed nonfederal agencies and private parties that they must avoid take of any fully protected species in carrying out projects.

California Fish and Game Code Section 1602—Streambed Alteration

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources are subject to regulation by DFG under Section 1602 of the California Fish and Game Code. Under Section 1602, it is unlawful for any person, governmental agency, or public utility to do the following without first notifying DFG: substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. A stream is defined as a body of water that flows at least periodically or intermittently through a bed or channel that has banks and supports fish or other aquatic life. This definition includes watercourses with a surface or subsurface flow that supports or has supported riparian vegetation. DFG's jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife. A DFG streambed alteration agreement must be obtained for any project that would result in an impact on a river, stream, or lake.

Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Water Quality Control Act, waters of the state fall under the jurisdiction of the appropriate RWQCB. Under the act, the RWQCB must prepare and periodically update water quality control basin plans. Each basin plan sets forth water quality standards for surface water and groundwater, as well as actions to control nonpoint and point sources of pollution to achieve and maintain these standards. Projects that affect wetlands or waters must meet waste discharge requirements of the RWQCB, which may be issued in addition to a water quality certification or waiver under Section 401 of the CWA.

LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

Merced Vision 2015 General Plan

The Open Space, Conservation, and Recreation Element of the *Merced Vision 2015 General Plan* (City General Plan) contains policies that apply to wildlife conservation. The following specific local policies apply to development of the uses proposed in this project.

Open Space, Conservation, and Recreation Element

GOAL AREA OS-1: Open Space for the Preservation of Natural Resources

- ▶ **Policy OS-1.1** Identify and preserve wildlife habitats which support rare, threatened, and endangered species.
 - 1.1.a: Identify, and recognize as significant, wetland habitats which meet the appropriate legal definition of Federal and State law.
 - 1.1.b: Urban development should occur away from identified sensitive species habitat unless specific provisions to ensure adequate.

- 1.1.c: Establish development review procedures which minimize impact on sensitive species and their habitats.

4.3.3 ENVIRONMENTAL IMPACTS

THRESHOLDS OF SIGNIFICANCE

Thresholds for determining the significance of impacts on biological resources were based on Section 15065 and Appendix G of the State CEQA Guidelines. The proposed project would have a significant impact on biological resources if it would:

- ▶ 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 DFG or USFWS;
- ▶ have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in any local or regional plans, policies, or regulations, or by DFG or USFWS;
- ▶ have a substantial adverse effect on federally protected waters of the United States, including wetlands, as defined by Section 404 of the CWA (including but not limited to marshes, vernal pools, rivers, etc.) through direct removal, filling, hydrological interruption, or other means;
- ▶ interfere substantially with the movement of any native resident or migratory wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- ▶ conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;
- ▶ conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan; or
- ▶ substantially reduce the habitat of a fish and wildlife species, cause a fish or wildlife species to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or substantially reduce the number or restrict the range of an endangered, rare, or threatened species.

IMPACT ANALYSIS

IMPACT 4.3-1 *Effects on Special-Status Plants. Implementation of the proposed project would result in loss of agricultural and ruderal habitats, which are unsuitable for special-status plants known to occur in the region. This impact would be less than significant.*

Special-status plants known to occur in the vicinity of the project site are restricted to habitats that do not occur on the project site, including vernal pools, marches and swamps, and grasslands. Because habitat on the project site is limited to orchards and agricultural fields, special-status plants are unlikely to occur on the site and would, therefore, not be affected by the proposed project. This impact would be ***less than significant***.

Mitigation Measure

No mitigation is required.

IMPACT **Effects on Special-Status Wildlife.** *Implementation of the proposed project would result in loss of approximately 150 acres of suitable foraging habitat for Swainson's hawk and could result in destruction and/or disturbance of occupied burrowing owl burrows. Other special-status wildlife species known to occur in the project vicinity are unlikely to occur on the project site and would not be affected by project implementation. This impact would be potentially significant.*

4.3-2

Development of the project site would result in loss of approximately 150 acres of agricultural fields that provide potential foraging habitat for Swainson's hawk and potential burrowing and foraging habitat for burrowing owl. Two other special-status wildlife species that have been documented in the vicinity of the project site (mountain plover and San Joaquin kit fox) are very unlikely to occur on the project site and would not be affected by project implementation. As mentioned above, the project site provides very low-quality habitat for these species and more suitable habitat is available elsewhere in the region, including grasslands to the north and east of the site where these species have been documented in the past.

Swainson's hawk and burrowing owl have greater potential, however, to occur on-site. Although no focused surveys have been conducted to document use of the project site as foraging habitat for Swainson's hawks, suitable foraging habitat was present at the time of the EDAW field survey (conducted during the Swainson's hawk nesting season) and could be relied on by nearby nesting pairs. Loss of such habitat could adversely affect nesting pairs that rely on it. In addition, loss of habitat on the site would contribute to the overall loss of Swainson's hawk foraging habitat in the region and could contribute to a reduction in the regional breeding population. These impacts could result in a substantial effect on the species. The project site also has potential to support occupied burrowing owl burrows. At the time of the EDAW field survey, the project site did not appear to support the population of burrowing mammals typically associated with occupied burrowing owl habitat, and no evidence of burrowing owls was observed. However, the agricultural field margins and irrigation ditches provide potential burrowing habitat. Because burrowing owls have been documented within approximately five miles of the project site and this species is known to move into new areas with suitable burrows, burrowing owls could occupy these areas in the future if ground squirrels become established and create suitable burrows. Therefore, the potential for burrowing owls to occur on or adjacent to the site at the time of project implementation should not be dismissed. If burrowing owls are present during project construction, occupied burrows could be directly destroyed and owls could be disturbed by construction activities near active nest burrows, potentially resulting in abandonment of their eggs or young. Loss of individual burrowing owls would be **significant** impact. In addition, if burrowing owls become established at and dependent upon the project site, loss of the potential burrowing and foraging habitat provided by the site could result in a substantial adverse effect.

Mitigation Measure 4.3-2: Implement Measures to Minimize Potential Project Effects on Swainson's Hawk and Burrowing Owl. To minimize potential project effects on Swainson's hawk and burrowing owl, the project applicant shall do the following:

Swainson's Hawk

- ▶ Loss of Swainson's hawk foraging habitat shall be compensated for by preservation and management of foraging habitat of at least a similar quality at an appropriate off-site location. Specific measures to offset the loss of foraging habitat shall be developed in consultation with DFG pursuant to DFG's "Draft Non-regulatory Guidelines for Determining Appropriate Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*)."
- ▶ Compensatory mitigation shall be provided for any loss of suitable foraging habitat, including fallow or active agricultural fields (not orchards), before any grading on the site begins.
- ▶ Mitigation lands shall be either grassland or croplands (i.e., row crops or alfalfa) that provide suitable Swainson's hawk foraging habitat and shall be located within 10 miles of a known active nest site. In accordance with DFG mitigation guidelines (DFG 1994), habitat shall be provided at a ratio of 0.75 acre of mitigation land for each acre of foraging habitat that would be lost within 5 miles of, but greater than 1 mile from, the nearest active nest.

- ▶ Long-term protection of mitigation lands shall be ensured through fee title acquisition, conservation easement, or other suitable mechanisms. Long-term management of mitigation lands shall be ensured by establishing a management endowment or other suitable funding source.

Burrowing Owl

- ▶ The project applicant shall hire a qualified biologist to conduct preconstruction surveys for burrowing owl to determine whether burrowing owls occupy the site during the breeding and/or nesting season. The timing and methodology for the surveys shall be consistent with DFG and Burrowing Owl Consortium survey guidelines. Winter surveys shall be conducted on four separate days between December 1 and January 31. Nesting season surveys shall be conducted on four separate days between February 1 and August 31, with at least two of the survey days during the peak nesting season (April 15–July 15).
- ▶ If no burrowing owls are documented during the surveys, the site shall be regularly maintained in a manner that ensures owls do not occupy the site in the future (e.g., regular discing of open areas). No further mitigation shall be necessary.
- ▶ If burrowing owls are discovered on the project site, the project applicant shall immediately notify and coordinate with DFG regarding implementation of passive relocation methods to exclude the owls from the site prior to initiating construction activities. Exclusion shall be conducted through installation of one-way doors at the burrow entrances and subsequent destruction of the burrows to preclude re-occupation. Passive relocation may only be conducted during the non-nesting season (September 31–January 31). After relocation, the site shall be regularly monitored to confirm that burrowing owls have not re-occupied the site. If the site is re-occupied, exclusion measures shall be repeated, in coordination with DFG.
- ▶ In addition to exclusion of the owls from the site, the project applicant shall consult with DFG to provide appropriate compensation for loss of burrowing owl habitat. To offset the loss of foraging and burrow habitat on the project site, DFG recommends, in their 1995 Staff Report on Burrowing Owl Mitigation, a minimum of 6.5 acres of foraging habitat (calculated on a 100 meter {approximately 300 ft.} foraging radius around the burrow) per pair or unpaired resident bird, should be acquired and permanently protected. The protected lands should be adjacent to occupied burrowing owl habitat and at a location acceptable to the Department. Mitigation for loss of Swainson’s hawk foraging habitat could, upon approval by DFG, be used concurrently to mitigate for the loss of burrowing owl habitat.
- ▶ Long-term protection of mitigation lands shall be ensured through fee title acquisition, conservation easement, or other suitable mechanisms. Long-term management of mitigation lands shall be ensured by establishing a management endowment or other suitable funding source.

Implementation of the above mitigation measures would avoid impacts to nesting burrowing owls and compensate for the loss of Swainson’s hawk foraging habitat and potential burrowing owl habitat. Therefore, impacts on these species would be reduced to a ***less-than-significant*** level.

IMPACT **Effects on Sensitive Habitats.** *Implementation of the proposed project would result in loss of agricultural and ruderal habitats that are not considered sensitive by any biological resource agencies or conservation organizations. This impact would be less than significant.*

4.3-3

The project site does not support any sensitive natural communities or habitats under jurisdiction of resource protection agencies, such as USACE, DFG, or the Central Valley RWQCB. Irrigation ditches that border and traverse the eastern portion of the site have been excavated in uplands and do not appear to drain to any potentially sensitive habitats. At the time of the EDAW field survey, the ditches did not appear to have been utilized for an extended period of time and did not support wetland vegetation or provide habitat for any aquatic

animals. Because no sensitive habitats are present on the project site, there would be no adverse effects to such habitats. This impact would be ***less than significant***.

Mitigation Measure

No mitigation is required.

IMPACT 4.3-4 **Effects of Wildlife Movement.** *Implementation of the project would not substantially interfere with wildlife movement or impede the use of wildlife nursery site. This impact would be less than significant.*

The project site is surrounded by similar agricultural and rural residential development. It does not link any areas of open space that serve as important wildlife habitat and does not serve as a wildlife nursery site. Common wildlife species that may currently travel through the site could easily use similar adjacent habitats as travel routes. Therefore, implementation of the project would not substantially interfere with wildlife movement or established migratory corridors or impede the use of important nursery sites. This impact would be ***less than significant***.

Mitigation Measure

No mitigation is required.

IMPACT 4.3-5 **Consistency with Local Plans, Policies, and Ordinances.** *Implementation of the project could conflict or be inconsistent with the City of Merced General Plan. This impact would be significant.*

The Project site was planned for Industrial in the City General Plan. This designation's purpose is to provide land for industrial uses in the City, including combination industrial/office uses, such as the proposed project. As analyzed in section 4.7, the project is consistent with the land use designation and the land use intensity planned for the site.

The Open Space, Conservation, and Recreation chapter of the City of Merced Vision 2015 General Plan includes a goal and supporting objectives and policies related to protection rare, endangered, or threatened species and the habitats that support them. Implementation of the proposed project has the potential to adversely affect Swainson's hawk by reducing potential foraging habitat and adversely affect burrowing owl by eliminating occupied burrowing habitat. These effects could conflict with the General Plan if measures are not implemented to ensure protection of the species. This impact would be ***significant***.

Mitigation Measure 4.3-5: Implement Measures to Minimize Conflict with the City's General Plan. Implementation of Mitigation Measure 4.3-2 would reduce the impact on consistency with the City's General Plan to a ***less-than-significant*** level.

IMPACT 4.3-6 **Consistency with Adopted Habitat Conservation Plan, Natural Community Conservation Plan, or Other Approved Conservation Plan.** *Implementation of the project would not conflict with or be inconsistent with any conservation plans because no such plans apply to the project site. This impact would be considered less than significant.*

No Habitat Conservation Plan, Natural Community Conservation Plan, or other approved conservation plan has been adopted for an area including the project site. In addition, no such plan is known to be in development. Therefore, the proposed project would not conflict with any conservation plan. This impact would be ***less than significant***.

Mitigation Measure

No mitigation is required.

4.4 CULTURAL RESOURCES

This section of the environmental impact report describes the potential impacts to cultural resources that could result from the implementation of the Wal-Mart distribution center project. The Merced area and its vicinity are known to contain numerous traces of past human activity ranging from early Native American sites and artifacts to the remains of historic-era agricultural and ranching activities. Such materials can be found at many locations on the landscape and along with prehistoric and historic human remains, are protected from significant project-related impacts by the California Environmental Quality Act (CEQA).

A discussion of potential impacts on paleontological resources is contained in Section 4.5, “Geology, Minerals, Soils, and Paleontological Resources,” of this report.

4.4.1 ENVIRONMENTAL SETTING

PREHISTORY

Archaeological data gathered over the past century has shown that humans have inhabited California, likely including the Central Valley, for at least the past 10,000–12,000 years. Because, in part, of the varied topography and climate of the state, technological adaptations to these disparate conditions vary greatly from region to region and over long periods of time. To a certain degree, however, Native American technological and subsistence systems and land use patterns appear to have possessed similar general elements during various periods of prehistory. The basic aspects of these broad temporal and cultural periods are outlined below and are based in large part on the work of David Fredrickson (1973).

The *Paleo-Indian Period* (10,000 BC–6,000 BC) saw the first clearly demonstrated entry and spread of humans into California. Known sites are situated along shores of pluvial lakes and typically exhibit implements likely used in hunting. Traditionally, Paleo-Indian subsistence and land use has been tied to the hunting of Pleistocene megafauna. However, there is little archaeological evidence supporting the notion that Paleo-Indian lifeways were consistently tied to the pursuit of species such as mammoth, mastodon, or bison. The social units are thought to have been small, highly mobile, and were not heavily dependent on exchange of resources with exchange activities occurring on an ad hoc, individual basis.

The beginning of the *Lower Archaic Period* (6,000 BC–3,000 BC) coincided with a middle Holocene climatic change. Generally, drier conditions prevailed and this brought about a reduction in the size and number of pluvial lakes that appear to have been so important in earlier land use patterns. Subsistence appears to be focused on the consumption of plant foods over faunal resources and settlement appears to have been semi-sedentary. Most stone tools were manufactured with local materials, and patterns of material exchange remained on an ad hoc basis.

The *Middle Archaic Period* (3,000 BC–1,000 BC) began at the end of middle Holocene and climatic conditions were similar to those of the present day. The material cultural changes noted in the archaeological record likely occurred at least in part as a response to shifting environmental factors. The economic base became more diversified and acorn-processing technology first appeared. Hunting remained an important source of food, although there was clearly a shift in emphasis toward floral resources. Sedentism appears to have been more fully developed and there was a general population growth and expansion onto more varied parts of the landscape.

The growth of sociopolitical complexity marks the *Upper Archaic Period* (1,000 BC–500 AD) and the development of status distinctions based on material wealth is well documented. Group-oriented religions emerged and may represent the origins of the Kuksu religious system at the end of the period. There is greater complexity of exchange systems with evidence of regular, sustained exchanges between groups. Shell beads gained in significance as possible indicators of personal status and as important trade items.

Several technological and social changes distinguish the *Emergent Period* (500 AD–1,800 AD). The bow and arrow were introduced, ultimately replacing the dart and atlatl (spear-thrower) that were employed at least as early as the Lower Archaic Period. Territorial boundaries between groups became well established and settlement patterns were highly sedentary. It became increasingly common that distinctions in an individual's social status could be linked to acquired wealth. Exchange of goods between groups became more regularized with more resources, including raw materials, entering into the exchange networks. It was during the latter years of this period that large-scale European settlement began to greatly impact traditional Native lifeways.

ETHNOGRAPHY

The project area appears to have been inhabited by the Northern Valley Yokuts, whose territory extended from the large bend in the San Joaquin River near Mendota and north to the confluence of the San Joaquin and Calaveras Rivers. Unfortunately, archeologically and ethnographically, “no large section of California is so little known as the lower San Joaquin Valley” (Wallace 1978:462). Much of what is known about the Yokuts must be inferred from the archaeological record because of a deficiency in historical documentation (Wallace 1978:462). Excavations at habitation sites in Merced and Fresno Counties have yielded artifact assemblages similar to those found in the delta area of the Sacramento and San Joaquin rivers, suggesting strong cultural links between, at least in later prehistoric times, between the early native residents of the Merced area and peoples in the Bay and Delta areas.

The word Yokut roughly translates to “person” or “people” in the valley dialects. Their language belonged to the California Penutian family, which includes the languages of four other central and coastal California groups: the Miwok, Costanoan, Maiduan, and Wintuan (Silverstein 1978:446). As with archaeological evidence, linguistic relationships also suggest strong cultural ties between the Northern Valley Yokuts and those groups from surrounding regions.

Year-round population (often referred to as “tribelet”) centers were established in the western subarea of the Northern Valley Yokuts. However, because of the limited range of resources, these centers were dependent on exchange relationships with larger villages located along the San Joaquin River, and Los Banos Creek and San Luis Creek (Olsen 1972:7) to the west of Merced. It is inferred that both triblet centers and large villages maintained a similar sociopolitical organization where groups were organized on the basis of totemic moieties; chieftainship was based on inheritance along patrilineal lines, and secondarily by popular vote. Some archaeological evidence for this kind of social arrangement can be found in the large house remains that probably served as patrilocal residences for extended families (Olsen 1972:7).

The acorn was an important food staple and was processed in both stone and wood mortars. Buckeye nuts were also processed for consumption. Deer, antelope, rabbits, and gophers were hunted year round, while ducks and other waterfowl, fish, and various insects, including grasshoppers and caterpillars, were available on a seasonal basis (Kroeber 1925:524). However, a single valley oak could produce 300–500 pounds of acorns each year (Baumhoff 1963) and tule roots could be ground into meal to supplement the abundant faunal resources (Wallace 1978). Other food sources included seeds obtained from the grasslands, which Native Americans burned off annually to increase the following year's crop (Cook 1960). This basic subsistence pattern, along with most other aspects of the traditional Yokuts lifeways, remained largely unchanged until the early-to-middle decades of the nineteenth century. Although mining never took place on a large scale in Merced, the 1849 Gold Rush quickly resulted in a Euro-American population boom throughout the Central Valley. Yokuts people soon became marginalized and their numbers decimated by conflict and disease. However, today the Yokuts are reinvesting in their traditional lifeways and, through new-found political and economic influence, are revitalizing their community.

HISTORY

Traders and fur trappers associated with the Hudson's Bay Company and other groups may have traveled through the Merced region as early as the middle to late decades of the eighteenth century. However, the first documented

European travels through the region did not occur until 1806, when Alferez Gabriel Moraga and Father Pedro Muñoz led an exploratory expedition into the Central Valley and what is now the Merced region. The party consisted of Moraga, Father Muñoz, and 25 soldiers. They left San Juan Bautista in September 1806. Moraga and Muñoz, scouting potential interior mission sites, soon encountered and named the *El Río de Nuestra Señora de la Merced* (Merced River). Although Moraga and Muñoz noted the river and the area near the present-day City of Merced as favorable for a mission, no such establishment was ever constructed.

Numerous Spanish and Mexican expeditions in search of mission sites, mineral wealth, and other natural resources occurred in the Central Valley throughout the early decades of the nineteenth century, but little in the way of Euro-American settlement took place until the 1840s, with the establishment of large Mexican land grants. Few such tracts were granted to private citizens in what would become Merced County and the closest to the present-day City of Merced was the 48,824-acre *Sanjon de Santa Rita*; located to the west of the City (Beck and Haase 1974).

Intensive Euro-American settlement of Merced County did not take place until after the Gold Rush of 1849, when the rich soil and well-watered landscape was recognized for its ranching and agricultural potential. Merced County was not established until 1855, when it was separated from Mariposa County. Little of consequence occurred in the new county until the Southern Pacific Railroad arrived in the area early in 1872. Intended to facilitate the transportation of goods throughout the Central Valley, it was the arrival of the Southern Pacific Railroad that spurred the formation of the City of Merced, which was laid in January of 1872 and established as the county seat that same year (Hoover et al. 1990, Gudde 1969).

With a booming population, the arrival of the railroad, and the designation of the City of Merced as the county seat, agricultural and ranching pursuits soon developed into the economic mainstay of the region, as they did throughout the Central Valley. As farms and populations grew, water-conveyance systems such as the Crocker-Huffman canal and others were constructed and continue to serve the farms and residents today. Such canals are a major feature of the landscape and, along with the ranches, farms, rail lines, and highways, define the physical, social, economic, and political character of the region.

CULTURAL RESOURCES DOCUMENTED IN THE PROJECT AREA

Several cultural resource investigations have been conducted within and in the immediate vicinity of the project area. These include the 2004 Peak and Associates study (Table 4.4-1) that surveyed the entire project site and did not result in the identification of any prehistoric or historic-era sites, features, or artifacts. In addition, a record search conducted in 2004 by the Central California Information Center of the California Historical Resources Information System did not identify any cultural resources within or near the project area. A reconnaissance survey conducted by EDAW archaeologists in June 2006, intended to “ground-truth” previous findings, confirmed the conclusions of these studies and also did not identify any potential cultural resources within or in the immediate vicinity of the project area.

Table 4.4-1 Cultural Resources Investigation in the Project Area			
Report Title	Author	Date	Identified Resources
<i>Cultural Resource Assessment for an Industrial Park Site, City of Merced, Merced County, California</i>	Peak & Associates	2004	none
<i>Archaeological Survey Report, Merced Campus Highway</i>	URS, Inc.	2001	none
<i>Archaeological Survey Report Addendum 1, Merced Campus Parkway</i>	URS, Inc.	2001	none
<i>Archaeological Inventory Survey. Tracy to Fresno Longhaul Fiberoptics Data Transmission Line</i>	Peter Jensen	1996	none
Source: Data compiled by EDAW in 2006			

4.4.2 REGULATORY SETTING

The significance of cultural resources within the project area is measured against the criteria outlined in the California Register of Historical Resources (CRHR). CEQA requires that cultural resources eligible for listing on the CRHR be afforded degrees of protection ranging from preservation to the mitigation of adverse impacts. Determining the CRHR eligibility of historic-era and prehistoric sites located within the project area is guided by Sections 21083.2 and 21084.1 of the Public Resources Code (PRC), and the CEQA Guidelines (California Code of Regulations Title 14) Section 15064.5. In the CRHR, cultural resources are defined as buildings, sites, structures or objects that may have historical, architectural, archaeological, cultural, or scientific importance. A cultural resource may be eligible for listing on the CRHR if it:

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

In California, if a prehistoric or historic resource does not necessarily meet any of the four CRHR criteria, but does meet the definition of a "unique" site as outlined in the PRC (Section 21083.2), it may still be treated as a significant resource. This is the case if it is:

- ▶ an archaeological artifact, object or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:
 - It contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
 - It has a special and particular quality such as being the oldest of its type or the best available example of its type.
 - It is directly associated with a scientifically recognized important prehistoric or historic event.

These two sets of criteria operate independently to ensure that significant potential effects on archaeological and historic resources are considered as a part of a project's environmental analysis. PRC guidelines also recommend provisions be made for the accidental discovery of archaeological sites, historical resources, or Native American human remains during construction (PRC section 5097.98).

4.4.3 ENVIRONMENTAL IMPACTS

THRESHOLDS OF SIGNIFICANCE

Based on Appendix G of the State CEQA Guidelines, a cultural resources impact is considered significant if implementation of the proposed project would do any of the following:

- ▶ cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5,
- ▶ cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5,

- ▶ directly or indirectly destroy a unique paleontological resource or site or unique geologic feature, or
- ▶ disturb any human remains, including those interred outside of formal cemeteries.

IMPACT ANALYSIS

IMPACT 4.4-1 **Destruction/Damage to As-Yet Undiscovered Cultural Resources.** *Subsurface disturbances could potentially destroy or damage of as-yet undiscovered prehistoric or historic cultural resources. If these resources were to represent “unique archaeological resources” or “historic resources” as defined by CEQA, a significant impact would occur.*

The project site is located in a region where significant prehistoric and historic-era cultural resources have been documented. Although no “unique” or “historic” cultural resources (as per CEQA definitions) have been documented on the project site, there is a potential that unrecorded cultural resources could be unearthed or otherwise discovered at the project site during ground-disturbing and construction activities. If such resources were determined to be unique or historic, a **significant** impact would occur.

Mitigation Measure 4.4-1: Contact Cultural Resources Specialist for Potential Cultural Finds during Project-Related Ground-Disturbing Activities. If unrecorded cultural resources are encountered during project-related ground-disturbing activities, a qualified professional cultural resources specialist shall be contacted to assess the potential significance of the find.

If an inadvertent discovery of cultural materials (e.g., unusual amounts of shell, animal bone, bottle glass, ceramics, structure/building remains) is made during project-related construction activities, ground disturbances in the area of the find will be halted and a qualified professional archaeologist will be notified regarding the discovery. The archaeologist shall determine whether the resource is potentially significant per the CRHR and develop appropriate mitigation. The preferred mitigation would be preservation in place. If that is not feasible, a mitigation plan would be prepared and implemented and could include, but not necessarily be limited to documentary research; subsurface testing; data recovery; the analysis of excavated materials; preparation of a technical report; and curation of the collection and supporting documentation at a qualified institution.

Implementation of the above mitigation measure would reduce potentially significant impacts resulting from inadvertent damage or destruction of unknown cultural resources during construction to a **less-than-significant** level.

IMPACT 4.4-2 **Potential to Uncover Human Remains.** *Subsurface disturbances could potentially uncover unmarked historic-era and prehistoric Native American burials. Any such disturbance would represent a significant impact.*

While no evidence for prehistoric or early historic interments was found in the project site in surface contexts, this does not preclude the existence of buried subsurface human remains. California law recognizes the need to protect historic-era and Native American human burials, skeletal remains, and items associated with Native American interments from vandalism and inadvertent destruction. The procedures for the treatment of Native American human remains are contained in California Health and Safety Code Section 7050.5 and 7052 and California PRC Section 5097. If any human remains were unearthed during project construction, particularly those that were determined to be Native American in origin, a **significant** impact would occur.

Mitigation Measure 4.4-2: Stop Potentially Damaging Work if Human Remains Are Uncovered during Construction, Assess the Significance of the Find, and Pursue Appropriate Management. In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, the contractor and/or the project proponent shall immediately halt potentially damaging excavation in the area of the burial and notify the Merced County Coroner and a professional archaeologist to determine the nature of the remains. The coroner is

required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the Native American Heritage Commission (NAHC) by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). Following the coroner's findings, the property owner, contractor or project proponent, an archaeologist, and the NAHC-designated Most Likely Descendent (MLD) shall determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed. The responsibilities for acting on notification of a discovery of Native American human remains are identified in California PRC Section 5097.9.

Implementation of Assembly Bill (AB) 2641 requires that the following procedures be implemented:

Upon the discovery of Native American remains, the procedures above regarding involvement of the County Coroner, notification of the NAHC, and identification of a MLD shall be followed. The landowner shall ensure that the immediate vicinity (according to generally accepted cultural or archaeological standards and practices) is not damaged or disturbed by further development activity until consultation with the MLD has taken place. The MLD shall have 48 hours to complete a site inspection and make recommendations after being granted access to the site. A range of possible treatments for the remains, including nondestructive removal and analysis, preservation in place, relinquishment of the remains and associated items to the descendants, or other culturally appropriate treatment may be discussed. AB 2641 suggests that the concerned parties may extend discussions beyond the initial 48 hours to allow for the discovery of additional remains. AB 2641(e) includes a list of site protection measures and states that the landowner shall comply with one or more of the following:

- (1) Record the site with the NAHC or the appropriate Information Center
- (2) Utilize an open-space or conservation zoning designation or easement
- (3) Record a document with the county in which the property is located

The landowner or their authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance if the NAHC is unable to identify a MLD or the MLD fails to make a recommendation within 48 hours after being granted access to the site. The landowner or their authorized representative may also reinter the remains in a location not subject to further disturbance if they reject the recommendation of the MLD, and mediation by the NAHC fails to provide measures acceptable to the landowner. Adherence to these procedures and other provisions of the California Health and Safety Code and AB 2641(e) will reduce potential impacts to human remains to a ***less-than-significant*** level.

4.5 GEOLOGY, MINERALS, SOILS, AND PALEONTOLOGICAL RESOURCES

This chapter identifies and evaluates the changes in conditions related to geology, minerals, soils, paleontological resources, and seismic conditions associated with implementation of the proposed project. The analysis addresses potentially significant geology and soil effects and impacts on paleontological resources, and recommends mitigation measures to reduce significant or potentially significant environmental impacts. This chapter is based on EDAW's review of local, State, and Federal websites and documents, as well as a Geotechnical Feasibility Study prepared for the project site by ENGEO in 2004.

4.5.1 ENVIRONMENTAL SETTING

GEOLOGY

Regional Geology

The project site is located in the Great Valley Geomorphic Province of California, a large northwest-trending valley bounded by the Sierra Nevada range to the east and south, the Coast Ranges to the west, and the Klamath Mountains to the north. The Great Valley is drained by the Sacramento and San Joaquin rivers, which join and flow out of the province through the San Francisco Bay. This geomorphic province is an asymmetric trough approximately 400 miles long and 50 miles wide, filled with a thick sequence of sediments ranging from Jurassic (180 million years ago) to Recent age.

The Central or Great Valley comprises the Sacramento Valley and the San Joaquin Valley. The Central Valley is a forearc basin comprising thousands of feet of sedimentary deposits, which has undergone alternating periods of subsidence and uplift over millions of years. The Central Valley basin began to form during the Jurassic period as the Pacific oceanic plate was subducted underneath the adjacent North American continental plate. During the Jurassic and Cretaceous periods of the Mesozoic era, the Central Valley existed in the form of an ancient ocean. By the end of the Mesozoic, the northern portion of the Central Valley began to fill with sediment as tectonic forces caused uplift of the basin. Geologic evidence surrounding the Stockton Arch suggests that the Sacramento Valley and San Joaquin Valley gradually separated into two separate waterbodies as uplift and sedimentation continued. By the time of the Miocene epoch (approximately 24 million years ago), sediments deposited in the Sacramento Valley were mostly of terrestrial origin. In contrast, the San Joaquin Valley continued to be inundated with water for another 20 million years, as indicated by marine sediments dated to the late Pliocene (approximately 5 million years ago). By the Pleistocene epoch, the San Joaquin Valley had emerged from the water and was enclosed by the Sierra Nevada Range to the east and the Coast Range to the west (Bartow 1991). Most of the surface of the San Joaquin Valley is covered with Pleistocene and recent (Holocene) alluvium. This alluvium comprises sediments from the Sierra Nevada Mountains to the east and the Coast Range Mountains to the west, which were carried by water and deposited on the valley floor. Siltstone, claystone, and sandstone are the primary types of sedimentary deposits.

Project Site Geology

The project site is located within the U.S. Geological Survey Merced 7.5-Minute Quadrangle. Site topography is nearly flat, with elevations ranging from approximately 185 to 190 feet above mean sea level. The northern portion of the project site is located in Holocene-age (10,000 years Before Present [BP] to Present Day) alluvial deposits consisting of unconsolidated clay, silt, sand, and gravel from Bear Creek. The remainder of the project site is located in the Modesto Formation, which is discussed in greater detail below. (Wagner et al. 1991)

Modesto Formation

Piper et al. (1939) were the first to publish detailed geologic maps in the southern Sacramento/northern San Joaquin Valley areas, and they designated the older alluvial Pleistocene deposits as the Victor Formation. However, in 1959, Davis and Hall proposed a subdivision of the Victor Formation into the Turlock Lake (oldest), Riverbank (middle), and Modesto (youngest) Formations. The type section of Modesto was designated along the south bluff of the Tuolumne River south of Modesto. Marchand and Allwardt (1981) proposed that the name Victor Formation be abandoned and that the Turlock Lake, Riverbank, and Modesto Formations be adopted as formal nomenclature for Quaternary deposits in the Sacramento and San Joaquin Valleys. Most later researchers have followed this recommendation.

In the San Joaquin Valley, the Modesto Formation forms ancient alluvial fans of the San Joaquin River and can be divided into upper and lower members. Researchers differ as to the age of this formation: Marchand and Allwardt (1981) placed the age between approximately 12,000 and 42,000 years BP, Atwater (1982) placed the age from 9,000 to 73,000 years BP. The upper member is composed primarily of unconsolidated, unweathered, coarse sand and sandy silt. This unit may range in age from 9,000 to 26,000 years BP. The lower member of the Modesto Formation is composed of consolidated, slightly weathered, well-sorted silt and fine sand, silty sand, and sandy silt. Age estimates for the lower member range from 29,000 to 73,000 year BP. The thickness of the Modesto at the project range may range from 50 to 700 feet below the ground surface (Page and Balding 1973).

REGIONAL SEISMICITY AND FAULT ZONES

Potential seismic hazards resulting from a nearby moderate-to-major earthquake can generally be classified as primary and secondary. The primary effect is fault ground rupture, also called surface faulting. Common secondary seismic hazards include ground shaking, liquefaction, and subsidence. Each of these potential hazards is discussed below.

Surface Rupture

Surface rupture is an actual cracking or breaking of the ground along a fault during an earthquake. Structures built over an active fault can be torn apart if the ground ruptures. Surface ground rupture along faults is generally limited to a linear zone a few meters wide. The Alquist-Priolo Act (see Section 4.5.2, “Regulatory Setting,” below) was created to prohibit the location of structures designed for human occupancy across the traces of active faults, thereby reducing the loss of life and property from an earthquake.

No faults zoned under the Alquist-Priolo Act pass through or near the project site (California Geological Survey 2005a), nor is the project site underlain by any other known active faults (Jennings 1994).

Seismic Ground Shaking

Ground shaking, motion that occurs as a result of energy released during faulting, could potentially result in the damage or collapse of buildings and other structures, depending on the magnitude of the earthquake, the location of the epicenter, and the character and duration of the ground motion. Other important factors to be considered are the characteristics of the underlying soil and rock, the building materials used, and the workmanship of the structure.

Active Fault Zones in the Project Vicinity

The closest active/potentially active seismic sources to the project site are the San Joaquin Fault System, the Tesla-Ortigalita Fault Zone, and the Great Valley Fault Zone, discussed in more detail below.

San Joaquin Fault System

The San Joaquin Fault System is located along the foothill-valley margin, and consists of a number of northeast-dipping faults that offset Quaternary rock formations. The zone parallels Interstate 5 from Tracy south to Panoche Creek. Although it is not considered “active” (i.e., a fault having surface displacement within the last 11,000 years, during the Holocene epoch) by the California Division of Mines and Geology (CDMG), geomorphic evidence indicates that fault movement has occurred as recently as the Pleistocene epoch (Lettis 1982, Bartow 1991, Jennings 1994), and therefore it can be considered potentially active.

Tesla-Ortogonalita Fault Zone

The Tesla-Ortogonalita Fault Zone consists of a series of southwest-dipping strike-slip faults separated by pull-apart basins that extend from Orestimba Creek in the north to Panoche Creek in the south, along the eastern margin of the Coast Range. The zone has been divided into four segments, from north to south: Cottonwood Arm, Los Banos Valley, Piedra Azul, and Little Panoche (Bryant and Cluett 2000). The segments may represent different origins and histories (Bartow 1991), all of which show evidence of displacement during the late Pleistocene and Holocene epochs. The Tesla-Ortogonalita Fault Zone marks the boundary between the Franciscan Complex and the Great Valley Sequence of rock formations. This fault zone is designated by CDMG as an active fault (i.e., a fault having surface displacement within the last 11,000 years), and it has been zoned under the Alquist-Priolo Earthquake Fault Zoning Act. It is aligned northwest-southeast and is located approximately 40 miles west of the project site.

The Tesla-Ortogonalita Fault Zone is considered capable of generating a 6–7 Richter magnitude earthquake with a recurrence interval of 2,000 to 5,000 years (Anderson et al. 1982). The last major earthquake attributed to this fault occurred in 1981 and had a Richter magnitude of 3.7.

Great Valley Fault System

A tectonic boundary is believed to exist along the western margin of the San Joaquin Valley of California, referred to as the Great Valley Fault System. The 6.7 Richter magnitude Coalinga earthquake in 1983 and a greater than 6.0 Richter magnitude earthquake in 1892 near Vacaville and Winters are believed to have occurred on segments of the Great Valley Fault System. These earthquakes were caused by blind thrust faults, which do not intersect the ground surface. This fault system is considered capable of generating a 6.7 Richter magnitude earthquake, although it has not been zoned under the Alquist-Priolo Earthquake Fault Zoning Act.

Table 4.5-1 identifies active faults (as designated by CDMG) that may pose a potential geologic hazard to the project site. Active faults are those that show evidence of displacement during Holocene time. In addition, Table 4.5-1 identifies the approximate distance from the project site, maximum moment magnitude, and fault type.

The California Geological Survey (formerly the California Department of Conservation, Division of Mines and Geology) identifies low, medium, and high earthquake severity zones within California. The eastern portion of Merced County, including the project site, lies in a moderate severity seismic hazard zone wherein some structural damage could occur (Merced County 1990).

Ground motions from seismic activity can be estimated by probabilistic method at specified hazard levels. The intensity of ground shaking depends on the distance from the earthquake epicenter to the site, the magnitude of the earthquake, site soil conditions, and the characteristic of the source. For purposes of this draft environmental impact report (DEIR), the California Geological Survey’s Probabilistic Seismic Hazards Mapping Ground Motion Page (California Geological Survey 2005b) was consulted to estimate site-specific probabilistic ground acceleration for the project site. Peak horizontal ground acceleration (the level of ground shaking) with 10% probability of being exceeded in 50 years was calculated for firm rock, soft rock, and alluvium in percentage of gravity (or percentage of the earth’s normal gravitational strength). These calculations found that there is a 1-in-

10 probability that an earthquake will occur within 50 years that would result in a peak horizontal ground acceleration exceeding 0.18 gravity.

Table 4.5-1 Active Faults in the Project Vicinity			
Fault	Approximate Distance (Miles) from the Project Site	Fault Type ¹	Maximum Moment Magnitude ²
Great Valley Fault System	33	B	6.7
Ortigalita Fault Zone	40	B	6.9
Greenville	60	B	6.9
Calaveras Fault	62	B	6.2–6.8
Sargent Fault	64	B	6.8
San Andreas Fault	68	A	7.8
Hayward Fault	72	A	7.1
Notes: ¹ Faults with an “A” classification are capable of producing large magnitude (M) events (M greater than 7.0), have a high rate of seismic activity (e.g., slip rates greater than 5 millimeters per year), and have well-constrained paleoseismic data (e.g., evidence of displacement within the last 700,000 years). Class “B” faults are those that lack paleoseismic data necessary to constrain the recurrence intervals of large-scale events. Faults with a “B” classification are capable of producing an event of M 6.5 or greater. ² The moment magnitude scale is used by seismologists to compare the energy released by earthquakes. Unlike other magnitude scales, it does not saturate at the upper end, meaning there is no particular value beyond which all earthquakes have about the same magnitude, which makes it a particularly valuable tool for assessing large earthquakes. Sources: <i>Probabilistic Seismic Hazard Assessment for the State of California</i> (Petersen et al. 1996)			

The California Building Standards Code (CBC) specifies more stringent design guidelines where a project would be located adjacent to a Class “A” or “B” fault as designated by the California Probabilistic Seismic Hazard Maps. As shown in Table 4.5-1, the nearest Class A or B fault is located 33 miles from the project site.

Ground Failure/Liquefaction

Soil liquefaction occurs when ground shaking from an earthquake causes a sediment layer saturated with groundwater to lose strength and take on the characteristics of a fluid, thus becoming similar to quicksand. Factors determining the liquefaction potential are soil type, the level and duration of seismic ground motions, the type and consistency of soils, and the depth to groundwater. Loose sands and peat deposits are susceptible to liquefaction, while clayey silts, silty clays, and clays deposited in freshwater environments are generally stable under the influence of seismic ground shaking. Liquefaction poses a hazard to engineered structures. The loss of soil strength can result in bearing capacity insufficient to support foundation loads, increased lateral pressure on retaining or basement walls, and slope instability.

Most of the project site is underlain by the Modesto Formation, which consists of generally stable silty clays. Perched groundwater at the project site was observed between 34 and 40 feet below the existing surface (ENGEO 2004). According to historic topographic maps, two intermittent streams meandered through the property: one in the northern portion of the site and one in the southeast corner of the site. The stream channels have been filled at some time in the past and no longer exist at the project site. Liquefaction could be an issue in these areas of recent fill where loose soils and higher groundwater conditions may exist.

SUBSIDENCE

Land surface subsidence can be induced by both natural and human phenomena. Natural phenomena include: subsidence resulting from tectonic deformations and seismically induced settlements; soil subsidence from consolidation, hydrocompaction, or rapid sedimentation; subsidence from oxidation or dewatering of organic-rich soils; and subsidence related to subsurface cavities. Subsidence related to human activity includes subsurface fluid or sediment withdrawal. Pumping of water for residential, commercial, and agricultural uses from subsurface water tables causes more than 80% of the identified subsidence in the United States. (Galloway et al. 1999). Lateral spreading is the horizontal movement or spreading of soil toward an open face, such as a streambank, the open side of fill embankments, or the sides of levees. The potential for failure from subsidence and lateral spreading is highest in areas where there is a high groundwater table, where there are relatively soft and recent alluvial deposits, and where creek banks are relatively high. Merced County is most affected by subsidence caused by groundwater withdrawal, hydrocompaction, and earthquakes.

The fill that was placed in the historic stream channels noted above may represent a potential for settlement or consolidation that could adversely affect building foundations.

SLOPE STABILITY

A landslide is the downhill movement of masses of earth material under the force of gravity. The factors contributing to landslide potential are steep slopes, unstable terrain, and proximity to earthquake faults. This process typically involves the surface soil and an upper portion of the underlying bedrock. Expansive soil on slopes tends to shrink and swell in response to moisture content changes. During this shrinking and swelling process, gravity tends to work the soil downslope. Movement may be very rapid, or so slow that a change of position can be noted only over a period of weeks or years (creep). The size of a landslide can range from several square feet to several square miles.

Because the project site is flat, and is not located in close proximity to any steep hillslides where landslides would occur, slope stability should not be an issue at the project site.

PALEONTOLOGY

Paleontological Resource Inventory Methods

A stratigraphic inventory was completed to develop a baseline paleontological resource inventory of the project site and surrounding area by rock unit, and to assess the potential paleontological productivity of each rock unit. Research methods included a review of published and unpublished literature and a search for recorded fossil sites at the UC Berkeley Museum of Paleontology. These tasks complied with Society of Vertebrate Paleontology (SVP) (1995) guidelines.

Stratigraphic Inventory

Geologic maps and reports covering the geology of the project site and surrounding study area were reviewed to determine the exposed rock units and to delineate their respective aerial distributions in the project study area.

Paleontological Resource Inventory

Published and unpublished geological and paleontological literature were reviewed to document the number and locations and previously recorded fossil sites from rock units exposed in and near the project site and surrounding study area, as well as the types of fossil remains each rock unit has produced. The literature review was supplemented by a database search conducted at the University of California Museum of Paleontology in Berkeley, California on July 31, 2006.

Field Survey

A field reconnaissance was conducted in July 2006 to document the presence of any previously unrecorded fossil sites and of strata that might contain fossil remains. However, the ground surface was completely covered with recently mown hay and a small orchard; therefore, the surface was not visible. The surface topography was nearly flat, and no exposed road cuts or other escarpments were noted where the Modesto Formation was exposed. No fossils were observed at the project site.

Paleontological Resource Assessment Criteria

The potential paleontological importance of the project site can be assessed by identifying the paleontological importance of exposed rock units within the project area. Because the aerial distribution of a rock unit can be easily delineated on a topographic map, this method is conducive to delineating parts of the project site that are of higher and lower sensitivity for paleontological resources and to delineating parts of the project that may require monitoring during construction.

A paleontologically important rock unit is one that (1) has a high potential paleontological productivity rating and (2) is known to have produced unique, scientifically important fossils. The potential paleontological productivity rating of a rock unit exposed at the project site refers to the abundance/densities of fossil specimens and/or previously recorded fossil sites in exposures of the unit in and near the project site. Exposures of a specific rock unit at the project site are most likely to yield fossil remains representing particular species in quantities or densities similar to those previously recorded from the unit in and near the project site.

An individual vertebrate fossil specimen may be considered unique or significant if it is identifiable and well preserved, and it meets one of the following criteria:

- ▶ a type specimen (i.e., the individual from which a species or subspecies has been described);
- ▶ a member of a rare species;
- ▶ a species that is part of a diverse assemblage (i.e., a site where more than one fossil has been discovered) wherein other species are also identifiable, and important information regarding life history of individuals can be drawn;
- ▶ a skeletal element different from, or a specimen more complete than, those now available for its species; or
- ▶ a complete specimen (i.e., all or substantially all of the entire skeleton is present).

For example, identifiable vertebrate marine and terrestrial fossils are generally considered scientifically important because they are relatively rare. The value or importance of different fossil groups varies, depending on the age and depositional environment of the rock unit that contains the fossils, their rarity, the extent to which they have already been identified and documented, and the ability to recover similar materials under more controlled conditions, such as part of a research project. Marine invertebrates are generally common, well developed, and well documented. They would generally not be considered a unique paleontological resource.

The following tasks were completed to establish the paleontological importance of each rock unit exposed at or near the project site:

- ▶ The potential paleontological productivity of each rock unit was assessed, based on the density of fossil remains previously documented within the rock unit.
- ▶ The potential for a rock unit exposed at the project site to contain a unique paleontological resource was considered.

Paleontologic Resource Inventory Results

Stratigraphic Inventory

Regional and local surficial geologic mapping and correlation of the various geologic units in the vicinity of the project site has been provided at a scale of 1:24,000 by Lettis (1982); 1:125,000 by Marchand and Allwardt (1981); 1:250,000 by Wagner et al. (1991); and 1:500,000 by Bartow (1991).

Paleontological Resource Inventory and Assessment by Rock Unit

Holocene Alluvium

By definition, to be considered a fossil, an object must be more than 10,000 years old; therefore, project-related activities in this rock formation would have no effect on paleontological resources.

Modesto Formation

Surveys of late Cenozoic land mammal fossils in northern California have been provided by Hay (1927), Lundelius et al. (1983), Jefferson (1991a, 1991b), Savage (1951), and Stirton (1939). On the basis of his survey of vertebrate fauna from the nonmarine late Cenozoic deposits of the San Francisco Bay region, Savage (1951) concluded that two major divisions of Pleistocene-age fossils could be recognized: the Irvingtonian (older Pleistocene fauna) and the Rancholabrean (younger Pleistocene and Holocene fauna). These two divisions of Quaternary Cenozoic vertebrate fossils are widely recognized today in the field of paleontology. The age of the later Pleistocene, Rancholabrean fauna was based on the presence of bison and on the presence of many mammalian species that are inhabitants of the same area today. In addition to bison, larger land mammals identified as part of the Rancholabrean fauna include mammoths, mastodons, camels, horses, and ground sloths.

Remains of land mammals have been found in the project region at various localities in alluvial deposits referable to the Modesto Formation. Jefferson (1991a, 1991b) compiled a database of California late Pleistocene vertebrate fossils from published records, technical reports, unpublished manuscripts, information from colleagues, and inspection of museum paleontological collections at more than 40 public and private institutions. He listed a number of sites in Merced County that have yielded Rancholabrean vertebrate fossils that could be referable to the Modesto Formation. For example, specimens of Rancholabrean-age horse, camel, and deer were recovered from Bear Creek, several miles north of the project site. Specimens of Rancholabrean-age mammoth and camel were recovered from Planada, approximately 7 miles east of the project site.

A records search of the University of California Museum of Paleontology (UCMP) Paleontology Collections database yielded the following information: Locality V-2049, approximately 8 miles northeast of the project site, yielded one specimen of a Rancholabrean-age elephant. Locality V-6806, approximately 23 miles northwest of the project site, yielded Rancholabrean-age specimens of horse, bison, camel, and Harlan's ground sloth. Locality V-69194, approximately 24 miles northwest of the project site, yielded an unidentified Rancholabrean-age vertebrate fossil specimen.

Specimens from sediments referable to the Modesto Formation have been reported at other locations throughout the San Joaquin Valley (UCMP 2006), including Stockton, Modesto, Tracy (along the Delta-Mendota Canal), and Manteca. The Tranquility site in Fresno County (UCMP V-4401), approximately 60 miles south of the project site, has yielded more than 130 Rancholabrean-age fossils of fish, turtles, snakes, birds, moles, gophers, mice, wood rats, voles, jack rabbits, coyote, red fox, grey fox, badger, horse, camel, pronghorn antelope, elk, deer, and bison from sediments referable to the Modesto Formation.

Results of the paleontological record search at UCMP indicated no fossil remains at the project site, and no fossils were observed during the reconnaissance field visit.

SOILS

Subsurface investigations of the project site conducted by ENGEO (2004) indicate that the site is underlain by interbedded sandy silts and silty clays, as well as graded sands to a depth of approximately 40 feet. The sand layers are underlain by a consolidated silty clay layer at least 10 feet thick (50 feet was the maximum depth explored by ENGEO). Perched groundwater was encountered at depths of 34 to 40 feet.

Review of the March 1990 U.S. Department of Agriculture, Soil Conservation Service (now called the Natural Resources Conservation Services [NRCS]) *Soil Survey of the Merced Area* (NRCS 1962) indicates that soils types at the project site are as follows:

- ▶ Honcut silty clay loam, 0 to 1% slopes
- ▶ Landlow silty clay loam, 0 to 1% slopes
- ▶ Porterville clay, 0 to 3% slopes
- ▶ Wyman clay loam, 0 to 3% slopes
- ▶ Wyman clay loam, deep over hardpan, 0 to 1% slopes
- ▶ Wyman loam, 0 to 3% slopes
- ▶ Yokohl clay loam, 0 to 3% slopes

Exhibit 4.5-1 shows the location of the soils at the project site, and the characteristics of these soils are summarized in Table 4.5-2.

Expansive Soils

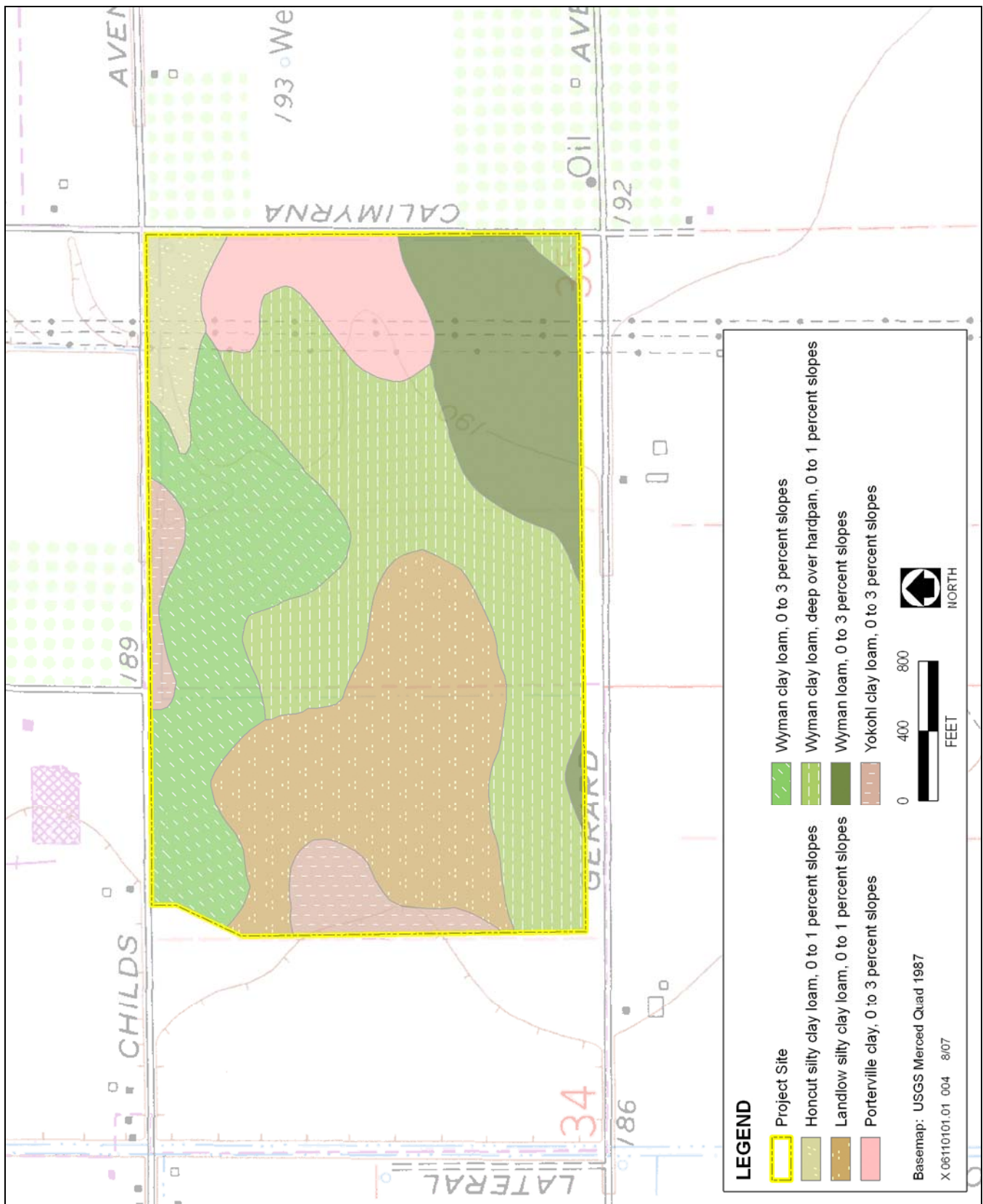
Expansive soils are composed largely of clays, which greatly increase in volume when saturated with water and shrink when dried. Because of this effect, building foundations may rise during the rainy season and fall during the dry season. If this expansive movement varies underneath different parts of a single building, foundations may creak, structural portions of the building may be distorted, and doors and windows may become warped so that they no longer function properly. The potential for soil to undergo shrink and swell is greatly enhanced by the presence of a fluctuating, shallow groundwater table. Volume changes of expansive soils can result in the consolidation of soft clays following the lowering of the water table or the placement of fill.

Soil borings collected by ENGEO (2004) had moderate-to-high plasticity indices (19–29) indicating that soils within the project site have a moderate-to-high shrink/swell potential.

MINERAL RESOURCES

Mineral extraction in Merced County consists primarily of sand and gravel operations. Active mining is occurring in concentrated locations on both the east and west sides of the County in the alluvial floodplain deposits of the Los Banos Creek and the off-channel floodplain of the Merced River. Sand and gravel are created from years of mountain erosion and from seasonal storms that result in rapid stream movement. Approximately 1 million tons are mined from the County annually, primarily from streambeds and floodplain deposits. Other local mineral resources include gypsum and diatomite in southwestern Merced County, lode gold in the western portion of the County, and clay along the eastern margin of the County.

In compliance with the California Surface Mining and Reclamation Act (SMARA), the California Department of Conservation, Division of Mines and Geology has established a classification system to denote both the location and significance of key extractive resources. An explanation of the classification system for Merced County is presented in Table 4.5-3. Lands are included in one of four categories based on available information indicating their potential to contain mineral deposits.



Source: Data compiled by EDAW 2007

Project Site Soil Types

Exhibit 4.5-1

**Table 4.5-2
Characteristics of Soils Found on the Project Site**

Soil Series Name	Shrink-Swell Potential	Permeability	Drainage	Runoff Potential	T Erosion Factor ¹	pH	% Clay	Limitations
Honcut silty clay loam	Moderate	Moderately rapid	Well drained	Slow to moderate	5	7.0–7.1	30	Moderate limitation for small commercial buildings (shrink-swell potential) Severe limitation for local roads and streets (low soil strength, shrink-swell potential) Somewhat limited for shallow excavations (cutbank caving)
Landlow silty clay loam	High	Slow	Somewhat poorly drained	High	5	7.5–8.0	36–46	Severe limitation for small commercial buildings (flooding, wetness, shrink-swell potential) Severe limitation for local roads and streets (low soil strength, wetness, shrink-swell potential, and flooding) Very limited use for shallow excavations (depth to saturated zone, too much clay, cutbanks cave)
Porterville clay	High	Slow	Well drained	High	5	7.5	50	Severe limitation for small commercial buildings (shrink-swell potential) Severe limitation for shallow excavations (cutbanks cave, too much clay) Sever limitation for local roads and streets (low soil strength, shrink-swell potential)
Wyman clay loam	Moderate	Moderately slow	Well drained	Moderate	5	6.7–7.4	23–30	Moderate limitation for small commercial buildings (shrink-swell potential) Moderate limitation for shallow excavations (cutbanks cave) Severe limitation for local roads and streets (low soil strength, shrink-swell potential)
Wyman clay loam over hardpan	Moderate	Moderately slow	Well drained	Moderate	3	6.7–7.2	28–30	Moderate limitation for small commercial buildings (shrink-swell potential) Moderate limitation for shallow excavations (cutbanks caving) Severe limitation for local roads and streets (low soil strength, shrink-swell potential)
Wyman loam	Moderate	Moderately slow	Well drained	Moderate	5	6.7–7.4	21–30	Moderate limitation for small commercial buildings (shrink-swell potential) Moderate limitation for shallow excavations (cutbanks caving) Severe limitation for local roads and streets (low soil strength, shrink-swell potential)

Table 4.5-2 Characteristics of Soils Found on the Project Site								
Soil Series Name	Shrink-Swell Potential	Permeability	Drainage	Runoff Potential	T Erosion Factor ¹	pH	% Clay	Limitations
Yokohl clay loam	High	Slow	Well drained	Very high	1	6.7–7.0	30–45	Severe limitation for small commercial buildings (low depth to cemented hardpan, shrink-well potential) Severe limitation for shallow excavations (low depth to cemented hardpan, cutbanks cave) Severe limitation for local roads and streets (low soil strength, low depth to cemented hardpan, cutbanks cave)
Source: NRCS 1962, 2006 Notes: ¹ T represents soil loss tolerance, which is defined as the maximum rate of soil erosion (wind and water) without reducing crop production or environmental quality. Values range from 1 to 5 tons of soil loss per acre per year, with 5 representing soils less sensitive to erosion.								

Table 4.5-3 California Division of Mines and Geology Mineral Land Classification System, Merced County	
Classification	Description
MRZ-1	Areas where available geologic information indicates that little likelihood exists for the presence of significant mineral resources
MRZ-2a	Areas underlain by mineral deposits where geologic data indicate that significant measured or indicated resources are present
MRZ-2b	Areas underlain by mineral deposits where geologic information indicates that significant inferred resources are present
MRZ-3a	Areas containing known mineral occurrences of undetermined mineral resource significance
MRZ-3b	Areas containing inferred mineral occurrences of undetermined mineral resources significance
MRZ-4	Areas of no known mineral occurrences where geologic information does not rule out either the presence or absence of significant mineral resources. ¹
Notes: MRZ = Mineral Resource Zone ¹ MRZ-4 classification does not imply that there is little likelihood for the presence of mineral resources, but rather there is a lack of knowledge regarding mineral occurrence. Further exploration work in MRZ-4 areas could result in the reclassification of land to MRZ-3 or MRZ-2 categories. Source: Clindenbeard 1999	

The project site is located in an area designated by CDMG as MRZ-1: areas where available geologic information indicates that little likelihood exists for the presence of significant mineral resources. The site is underlain by interbedded sandy silts and silty clays (ENGEO 2004). There are no economically viable deposits of clean sand or gravel that would be useful to extract for riprap, aggregate, or other industrial uses.

4.5.2 REGULATORY SETTING

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

Earthquake Hazards Reduction Act

In October 1977, the U.S. Congress passed the Earthquake Hazards Reduction Act to reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards and reduction program. To accomplish this, the act established the National Earthquake Hazards Reduction Program (NEHRP). This program was significantly amended in November 1990 by the National Earthquake Hazards Reduction Program Act (NEHRPA) by refining the description of agency responsibilities, program goals, and objectives.

The mission of NEHRP includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improved building codes and land use practices; risk reduction through post-earthquake investigations and education; development and improvement of design and construction techniques; improved mitigation capacity; and accelerated application of research results. The NEHRPA designates the Federal Emergency Management Agency as the lead agency of the program and assigns several planning, coordinating, and reporting responsibilities. Other NEHRPA agencies include the National Institute of Standards and Technology, National Science Foundation, and U.S. Geological Survey.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Act (Public Resources Code Sections 2621–2630) was passed in 1972 to mitigate the hazard of surface faulting to structures designed for human occupancy. The main purpose of the law is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The law addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards. The Alquist-Priolo Act requires the State Geologist to establish regulatory zones known as “Earthquake Fault Zones” around the surface traces of active faults and to issue appropriate maps. The maps are distributed to all affected cities, counties, and state agencies for their use in planning efforts. Before a project can be permitted in a designated Alquist-Priolo Earthquake Fault Zone, cities and counties must require a geologic investigation to demonstrate that proposed buildings would not be constructed across active faults.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 (Public Resources Code Sections 2690–2699.6), addresses earthquake hazards from nonsurface fault rupture, including liquefaction and seismically induced landslides. The act established a mapping program for areas that have the potential for liquefaction, landslide, strong ground shaking, or other earthquake and geologic hazards. The Act also specifies that the lead agency for a project may withhold development permits until geologic or soils investigations are conducted for specific sites and mitigation measures are incorporated into plans to reduce hazards associated with seismicity and unstable soils.

National Pollutant Discharge Elimination System Permit

In California, the State Water Resources Control Board (SWRCB) administers regulations promulgated by the U.S. Environmental Protection Agency (55 Code of Federal Regulations 47990) requiring the permitting of stormwater-generated pollution under the National Pollutant Discharge Elimination System (NPDES). In turn, the SWRCB’s jurisdiction is administered through nine regional water quality control boards. Under these federal regulations, an operator must obtain a general permit through the NPDES Stormwater Program for all construction activities with ground disturbance of 1 acre or more. The general permit requires the implementation

of best management practices to reduce sedimentation into surface waters and control erosion. One element of compliance with the NPDES permit is preparation of a Storm Water Pollution Protection Plan (SWPPP) that addresses control of water pollution, including sediment, in runoff during construction. (See Section 4.6, “Hydrology and Water Quality,” for more information about NPDES and SWPPPs.)

California Building Standards Code

The State of California provides minimum standard for building design through the CBC (California Code of Regulations, Title 24). Where no other building codes apply, Chapter 29 regulates excavation, foundations, and retaining walls. The CBC applies to building design and construction in the state and is based on the federal Uniform Building Code (UBC) used widely throughout the country (generally adopted on a state-by-state or district-by-district basis). The CBC has been modified for California conditions with numerous more detailed and/or more stringent regulations.

The state earthquake protection law (California Health and Safety Code Section 19100 et seq.) requires that structures be designed to resist stresses produced by lateral forces caused by wind and earthquakes. Specific minimum seismic safety and structural design requirements are set forth in Chapter 16 of the CBC. The CBC identifies seismic factors that must be considered in structural design.

Chapter 18 of the CBC regulates the excavation of foundations and retaining walls, and Appendix Chapter A33 regulates grading activities, including drainage and erosion control, and construction on unstable soils, such as expansive soils and areas subject to liquefaction.

California Surface Mining and Reclamation Act

SMARA (Public Resources Code Section 2710 et seq.) was enacted by the State Legislature in 1975 to regulate activities related to mineral resource extraction. The act requires the prevention of adverse environmental effects caused by mining, the reclamation of mined lands for alternative land uses, and the elimination of public health and safety hazards from the effects of mining activities. At the same time, SMARA encourages both the conservation and production of extractive mineral resources, requiring the State Geologist to identify and attach levels of significance to the state’s varied extractive resource deposits. Under SMARA, the mining industry in California must adequately plan for the reclamation of mined sites for beneficial uses and provide financial assurances to guarantee that the approved reclamation will actually be implemented. The requirements of SMARA must be implemented by the local lead agency with permitting responsibility for the proposed mining project.

LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

City of Merced General Plan

The following policies of the City of Merced 2015 General Plan are applicable to the proposed project:

Safety Element

GOAL AREA 2: Seismic Safety. Reasonable safety for City residents from the hazards of earthquake and other geologic activity.

- **Policy S-2.3:** Restrict urban development in all areas with potential ground failure characteristics

Professional Paleontological Standards

SVP (1995, 1996), a national scientific organization of professional vertebrate paleontologists, has established standard guidelines that outline acceptable professional practices in the conduct of paleontological resource

assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, specimen preparation, analysis, and curation. Most practicing professional paleontologists in the nation adhere to the SVP assessment, mitigation, and monitoring requirements, as specifically spelled out in its standard guidelines. The criteria for determining sensitivity of paleontological resources are described below under “Method of Analysis” and “Thresholds of Significance.”

4.5.3 ENVIRONMENTAL IMPACTS

METHOD OF ANALYSIS

Evaluation of potential geologic and soil impacts was based on a review of documents pertaining to the project site, including the County General Plan (Merced County 1990), the U.S. Department of Agriculture Soil Conservation Service (SCS) *Merced Area Soil Survey* (SCS 1991) geologic maps, and published and unpublished geologic literature. The information obtained from these sources was reviewed and summarized to establish existing conditions and to identify potential environmental effects, based on the standards of significance presented in this section.

In its standard guidelines for assessment and mitigation of adverse impacts on paleontological resources, SVP (1995) established three categories of sensitivity for paleontological resources: high, low, and undetermined. Areas where fossils have been previously found are considered to have a high sensitivity and a high potential to produce fossils. In areas of high sensitivity that are likely to yield unique paleontological resources, full-time monitoring is typically recommended during any project-related ground disturbance. Areas that are not sedimentary in origin and that have not been known to produce fossils in the past typically are considered to have low sensitivity and monitoring is usually not needed during project construction. Areas that have not had any previous paleontological resource surveys or fossil finds are considered to be of undetermined sensitivity until surveys and mapping are performed to determine their sensitivity. After reconnaissance surveys, observation of exposed cuts, and possibly subsurface testing, a qualified paleontologist can determine whether the area should be categorized as having high or low sensitivity. In keeping with the significance criteria of SVP (1995), all vertebrate fossils are generally categorized as being of potentially significant scientific value.

THRESHOLDS OF SIGNIFICANCE

Based on Appendix G of the State CEQA Guidelines, a geology, soils, or mineral resources impact is considered significant if implementation of the proposed project would do any of the following:

- ▶ expose people or property to seismic hazards, including fault rupture, strong seismic ground shaking, or seismically induced ground failure, including liquefaction;
- ▶ expose persons or property to geologic hazards such as landslides, land subsidence, or expansive soils;

Because the project site is located in an area of relatively flat topography, there would be no hazard related to landslides, and this impact is not evaluated further in this DEIR.

- ▶ result in substantial erosion or unstable soil conditions from excavation grading or fill; or
- ▶ result in the loss of availability of known mineral resources that would be of future value to the region or result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

Because the project site is underlain by interbedded sandy silts and silty clays and does not contain any known mineral resources that would be of future value to the region, this impact is not evaluated further in this DEIR.

- ▶ Based on Appendix G of the State CEQA Guidelines, viewed in light of the professional paleontological standards described above, significant adverse environmental impacts on paleontological resources would result if the proposed project would directly or indirectly destroy a unique paleontological resource or site. For the purposes of this DEIR, an individual vertebrate fossil specimen may be considered unique or significant if it is identifiable and well preserved, and it meets one of the following criteria:
 - a type specimen (i.e., the individual from which a species or subspecies has been described);
 - a member of a rare species;
 - a species that is part of a diverse assemblage; (i.e., a site where more than one fossil has been discovered) wherein other species are also identifiable, and important information regarding life history of individuals can drawn;
 - a skeletal element different from, or a specimen more complete than, those now available for its species; or
 - a complete specimen (i.e., all or substantially all of the entire skeleton is present).

The value or importance of different fossil groups varies depending on the age and depositional environment of the rock unit that contains the fossils, their rarity, the extent to which they have already been identified and documented, and the ability to recover similar materials under more controlled conditions (such as for a research project). Marine invertebrates are generally common; the fossil record is well developed and well documented, and they would generally not be considered a unique paleontological resource. Identifiable vertebrate marine and terrestrial fossils are generally considered scientifically important because they are relatively rare.

IMPACT ANALYSIS

IMPACT 4.5-1 **Disturbance of Paleontological Resources during Earth-Moving Activities.** *Previously undiscovered paleontological resources could be present in sediments of the Modesto Formation that underlie the project site. Therefore, construction activities could potentially disturb unknown subsurface paleontological resources. Destruction of "significant" paleontological resources would be a **potentially significant** impact.*

Based on the record search conducted at UCMP, no previously recorded fossil sites are located at the project site. However, as detailed in the "Paleontological Resources Inventory and Assessment by Rock Unit" contained earlier in this section, the project site is located within sediments of the Modesto Formation, which is a paleontologically sensitive rock unit under the SVP guidelines (1995, 1996). Locality V-2049, approximately 8 miles northeast of the project site, yielded one specimen of a Rancholabrean-age elephant. Locality V-6806, approximately 23 miles northwest of the project site, yielded Rancholabrean-age specimens of horse, bison, camel, and Harlan's ground sloth. Locality V-69194, approximately 24 miles northwest of the project site, yielded an unidentified Rancholabrean-age vertebrate fossil specimen. Specimens from sediments referable to the Modesto Formation have been reported at other locations throughout the San Joaquin Valley (UCMP 2006), including Stockton, Modesto, Tracy (along the Delta-Mendota Canal), and Manteca.

The occurrence of numerous Pleistocene vertebrate fossil remains in sediments referable to the Modesto Formation throughout the San Joaquin Valley suggests that the potential exists for uncovering additional similar fossil remains during construction-related earth-moving activities at the project site. Because the potential exists for proposed earth-moving activities at the project site to uncover or disturb previously undiscovered paleontological resources, this would be a **potentially significant** impact.

Mitigation Measure 4.5-1: Implement Construction Personnel Training and Recover Paleontological Resources if Encountered. To minimize potential adverse impacts on unique, scientifically important paleontological resources, the project applicant shall do the following:

- ▶ Before the start of grading or excavation activities, construction personnel involved with earth-moving activities shall be informed of the possibility of encountering fossils, the appearance and types of fossils likely to be seen during construction activities, and proper notification procedures should fossils be encountered. This worker training shall be prepared and presented by a qualified paleontologist or archaeologist.
- ▶ If paleontological resources are discovered during earth-moving activities, the construction crew shall immediately cease work in the vicinity of the find and shall notify the City planning department. The project applicant shall retain a qualified paleontologist to evaluate the resource and prepare a proposed mitigation plan in accordance with SVP guidelines (1995). The proposed mitigation plan may include a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations determined by the lead agency to be necessary and feasible shall be implemented before construction activities can resume at the site where the paleontological resources were discovered.

Implementation of Mitigation Measure 4.5-1 would result in avoidance of damage to, and further study of, any paleontological resources that were encountered by project-related activities, and would therefore reduce potentially significant impacts of the proposed project on unique, scientifically important paleontological resources to a ***less-than-significant*** level.

IMPACT 4.5-2 Risks to People and Structures from Surface Fault Rupture and Strong Seismic Ground Shaking. *The project site is located in an area of low seismic activity and structures at the site would be designed in accordance with CBC standards. Therefore, this impact is considered less than significant.*

The project site is not located in a known fault zone and no faults known to be active within Holocene time are located within 30 miles of the project site; therefore, the potential for surface fault rupture to cause damage to proposed structures is improbable. Although the project site could be subject to seismic ground shaking from faults 30 miles west of the project site in the Coast Range, compliance with the CBC would require the site's seismic-design response spectrum to be established and incorporated into the design of all new buildings. Roadways, utilities, and structures would be designed to withstand seismic forces per CBC requirements for Seismic Zone 3. Therefore, potential damage to structures from surface fault rupture and strong seismic ground shaking would be a ***less-than-significant*** impact.

Mitigation Measure

No mitigation is required.

IMPACT 4.5-3 Risks to People and Structures from Seismically-Induced Liquefaction and/or Subsidence. *While the project site is located in an area of low seismic activity, localized areas of the project site may pose a hazard related to liquefaction and/or subsidence if seismic activity were to occur. Therefore, this impact is considered potentially significant.*

The project site could be subject to seismic ground shaking from faults 30 miles west of the project site in the Coast Range. Most of the project site is underlain by the Modesto Formation, which consists of generally stable silty clays. Perched groundwater at the project site was observed between 34 and 40 feet below the existing surface (ENGEO 2004). According to historic topographic maps, two intermittent streams meandered through the property: one in the northern portion of the site and one in the southeast corner of the site. The stream channels have been filled at some time in the past and no longer exist at the project site. Because of the potentially unstable

nature of the fill materials and the perched groundwater located near the ground surface, the liquefaction and subsidence hazards in and around the historic streambeds are considered ***potentially significant***.

Mitigation Measure 4.5-3a: Prepare a Final Geotechnical Design Report and Implement All Applicable Recommendations. Before the approval of grading plans for all project phases, a final geotechnical subsurface investigation report shall be prepared by the project applicant(s) for the proposed development and shall be submitted to the City. The final geotechnical engineering report shall address and make recommendations on the following:

- ▶ site preparation;
- ▶ appropriate sources and types of fill;
- ▶ potential need for soil amendments;
- ▶ road, pavement, and parking areas;
- ▶ structural foundations, including retaining wall design;
- ▶ grading practices;
- ▶ erosion/winterization;
- ▶ expansive/unstable soils; and
- ▶ liquefaction.

The geotechnical investigation shall include subsurface testing of soil and groundwater conditions and determine appropriate foundation designs that are consistent with the CBC. Recommendations contained in the geotechnical engineering report shall be noted on the grading plans and implemented as appropriate before the issuance of building permits. Design and construction of all new development in all phases of the project shall be in accordance with the CBC. It is the responsibility of the project applicant(s) to provide for engineering inspection and certification that earthwork has been performed in conformity with recommendations contained in the report.

Mitigation Measure 4.5-3b: Provide On-Site Construction Monitoring by a Geotechnical Engineer. All earthwork shall be monitored by a geotechnical engineer retained by the project applicant(s). The geotechnical engineer shall provide oversight during all excavation, placement of fill, and disposal of materials removed from and deposited on the subject site and other sites. Before export/import of any soil to/from an off-site location, the project applicant(s) shall obtain a grading permit from the City Inspection Services Division.

With implementation of Mitigation Measures 4.5-3a and 4.5-3b, potentially significant impacts related to construction in areas susceptible to liquefaction and/or subsidence would be reduced to a ***less-than-significant*** level because buildings and structures would incorporate design recommendations of a geotechnical engineer and on-site monitoring by a geotechnical engineer would provide for appropriate correction in grading activities if unexpected pockets of loose or unstable soils were encountered.

IMPACT 4.5-4	Potential Temporary, Short-Term Construction-Related Erosion. <i>Construction activities during project implementation would involve grading and movement of earth, which could expose soils to erosion and result in the loss of topsoil. This impact is considered <i>potentially significant</i>.</i>

Project implementation would include construction activity that would result in the temporary disturbance of soil and would expose disturbed areas to winter storm events. Rain of sufficient intensity could dislodge soil particles from the soil surface. Once particles are dislodged and the storm is large enough to generate runoff, localized erosion could occur. In addition, soil disturbance during the summer months could result in loss of topsoil because of wind erosion. Therefore, a ***potentially significant*** impact from soil erosion could result from construction activities associated with the project.

Mitigation Measure 4.5-4: Prepare and Implement a Grading and Erosion Control Plan. A grading and erosion control plan shall be prepared by a California Registered Civil Engineer retained by the project applicant(s) for all project phases. The grading and erosion control plan shall be submitted to the City Inspection Services Division before

issuance of grading permits for all new development within the project site. The plan shall be consistent with Appendix Chapter A33 of the CBC as well as the City's National Pollutant Discharge Elimination System (NPDES) permit and shall include the site-specific grading associated with development for all project phases. The plan shall include the location, implementation schedule, and maintenance schedule of all erosion and sediment control measures, a description of measures designed to control dust and stabilize the construction-site road and entrance, and a description of the location and methods of storage and disposal of construction materials. Erosion and sediment control measures could include the use of detention basins, berms, swales, wattles, and silt fencing. Stabilization of construction entrances to minimize trackout (control dust) is commonly achieved by installing filter fabric and crushed rock to a depth of approximately 1 foot. The project applicant(s) shall ensure that the construction contractor is responsible for securing a source of transportation and deposition of excavated materials.

Implement Mitigation Measures 4.5-4 and 4.6-1a.

Implementation of Mitigation Measures 4.5-4 and 4.6-1a would reduce the potentially significant impacts associated with construction-related erosion hazards to a **less-than-significant** level because a grading and erosion control plan and a Storm Water Pollution Prevention Plan, which would contain specific Best Management Practices to reduce erosion, would be prepared and implemented.

IMPACT 4.5-5 **Potential Damage to Structures from Construction on Expansive Soils.** *Portions of the project site are underlain by soils that have a moderate to high potential for expansion when wet. Construction in these soils may result in foundation movements that could cause damage to overlying structures. This impact is considered significant.*

Expansive soils shrink and swell as a result of moisture change. These volume changes can result in damage over time to building foundations, underground utilities, and other subsurface facilities if they are not designed and constructed appropriately to resist the changing soil conditions. Volume changes of expansive soils also can result in the consolidation of soft clays following the lowering of the water table or the placement of fill.

Portions of the project site are underlain by clayey soils with a moderate to high expansion potential. Soil expansion could pose problems for foundation design of structures and roadways. Furthermore, these soils could be subjected to volume changes during seasonal fluctuations in moisture content, which could adversely affect interior slabs-on-grade and landscaping hardscapes. Therefore, the potential damage to structures from construction in areas of expansive soils is considered a **significant** impact.

Mitigation Measure 4.5-5: Implement Mitigation Measures 4.5-3a and 4.5-3b.

With implementation of Mitigation Measures 4.5-3a and 4.5-3b, significant impacts related to construction on expansive soils would be reduced to a **less-than-significant** level because buildings and structures would incorporate design recommendations of a geotechnical engineer and on-site monitoring by a geotechnical engineer would provide for appropriate correction in grading activities if unexpected pockets of expansive soils were encountered.

4.6 HYDROLOGY AND WATER QUALITY

This section analyzes water quality conditions of ground and surface waters in the project vicinity and the project's potential impacts to these water resources. This analysis uses existing information from previously completed documents that address water resources in the project vicinity, including the following: Merced County Year 2000 General Plan (Merced County 1990); the City's *Merced Vision 2015 General Plan* (1997a); Preliminary Site Drainage Analysis (Carter-Burgess 2007); City of Merced Storm Drain Master Plan (City of Merced 2002); Water Supply Assessment, Proposed Wal-Mart Regional Distribution Center (City of Merced 2006); Geotechnical Feasibility Report, Merced Distribution Center, APN 061-025-018, 061-025-035, 061-029-001, and 061-029-027 (ENGEO 2004); Final Geotechnical Exploration Report (FGR2), Proposed Industrial Warehouse Distribution Center, Merced, CA. (ENGEO 2006); and Groundwater Recharge Discussion, Wal-Mart Distribution Center, Merced, California (ENGEO 2007).

Numerous federal, state, regional, and local laws, rules, regulations, plans, ordinances, and policies define the framework for regulating hydrology and water quality in the project study area. The section also focuses on hydrology and water quality requirements applicable to the proposed project. This analysis assumes that the project applicant would follow NPDES and Basin Plan guidelines as described below in Section 4.6.2, "Regulatory Setting."

4.6.1 ENVIRONMENTAL SETTING

The proposed project site is situated on relatively flat terrain, with a slight downhill gradient from northeast to southwest and elevation ranging from 195 feet above mean sea level (msl) near the northeast corner of the property to 187 feet msl at the southwest corner (ENGEO 2004, 2007). The climate is typical of the middle San Joaquin Valley – semi-arid with dry summers of extended hot weather, and cool winter temperatures with fog and light to intermediate rain. Temperatures often exceed 100 degrees Fahrenheit during the summer and average 46 degrees Fahrenheit during January, the coldest month. The average annual precipitation in Merced is 12.63 inches, more than 80 percent of which falls from October through March (City of Merced 1997b).

SURFACE WATER

The City of Merced (the City) is located in the San Joaquin Valley hydrologic region. Overall surface water quality in the vicinity is good to excellent in the higher foothill areas and decreases in quality toward the valley's central low areas (Merced County 1990). The proposed project site is located within the City's Specific Urban Development Plan (SUDP) area. This area has been subdivided into eleven primary local watersheds, denoted A through K, based on initial watershed delineations and areas having a common existing or proposed drainage outfall. The proposed project site is within Watershed H located in the far southeast corner of the SUDP area. The total area of the watershed is approximately 2.7 square miles.

The site is currently utilized for agriculture. Current and past irrigation sources include surface water from the Merced Irrigation District (MID) canal and groundwater from an on-site well located in the northeastern portion of the site. The amount of groundwater pumped annually from this well is unknown (City of Merced Planning and Permitting 2006). There are no lakes, streams, or waterbodies meeting the criteria of "waterbodies of the United States" on the proposed project site. Runoff generated within Watershed H flows into the Merced Irrigation District's Doane Lateral Canal, located approximately 1,200 feet west of the proposed project site, which discharges into Miles Creek approximately one mile south of the proposed project site (City of Merced 2002). Miles Creek is an ephemeral creek that receives water from naturally occurring runoff (Caltrans 2000). No monitoring data or information exists to characterize typical stormwater surface runoff water quality at the proposed project site.

FLOODING

The Federal Emergency Management Agency (FEMA) is responsible for identifying and delineating flood hazard zones. Based on the most current FEMA map for the proposed project area (Flood Insurance Rate Map 06047C0445 E, Panel 445, effective 2006) (Exhibit 4.6-1), the proposed project site falls within Zone AH and Zone AO. Zone AO is defined as areas that are subject to inundation by the 100-year flood predominantly from sheet flow, with base flood elevations between 1 and 3 feet. Zone AH is defined as areas that are subject to inundation by the 100-year flood predominantly from ponding, with the same base flood elevations as Zone AO have been determined.

GROUNDWATER

The proposed project site is located within the Merced hydrologic sub-area (HSA 535.80), which is located within the San Joaquin Valley groundwater basin, the largest in California. The four aquifers found beneath the Merced area, listed from deepest to shallowest, are the Mehrten Formation, a confined aquifer between the Mehrten Formation and the base of the Corcoran Clay, an intermediate aquifer above the Corcoran Clay and below the shallow clay, and a shallow unconfined aquifer. Groundwater in the proposed project vicinity tends to flow northeast to southwest, although cones of depression from groundwater pumping and mounding from irrigation can complicate flow patterns and cause changes over time. Total dissolved solids (TDS) values in HSA 535.80 range from 100 to 3,600 mg/l, with a typical range of 200 to 400 mg/l, and there are localized areas of high hardness, iron, nitrate, and chloride (DWR 2003). Perched groundwater (i.e., local saturated zones above or discontinuous from the water table which exist above an impervious layer of limited extent) was observed at the proposed project site at between 34 and 40 feet below existing grade (ENGEO 2004).

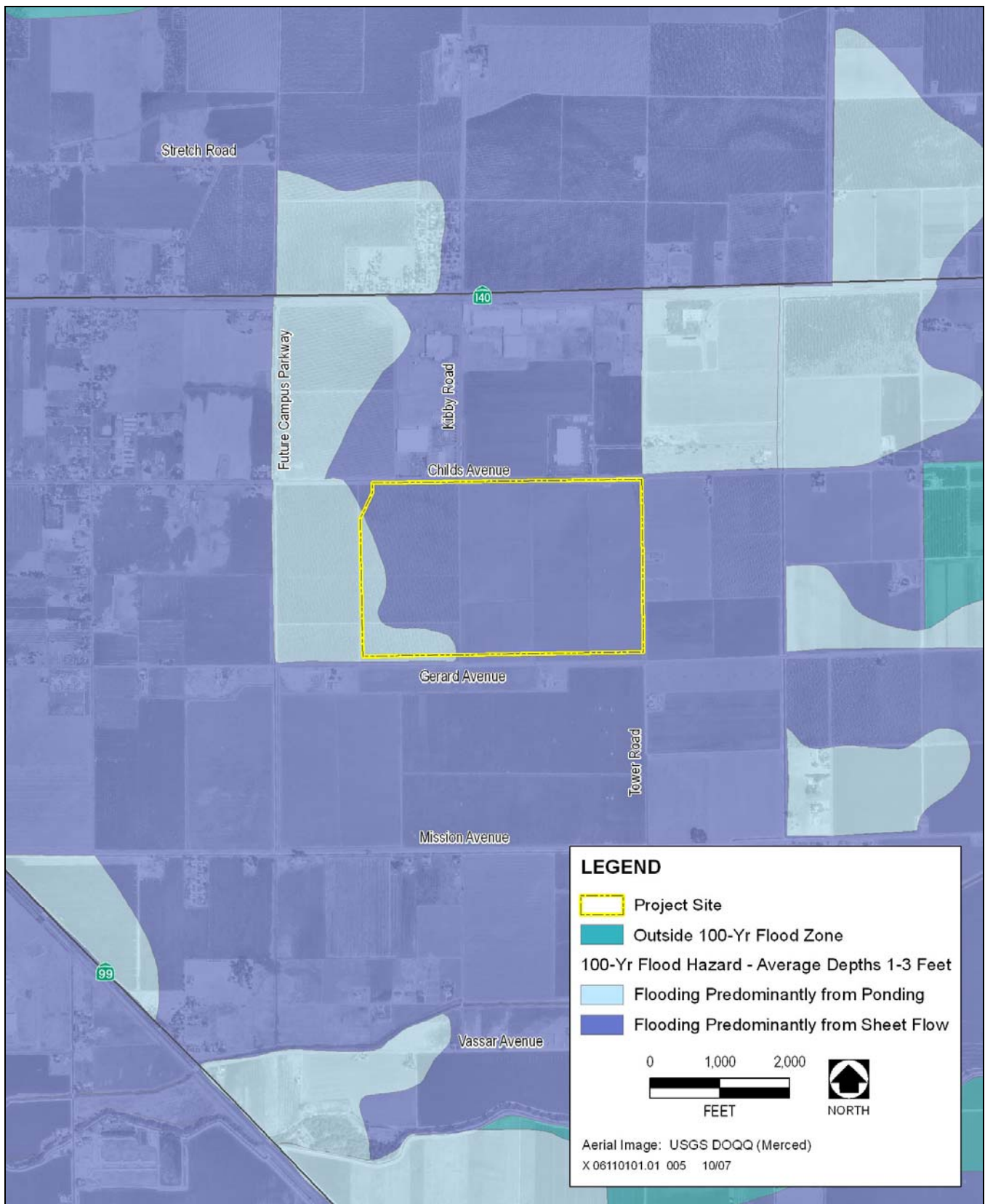
The City relies on groundwater for its primary domestic water source, which is recharged primarily from precipitation on the foothills and areas east of Merced. The City's domestic wells range in depth from 161 to 800 feet, with an average depth of 414 feet. The existing water quality from the City's domestic wells can be characterized as moderate to good (City of Merced 1997c). The most significant groundwater quality issue in the vicinity of the proposed project site was the discovery of trichloroethene (TCE) in 1984 during sampling of domestic and industrial water supply wells in the vicinity of a former General Electric Company (GE) facility. The disposal pond for this property is located approximately 2,500 feet north of the proposed project site. A shallow aquifer monitoring well located on the site is part of the monitoring well network for the GE study of TCE in groundwater. Data from February 2006 sampling of the monitoring well show that TCE was not detected at laboratory reporting limits of 0.5 parts per billion (ppb). Additionally, trichloroethane (TCA), volatile and semivolatile organic compounds were tested and were not found in measurable amounts (ENGEO 2006a). For the past several years GE has been conducting shallow groundwater remediation activities at the site (Tucker and Raggio, pers. comm., 2008)

4.6.2 REGULATORY SETTING

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

Clean Water Act

The objective of the Federal Clean Water Act (CWA) is to restore and maintain the physical, chemical and biological integrity of the nation's waters. Mechanisms to achieve this include the regulation of discharges of pollutants to navigable waters, establishment of numeric and narrative water quality objectives based on beneficial uses of water bodies, and periodic review of the water quality objectives. Water quality objectives for both surface and groundwater are established under CWA Section 303. The EPA has given California the authority to implement the provisions of the CWA through the Porter-Cologne Water Quality Control Act of 1969.



Source: Adapted by EDAW 2007

FEMA 100-Year Flood Zone in the Proposed Project Area

Exhibit 4.6-1

The National Pollutant Discharge Elimination System (NPDES) permit program was established in the CWA to regulate municipal and industrial discharges to surface waters of the United States. Federal NPDES permit regulations have been established for broad categories of discharges, including point-source municipal waste discharges and nonpoint-source stormwater runoff. NPDES permits generally identify effluent and receiving water limits on allowable concentrations and/or mass emissions of pollutants contained in the discharge; prohibitions on discharges not specifically allowed under the permit; and provisions that describe required actions by the discharger, including industrial pretreatment, pollution prevention, self-monitoring, and other activities.

In November 1990, the EPA published regulations establishing NPDES permit requirements for municipal and industrial stormwater discharges. Phase 1 of the permitting program applied to municipal discharges of stormwater in urban areas where the population exceeded 100,000 persons. Phase 1 also applied to stormwater discharges from a large variety of industrial activities, including general construction activity if the project would disturb more than 5 acres. Phase 2 of the NPDES stormwater permit regulations, which became effective in March 2003, required that NPDES permits be issued for construction activity for projects that disturb 1 acre or more. Phase 2 of the municipal permit system (known as the NPDES General Permit for Small MS4s) required small municipal areas of less than 100,000 persons to develop stormwater management programs. The City of Merced is part of the Merced Storm Water Group (MSWG), a coalition with the City's of Atwater, Merced County, and Merced Irrigation District. The State Regional Water Quality Control Board approved MSWG's Storm Water Management Program (SWMP) in April 2007. The RWQCBs in California are responsible for implementing the NPDES permit system (see NPDES Permits below).

Federal Emergency Management Agency

FEMA identifies flood zones, that is, areas subject to flooding, through Flood Insurance Rate Maps (FIRMs). The standard for flood protection established by FEMA, and used by CEQA guidelines, is the 1-in-100 annual exceedance probability (AEP), commonly referred to as the 100-year flood event. The State of California has started implementing requirements for the Central Valley to protect the area from a 200-year flood event, to be in place by 2015.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

Porter-Cologne Water Quality Act of 1969

The Porter-Cologne Water Quality Control Act (Porter-Cologne) established the State Water Resources Control Board (SWRCB) and divided the state into nine regional basins, each represented by a Regional Water Quality Control Board (RWQCB). The SWRCB is the primary agency responsible for protecting the quality of the state's surface water and groundwater, and is authorized by Porter-Cologne to draft state policies regarding water quality. The Central Valley Region RWQCB (Region 5) has jurisdiction at the proposed project site.

In addition, Porter-Cologne authorizes the SWRCB to issue Waste Discharge Requirement Permits (WDRs) and NPDES Permits, and requires that either the State or Regional Water Quality Control Boards adopt water quality control plans (Basin Plans) for the protection of surface water and groundwater quality. The Basin Plans also provide the technical basis for determining NPDES permits, WDR permits, and thresholds and conditions for taking enforcement actions. All discharges to surface water or groundwater at the proposed project site are subject to Region 5 Basin Plan requirements (CVRWQCB 1998).

NPDES Permits

A Statewide NPDES Stormwater Permit for General Construction Activity (Order No. 99-08 DWQ) would be required for the proposed project. The SWRCB adopted a statewide NPDES stormwater permit for general construction activity, which requires the preparation of a stormwater pollution prevention plan (SWPPP) that identifies and describes the best management practices (BMPs) to be implemented at construction sites to control

pollution from stormwater runoff. Effective on March 10, 2003, the size of the construction disturbance subject to the statewide NPDES permit is 1 acre or more.

The SWRCB adopted a General Industrial Storm Water Permit (Order No. 97-03-DWQ), which covers specific industries including certain transportation, warehousing, and storage facilities. The general permit requires industrial dischargers to eliminate illicit discharges to storm drains, develop and implement a SWPPP, and perform monitoring of discharges to stormwater systems.

The General Industrial Storm Water Permit requires industrial dischargers to eliminate illicit discharges to storm drains, develop and implement a SWPPP, and perform monitoring of discharges to stormwater systems. The SWPPP should include the following items:

- ▶ source identification,
- ▶ practices to reduce pollutants,
- ▶ an assessment of potential pollution sources,
- ▶ a materials inventory,
- ▶ a preventive maintenance program,
- ▶ spill prevention and response procedures,
- ▶ general stormwater management practices,
- ▶ employee training,
- ▶ facility inspection,
- ▶ record keeping, and
- ▶ elimination of discharges other than stormwater that aren't permitted into the industrial stormwater system.

Senate Bill 5

Senate Bill (SB) 5, promulgated on October 10, 2007, enacts the Central Valley Flood Protection Act of 2008. Requirements of the Department of Water Resources (DWR) and the Central Valley Flood Protection Board (previously known as the State Reclamation Board) under SB5 are:

- ▶ To prepare and adopt a Central Valley Flood Protection Plan (the Plan, described below) by 2012.
- ▶ To establish 200-year protection as the minimum urban level of flood protection.
- ▶ By July 1, 2008, the DWR must produce preliminary maps for 100-year and 200-year floodplains protected by project levees, and to make them available to cities and counties in the Sacramento-San Joaquin Valley ("Central Valley"). (Water Code § 9610[a])
- ▶ Sets deadlines for cities and counties in the Central Valley to amend their general plans and their zoning ordinances to conform to the Plan within 24 months and 36 months, respectively, of its adoption.
- ▶ Restricts approval of development agreements rezones and subdivision maps in flood hazard zones, once the general plan and zoning ordinance amendments have been enacted, unless certain findings are made.
- ▶ Obligates Central Valley counties to develop flood emergency plans within 24 months of adoption of the Plan.
- ▶ By 2009, the Department of Water Resources ("Department") must propose amendments to the California Building Standards Code ("Building Code") to protect areas with flood depths anticipated to exceed three feet for the 200-year flood event. SB 5 requires that the Building Code amendments are designed to reduce the risk of flood damage and increase safety.

No later than 2015, but potentially sooner depending on when the Central Valley Flood Protection Plan takes effect, SB 5 prohibits local governments from entering development agreements or approving entitlements or permits, including ministerial permits resulting in construction of a new residence in a flood zone, which result in construction of a new residence in a flood zone unless one of three conditions are met:

- ▶ flood management facilities provide level of protection necessary to withstand 200-year flood event;
- ▶ the development agreement or other entitlements include conditions that provide protections necessary to withstand 200-year flood event; or
- ▶ the local flood management agency has made adequate progress on construction of a flood protection system that will result in protections necessary to withstand 200-year flood event by 2025.

Central Valley Flood Protection Plan

The Central Valley Flood Protection Plan (CVFPP, as set forth in Water Code, § 9614) is a descriptive document that includes the following elements:

1. a description of the Flood Management System, its performance, and the challenges to modifying it;
2. a description of the facilities included in the State Plan of Flood Control;
3. a description of probable impacts of projected climate change, land-use patterns, and other potential challenges;
4. an evaluation of needed structural improvements and a list of facilities recommended for removal; and
5. a description of both structural and nonstructural methods for providing an urban level of flood protection to currently urbanized areas in the Central Valley.

Groundwater Wells

The proposed project site contains an irrigation well, and City of Merced Water Well 10-R2. Section 13801 of the California Water Code requires the state board to adopt a model, and each county, city, or water agency to adopt ordinances for well placement, construction, and abandonment, that meet or exceed California Department of Water Resources (DWR) standards (California Water Code Section 231). Standards for wells in California are found in DWR Bulletins No.74-81 and 74-90, entitled “Water Well Standards, State of California.” The City of Merced Standard Designs – Well Destruction (Department of Public Works, Sheet W-10, August 5, 1991) lists the procedures and performance standards for well abandonment.

LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

Goals and policies contained in the *Merced Vision 2015 General Plan* (City of Merced 1997a) that are applicable to hydrology, water quality, and flood control issues related to the proposed project are listed below.

- ▶ Protect ground and surface water resources from contamination (Chapter 11-Safety, Policies S-7.1 and 7.2; Chapter 7-Open Space, Policy OS-1.5).
- ▶ Preserve and protect surface water resources in the Merced Urban Area. (Chapter 5-Public Facilities, Policy P-5.2; Chapter 7-Open Space, Policies OS-1.2, 1.5, and 5.2).

- ▶ Protect groundwater quality by minimizing the need to use septic systems for wastewater treatment and disposal, and the use of private wells as a source of domestic water supply. (Chapter 2-Urban Expansion, Policy UE-1.7; Chapter 5-Public Facilities, Policy P- 4.1; Chapter 7-Open Space, Policy OS-1.5).
- ▶ Enhance urban groundwater recharge opportunities. (Chapter 5-Public Facilities, Policy 5.2).
- ▶ Promote water conservation strategies throughout the Merced Urban Area. (Chapter 5-Public Facilities, Policies P-4.2 and 5.2; Chapter 7-Open Space, Policy OS-5.1).
- ▶ Reduce the threat of flooding and flood water damage. (Chapter 5-Public Facilities, Policy 5.1; Chapter 11-Safety, Policy S-3.1).

The City of Merced Storm Drain Master Plan (SDMP) describes required drainage infrastructure recommendations for the SUDP area, including the proposed project site, that are designed to accommodate stormwater runoff under buildout conditions per the City of Merced Vision 2015 General Plan. Based on direction provided by the Merced City Council in 2001, the SDMP conveyance infrastructure has been configured to accommodate runoff generated during a 10-year storm event under upstream buildout conditions, pursuant to the General Plan, a standard utilized by many Northern California communities.

4.6.3 ENVIRONMENTAL IMPACTS

THRESHOLDS OF SIGNIFICANCE

Based on Appendix G of the State CEQA Guidelines and thresholds reviewed and accepted by the City of Merced a hydrology and water quality impact is considered significant if implementation of the proposed project would do any of the following:

- ▶ contribute substantially to the nonattainment of Basin Plan thresholds for water quality through:
 - substantial degradation or depletion of ground water resources or
 - substantial degradation of surface water quality;
- ▶ diminish water quantity and the continued availability of water supplies by:
 - interfering substantially with ground water recharge or
 - creating water demand in excess of known available supplies; or
- ▶ create flooding or other water related hazards through:
 - placement within a 100-year flood hazard area structures which would impede or redirect flood flows; or
 - substantial change in absorption rates, drainage patterns, or the rate and amount of surface runoff, so that existing drainage capacity is exceeded.
- ▶ exceed the following City of Merced Storm Drain Master Plan thresholds:
 - Accommodate conveyance for runoff generated during a 10-year storm event under buildout conditions per the Merced Vision 2015 General Plan; or
 - Detention basin accommodation of runoff generated by a 50-year storm event under buildout conditions per the Merced Vision 2015 General Plan, with the rate of outflow being limited to the discharge generated by the watershed during a 2-year storm event under existing conditions.

IMPACT ANALYSIS

IMPACT 4.6-1	Short-Term Degradation of Water Quality from Project-Related Construction Activities. <i>Construction disturbances associated with the proposed project would create the potential for soil erosion and sedimentation of stormwater drainage systems and runoff to the Merced Irrigation District Doane Lateral Canal west of the proposed project site. The construction process may also involve the potential for releases of other pollutants to surface waters and/or the future storm drain system, including oil and gas, chemical substances used in the construction process, accidental discharges, waste concrete and wash water. This impact is considered potentially significant.</i>

Because construction activities would occur over a large area (approximately 235 acres), the substantial construction-related alteration of drainages could result in soil erosion and stormwater discharges of suspended solids, increased turbidity, and potential mobilization of other pollutants from project construction sites as contaminated runoff to on-site and ultimately off-site drainage channels. Many construction-related wastes, including fuels, solvents, oil and grease from paved areas, disturbed topsoil, fertilizers and related landscaping materials, have the potential to degrade existing water quality by altering the dissolved-oxygen content, temperature, pH, suspended-sediment and turbidity levels, or nutrient content, or by causing toxic effects in the aquatic environment. Project construction activities that are implemented without mitigation could violate water quality standards or cause direct harm to aquatic organisms.

Consequently, project-related impacts on water quality within on-site drainage channels as a result of temporary construction activities are considered **potentially significant**.

Mitigation Measure 4.6-1a.Acquire Appropriate Regulatory Permits and Implement SWPPP and BMPs. Before the approval of grading permits and improvement plans, the project applicant for all project phases shall consult with the City of Merced, the SWRCB, and the Central Valley RWQCB to acquire the appropriate regulatory approvals that may be necessary to obtain a SWRCB statewide NPDES stormwater permit for general construction activity, and any other necessary site-specific Waste Discharge Requirements WDRs or waivers under the Porter-Cologne Act. The project applicant shall prepare and submit the appropriate Notice of Intent (NOIs) and prepare the SWPPP and any other necessary engineering plans and specifications for pollution prevention and control. After completion of construction and issuance of a Notice of Completion by the City of Merced, the project applicant shall prepare and submit the appropriate Notice of Termination (NOT) of the NOI. The SWPPP and best management practices (BMPs) therein shall identify and specify:

- ▶ the use of erosion and sediment-control BMPs, including construction techniques that will reduce the potential for runoff as well as other measures to be implemented during construction. These may include but not be limited to sedimentation ponds, inlet protection, perforated riser pipes, check dams and silt fences;
- ▶ the means of waste disposal;
- ▶ the implementation of approved local plans, nonstormwater-management controls, permanent postconstruction BMPs, and inspection and maintenance responsibilities;
- ▶ the pollutants that are likely to be used during construction that could be present in stormwater drainage and nonstormwater discharges, and other types of materials used for equipment operation;
- ▶ spill prevention and contingency measures, including measures to prevent or clean up spills of hazardous waste and of hazardous materials used for equipment operation, and emergency procedures for responding to spills;
- ▶ personnel training requirements and procedures that will be used to ensure that workers are aware of permit requirements and proper installation methods for BMPs specified in the SWPPP; and
- ▶ the appropriate personnel responsible for supervisory duties related to implementation of the SWPPP.

Where applicable, BMPs identified in the SWPPP shall be in place throughout all site work and construction and shall be used in all subsequent site development activities. BMPs shall include the following measures:

- ▶ Implementing temporary erosion-control measures in disturbed areas to minimize discharge of sediment into nearby drainage conveyances. These measures may include silt fences, staked straw bales or wattles, sediment/silt basins and traps, geofabric, sandbag dikes, and temporary vegetation.
- ▶ Establishing permanent vegetative cover to reduce erosion in areas disturbed by construction by slowing runoff velocities, trapping sediment, and enhancing filtration and transpiration.
- ▶ Using drainage swales, ditches, and earth dikes to control erosion and runoff by conveying surface runoff down sloping land, intercepting and diverting runoff to a watercourse or channel, preventing sheet flow over sloped surfaces, preventing runoff accumulation at the base of a grade, and avoiding flood damage along roadways and facility infrastructure.

All construction contractors shall retain a copy of the approved SWPPP on the construction site. Implementation of Mitigation Measure 4.6-1a would reduce the potentially significant impact of water quality degradation from project-related construction activities to a **less-than-significant** level because the project applicant would conform to applicable local and state regulations regulating construction discharges and successfully implement the SWPPP. However, Mitigation Measure 4.6-1b, discussed below, is necessary to assure that the measures put in place by Mitigation Measure 4.6-1a are properly maintained during the life of the project.

Mitigation Measure 4.6-1b: Establish a Maintenance Entity for BMPs. The project applicant shall establish a maintenance district, Community Facilities District (CFD), or other maintenance entity acceptable to the City of Merced and the MID, prior to recordation of any Final Maps, to provide funding for the operation, maintenance, and replacement costs of the stormwater BMPs. The maintenance entity shall insure that stormwater runoff shall meet all state and local water quality requirements, through modification of BMPs or stormwater pretreatment measures if required.

Several technical studies have been conducted regarding water the impacts of quality control features on groundwater (e.g., City of Fresno Nationwide Urban Runoff Project [EPA 1983] and *California Storm Water Best Management Practices Handbook* prepared by the Stormwater Quality Task Force) and surface water (e.g., Cumulative Water Quality Analysis Report for the Lahontan Development 1996–2002 [Huffman and Carpenter 2003]). These studies have identified that water quality control features such as revegetation, erosion control measures, detention and infiltration basins have been successful in controlling water quality and avoiding water quality impacts (metals and organic compounds associated with stormwater are typically lost within the first few feet of the soil of the retention basins associated with groundwater). Technical studies associated with the Lahontan Development demonstrated that the use of a variety BMPs such as source control, detention basins, revegetation and erosion control, have been able to maintain surface water quality conditions in adjacent receiving waters. Implementation of Mitigation Measure 4.6-1b would establish a maintenance entity to provide the funding source for BMPs, which would further reduce the potentially significant impact of water quality degradation from project-related construction activities to a **less-than-significant** level.

IMPACT 4.6-2	Long-Term Degradation of Surface Water Quality from Project-Related Contaminants. <i>The conversion of undeveloped land to urban land uses would alter the types, quantities, and timing of contaminant discharges in stormwater runoff. Overall, the potential for the proposed project to cause or contribute to long-term discharges of urban contaminants (e.g., oil and grease, trace metals and organics, trash) into the stormwater drainage system would increase compared to existing conditions. This impact is considered potentially significant.</i>

An increase in the amount of impervious surfaces within the SUDP area has resulted in higher rates of runoff during rainy periods, which can be a source of surface water pollution (City of Merced 1997b). Urban runoff

pollutants may stem from erosion of disturbed areas, deposition of atmospheric particles derived from automobile or industrial sources, corrosion or decay of building materials, rainfall contact with toxic substances, and spills of toxic materials on surfaces which receive rainfall and generate runoff. New urban industrial and commercial development can generate urban runoff from parking areas as well as any areas of hazardous materials storage exposed to rainfall. Therefore, this impact is considered ***potentially significant***.

Mitigation Measure 4.6-2. Develop and Implement a BMP and Water Quality Maintenance and Monitoring Plan.

Design standards for water quality treatment are being formulated that would meet or exceed City of Merced Storm Drain Master Plan and Standard Design requirements. The design standards, when completed, will incorporate the adopted City of Merced Master Storm Drain Plan and Design guidance (City of Merced 2002):

- ▶ Excavated Open Channels – 60-foot right-of-way open channels would convey runoff through areas where the estimated peak flow rates from a watershed exceed the capacity of a 66-foot storm drain. These open channels would include landscaping and bike paths for recreational opportunities. They shall be turfed or otherwise protected to prevent erosion. A minimum of 1 foot of freeboard shall be maintained above the design 10-year water surface elevation to the top of the banks. One side of the channel shall provide for all weather maintenance unless the channel is adjacent to a public road.
- ▶ Storm Drains – Underground storm drain pipelines would be utilized. Storm drain trunk lines would be sized to convey the 10-year discharges operating under uniform flow conditions, and shall be located in public streets.
- ▶ Stormwater Detention Facilities – The two stormwater detention basins, one draining the north portion of the proposed project site and the other draining the south portion, have been designed to accommodate runoff generated during a 50-year 24-hour storm event under General Plan buildout conditions, with the rate of outflow being limited to the discharge generated by the watershed during a 2-year storm event under existing conditions. Detention basins have been conceptually designed with a maximum depth of 5 feet below ground surface due to the relatively shallow depth to groundwater in some of the areas surrounding the proposed Project. One foot of freeboard from the 50-year 24-hour storm to the top of the basin has also been included in the conceptual design.
- ▶ Pump Stations – Due to the relative flatness of the proposed Project terrain, pump stations would be used to augment the gravity flow draining of the detention basins. The pumps have been conceptually designed to handle the 2-year discharge flow from the basins. Facilities would consist of a low flow pump, a high flow pump, and a backup pump.

The stormwater treatment system would reduce the increased amount of stormwater runoff and associated erosion created by the proposed project site. The runoff would be collected by overland flow and an underground storm sewer system into detention ponds to control the quantity of runoff exiting the site. The quality of runoff would be controlled by sedimentation ponds, biological treatment of the water by vegetation, infiltration of the water into the ground and a skimmer plate to skim floatable objects from the water surface. Implementation of these mitigation measures would reduce impacts to a ***less-than-significant*** level.

Design Criteria and Methodology

To design a treatment system that meets or exceeds the City and MID guidelines and standards for stormwater quantity and quality that must be met or exceeded, the site was analyzed to determine the peak discharge rates for the predeveloped and developed conditions under various storm event scenarios (Carter-Burgess 2007). The City requires the detention ponds to be designed (1) to store water deposited on site by the so-called 50-year storm and (2) to control the allowable discharge from developed conditions so as not to exceed the 2-year predeveloped discharge (City of Merced 2002). The City also has a requirement that the ponds be dry in 48 hours, if the maximum discharge rate will allow it. The MID requires that the allowable discharge from developed conditions not exceed the 10-year storm. However, the MID requested that the maximum allowable discharge be 2,200 gpm (gallons per minute), which is less than both the 10-year storm and the 2-year predeveloped discharge rates. The

MID maximum allowable rate of 2,200 gpm, lower than the City's discharge rate of 8,960 gpm, was agreed on by the City and MID (Carter-Burgess 2007).

The 24-hour rainfall values were selected from NMFS Atlas 14, Volume I by the National Oceanic and Atmosphere Administration. Time of concentration values were computed based on the methods in the Soil Conservation Service Technical Report Manual SCS TR-55, widely used for calculating stormwater runoff in small urban watersheds (USDA 1986). The detention ponds were size based on volume required to hold the stormwater runoff from a 100-year storm event. The computer program Interconnected Pond Routing by Streamline Technologies, Inc., a FEMA approved stormwater modeling system, was utilized to rout the various storms through the detention ponds and the pump station. The 2-year, 10-year, 25-year, 50-year and 100-year 24-Hour Storms were used in the analysis to size the stormwater conveyances such that they would handle the water volumes of all of those stormwater volumes.

Pre- and Postdevelopment Conditions

The site is currently used as farmland, with cultivation of alfalfa and almonds being the primary crops. Site topography indicates that the site slopes from northeast to southwest, with elevations ranging from approximately 195 feet msl near the northeast corner to approximately 187 feet msl at the southwest corner. Stormwater runoff from the site currently ponds in a low lying area near the southwest corner of the site and eventually spills over to a roadside ditch running to the west along the north side of Gerard Avenue.

The development of the approximately 235 acre site would create approximately 110 acres of impervious surface area. To offset the additional impervious area, a series of detention ponds would be constructed around the perimeter of the site area to store stormwater runoff (Exhibit 4.6-2). The detention ponds would be utilized to control the quantity and quality of runoff. The retention time of the stormwater in the ponds would allow additional stormwater infiltration into the soil (Infiltration rates are described in Mitigation measure 4.6-4). As determined by MID based on their review of the proposed Project Preliminary Site Drainage Analysis (Carter-Burgess 2007), stormwater would be pumped from the detention ponds into a connection to an existing irrigation canal. The preferred pump location is shown on Exhibit 4.6-2.

The preferred project canal to receive the stormwater runoff would be MID Fairfield Canal (Exhibit 4.6-3). This is the canal preferred by the MID as well based on their review of the proposed Project Preliminary Site Drainage Analysis (Carter-Burgess, 2007). To discharge in to this canal, a pump station would be located near the northeast corner of the development. Stormwater would be pumped in a closed system within the property owned by Wal-Mart, City right-of-way and MID easement/property to Fairfield Canal. In the event the Fairfield Canal could not be utilized, the alternative canal to receive the flow would be the Farmdale Lateral (Exhibit 4.6-4). To reach the Farmdale Lateral, a pump station would be located near the southwest corner of the development (Exhibit 4.6-5). Stormwater would be pumped in a closed system within the property owned by Wal-Mart, City right-of-way or easement and MID easement/property to the Farmdale Lateral. The detention ponds and the drainage channels would be grassed-lined to help filter stormwater runoff. In addition all of the ponds would be interconnected to each other and a discharge pipe would connect the detention ponds to the wet well basin of the pump station. The inlet side of this discharge pipe would have a skimmer plate on it to prevent floating contaminants from entering the wet well basin and leaving the site.

Using the maximum discharge rate of 2,200 gpm as required by the MID, the ponds could not be drained within 48 hours for the 10-year storm, as required by the City. Therefore the City would agree to allow longer drawdown duration time for the system. The drawdown durations for the 10-year, 25-year, 50-year and 100-year would be approximately 72 hours, 88 hours, 95 hours and 108 hours, respectively. These drawdown times assume that once the pumps start pumping they would operate continuously; however, the pumps would be controlled by MID. If MID determined that downstream conditions warranted the discharge from the proposed project site be discontinued, then MID would have the ability to shut the pumps down to discontinue the discharge. This would then increase the duration stormwater would remain in the ponds and the additional volume that could infiltrate

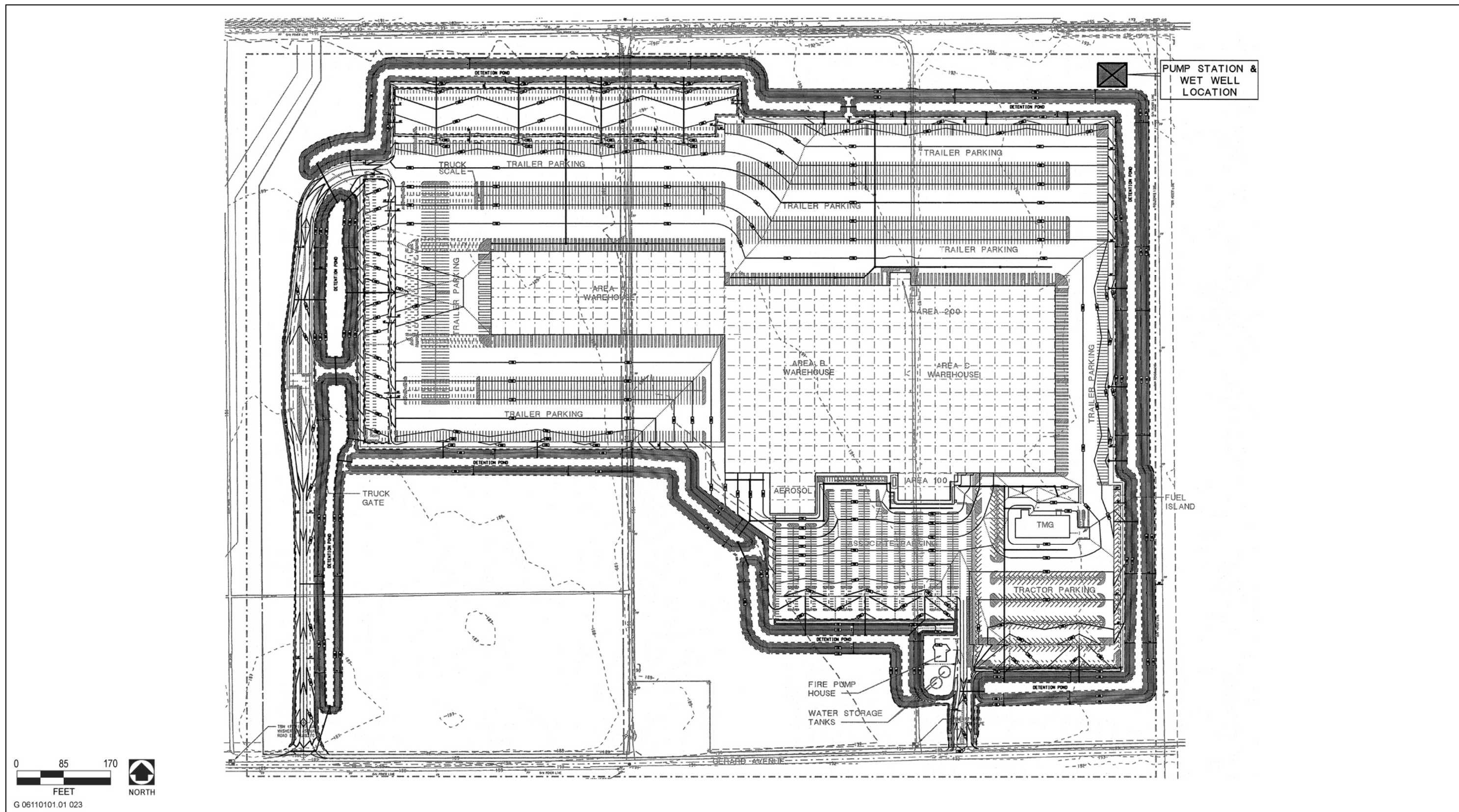
into the soil. The 10-year, 24-Hour storm runoff volume for the entire 235 acre site for predeveloped conditions is 10.7 af and for developed conditions is 26.2 af.

Permanent water quality improvement BMPs may include but not be limited to unlined detention ponds for filtration, biological treatment of runoff over vegetation, skimmer plates on discharge structures and sedimentation basins. The expected pollutant removal success rates listed in Table 4.6-1 suggest that multiple BMPs, when properly installed and maintained, can achieve nearly 100% sediment removal. Multiple temporary construction and permanent BMPs would therefore be used in combination to achieve this result. Although 100% contaminant removal is often infeasible, BMPs would be selected and designed with the objective of achieving maximum contaminant removal, using the best available technology that is economically feasible, and explicitly identifying the expected level of BMP effectiveness in removing contaminants.

Table 4.6-1 Expected Pollutant Removal Efficiency of Best Management Practices					
BMP Type	Typical Pollutant Removal (%)				
	Suspended Solids	Nitrogen	Phosphorus	Pathogens	Metals
Structural BMPs					
Dry detention basins	30–65	15–45	15–45	<30	15–45
Retention basins	50–80	30–65	30–65	<30	50–80
Constructed wetlands	50–80	<30	15–45	<30	50–80
Infiltration basins	50–80	50–80	50–80	65–100	50–80
Infiltration trenches, dry wells	50–80	50–80	15–45	65–100	50–80
Porous pavement	65–100	65–100	30–65	65–100	65–100
Grassed swales	30–65	15–45	15–45	<30	15–45
Vegetated filter strips	50–80	50–80	50–80	<30	50–80
Surface sand filters	50–80	<30	50–80	<30	50–80
Other media filters	65–100	15–45	<30	<30	50–80
Construction Site BMPs					
Silt fence	50–80				
Sediment basin	55–100				
Sediment trap	60				
Note: BMP = best management practice Source: EPA 1999					

In summary, the stormwater management design for the proposed project would consist of the following measures to safely convey on-site and off-site flows through the project site, and prevent increased flood hazard on downstream areas by limiting peak discharges to below pre-project levels.

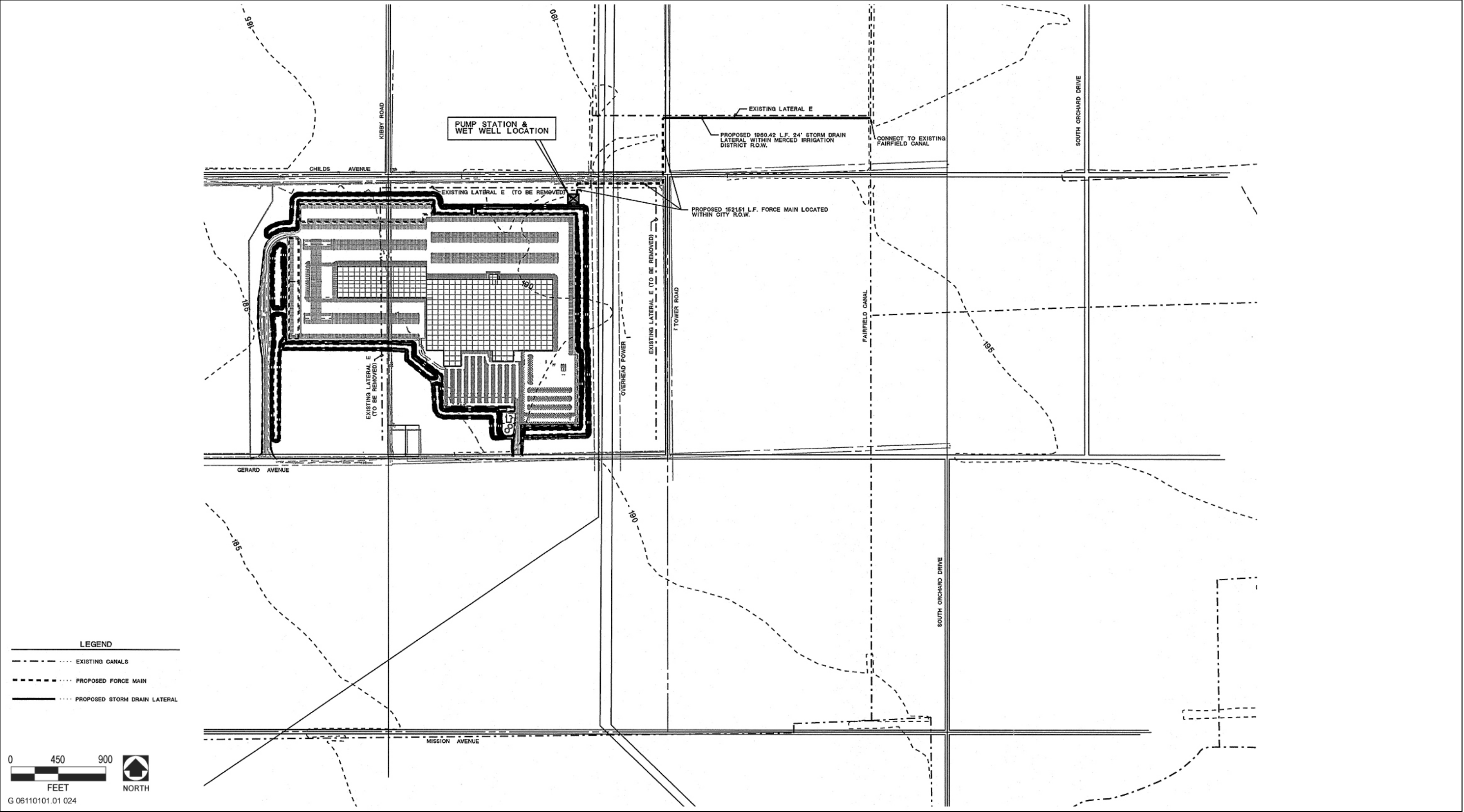
- ▶ Stormwater would be captured and conveyed in a closed system within the property owned by Wal-Mart, City right-of-way and MID easement/property
- ▶ Detention ponds in the system would be sized based on volume required to hold the stormwater runoff from a 100-year storm event
- ▶ Stormwater would be conveyed to Fairfield Canal (preferred) or Farmdale Lateral (alternative)
- ▶ Discharge would be limited to 2,200 gpm for all storm events.



Source: Carter & Burgess 2007

Preferred Pump Location

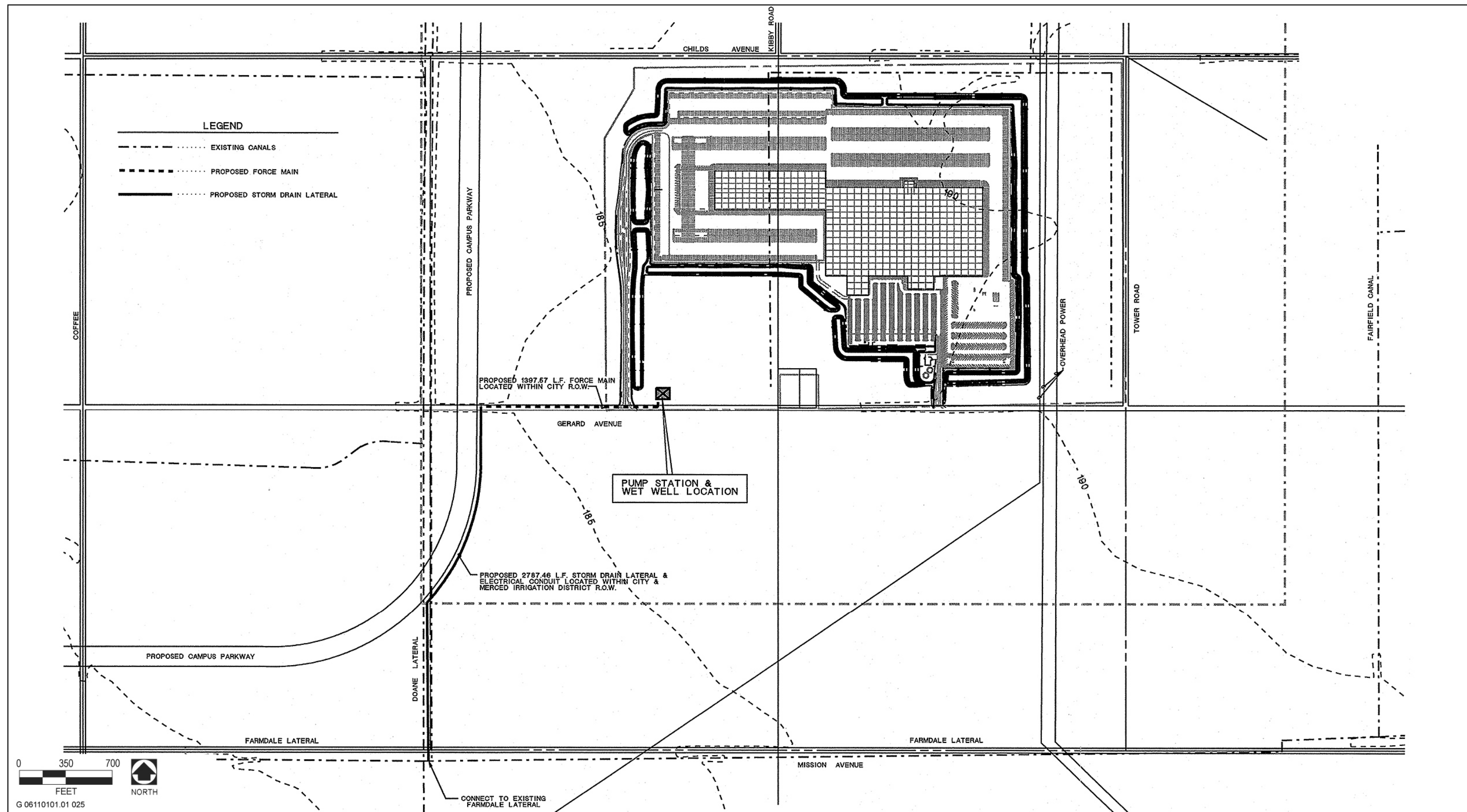
Exhibit 4.6-2



Source: Carter & Burgess 2007

Preferred Drainage Path

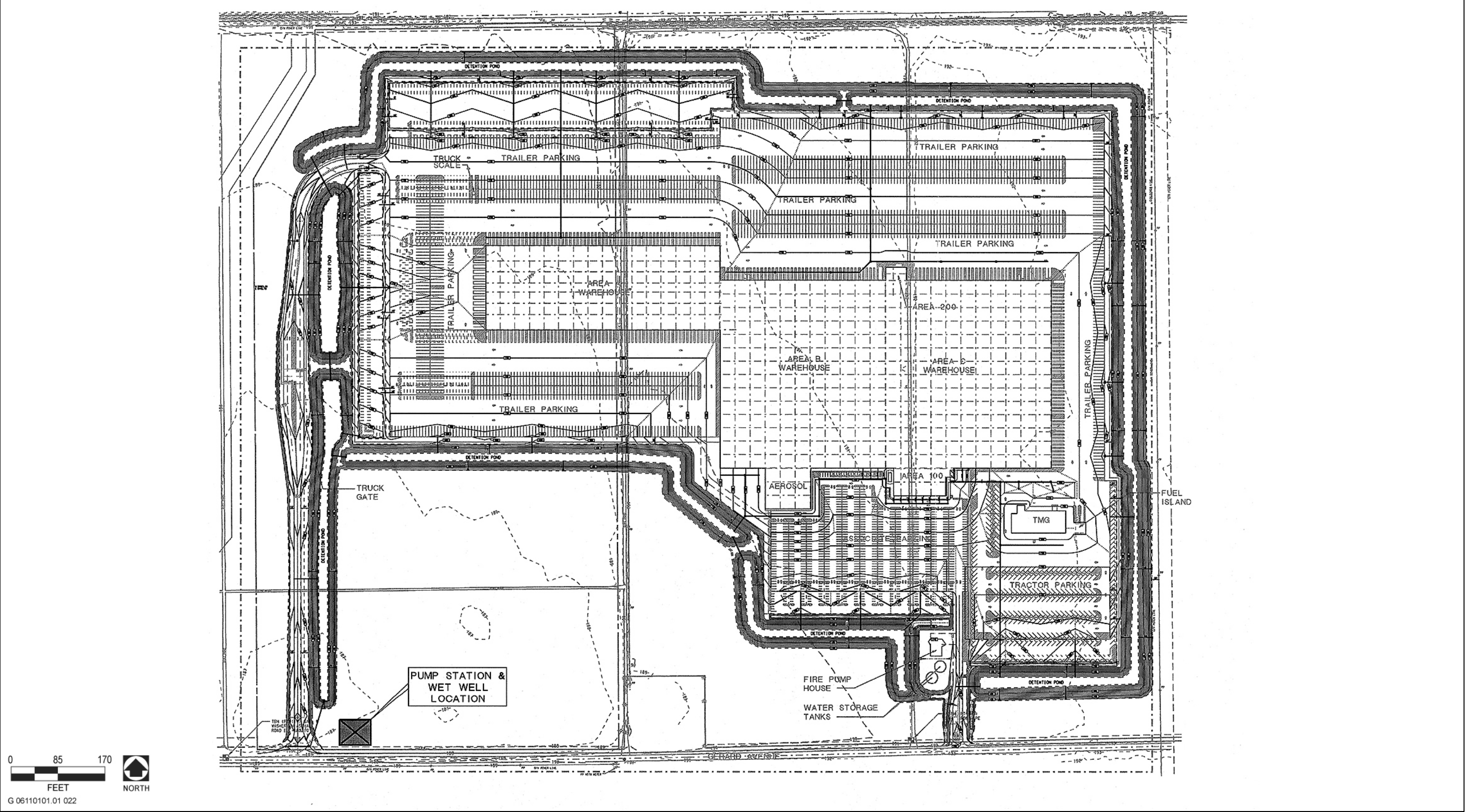
Exhibit 4.6-3



Source: Carter & Burgess 2007

Alternative Drainage Path

Exhibit 4.6-4



Source: Carter & Burgess 2007

Alternative Pump Location

Exhibit 4.6-5

The finish floor elevation of each structure on the site would be at least 2 feet above the existing ground elevation at the location of the structure, pursuant to City requirements for development within Zone A. The proposed project would meet or exceed City requirements for development within Zone A, and the stormwater management system would safely convey runoff from the 100-year storm.

Implementation of Mitigation Measure 4.2-2 would reduce the potentially significant impact related to long-term degradation of surface water quality from proposed project-related contaminants to a less-than-significant level because the project applicant would demonstrate to the City and MID that the proposed project would conform to applicable state and local regulations regulating surface water runoff. The design criteria described in detail in the Master Drainage Plan (City of Merced 2002) are designed to meet or exceed the City of Merced Storm Drain Master Plan and Standard Design requirements pertaining to stormwater treatment. The permanent BMPs to be utilized in the stormwater treatment system described in detail in the Master Drainage Plan (City of Merced 2002) have been shown to be effective in reducing contaminant levels in urban runoff (EPA 1999, CASQA 2003).

IMPACT **On-Site and Off-Site Flooding Hazards from Increased Stormwater Runoff.** *The proposed project*
4.6-3 *would alter the ground surface and drainage patterns of the majority of the site, creating approximately 110*
 *acres of impervious surface area. This impact is considered **potentially significant**.*

The site would consist of a 1,100,000-square-foot warehouse, a truck maintenance garage, a truck gate, a truck wash, a fuel island, and a fire pump house. Other site construction would include paved entrance roads, paved parking areas, utilities necessary to service each building. This increase in impervious surfaces would increase stormwater runoff patterns and volume. As noted above, the 10-year, 24-Hour storm runoff volume for the entire 235 acre site for predeveloped conditions is 10.7 af and for developed conditions is 26.2 af. Thus, the project would result in a net increase of 15.5 af in storm runoff volume for the 10-year, 24-hour storm. This impact is considered **potentially significant**.

Implementation of Mitigation Measure 4.6-2 would reduce the potentially significant impact related to on-site and off-site flooding hazards from proposed project-related stormwater runoff to a **less-than-significant** level because the project applicant would demonstrate to the City that the proposed project would conform with applicable state and local regulations regulating surface water runoff. The design criteria described in detail in the Master Drainage Plan (City of Merced 2002) are designed to meet or exceed the City of Merced Storm Drain Master Plan and Standard Design requirements pertaining to stormwater runoff. Specific project design standards would, when implemented, provide flood protection to meet FEMA 100-year flood protection criteria, would safely convey on-site and off-site flows through the proposed project site, and would prevent increased flood hazard on downstream areas by limiting peak discharges to below preproject levels.

IMPACT **Depletion of Groundwater Supplies or Substantial Interference with Groundwater Recharge.** *The*
4.6-4 *impervious surface area resulting from the proposed project has the potential to interfere with groundwater*
 recharge compared to existing conditions. However, the existing groundwater recharge potential of the site
 is low due low permeability soil characteristics, and the existing agricultural uses utilize groundwater at a
 rate greater than that which would be lost to recharge via impermeable surfaces. Therefore this impact is
 less than significant.

A recent geotechnical evaluation of the proposed project site (ENGEO 2006b) showed that the existing recharge potential of the site is relatively low, due to soil characteristics of low permeability in the upper three feet of silty clay materials, including portions of near-surface hardpan over much of the site, as well as high evapotranspiration from the crops grown on the site. The estimated annual recharge to groundwater from rainfall on the site is approximately 23.5 acre-feet per year (afy), based on 12 inches of annual rainfall and a 10% recharge rate (DWR 2003). The estimated post-development annual groundwater recharge from rainfall from the remaining 125 acres of open space is approximately 12.5 afy, based on site runoff characteristics utilizing the same rainfall and recharge rate.

Additional groundwater recharge would occur through infiltration from the stormwater treatment system detention basins (Exhibit 4.6-1). This infiltration rate is expected to be greater than the infiltration rate through the ground surface because the depth of the basins (approximately 10 feet) would introduce water into the deeper silty sand/sandy silt soil horizons with higher soil permeability than the silty clay surface horizons. In addition, the basin retention times would increase the contact time of water for infiltration. Based on a percolation rate of 1 gallon per day per square foot for the silty sand/sandy silt, and a retention time of 48 hours (conservative as up to 72 hours have been approved) the total estimated percolation amount would be approximately 5.6 afy. Therefore the estimated amount of reduced groundwater recharge due to site development is estimated at 5.4 afy (predevelopment recharge [23.5 afy]—post-development recharge [12.5 afy]—recharge from stormwater detention basins [5.5 afy]). This would result in a drawdown of 0.005 feet (0.6 inches) to the aquifer at the edge of the proposed project site. This is not significant given the overall thickness of the aquifer of 300 to 1,000 feet. Therefore, this impact is ***less than significant***.

Mitigation Measure

No mitigation is required.

IMPACT 4.6-5 **Proposed Project Structures within the 100-year Flood Zone Could Impede or Redirect Flood Flows.**
Portions of the proposed project are within the 100-year flood zone. However, the project stormwater management system, and compliance with City requirements regarding placement of structures in the flood zone, makes this impact less than significant.

The proposed project would be constructed within the FEMA 100-year flood zone (see Exhibit 4.6-1). The proposed Project site is located primarily in Zone AO, defined as areas that are subject to inundation by the 100-year flood predominantly from sheet flow with base flood elevations between 1 and 3 feet. The far western portion is located in Zone AH, defined as areas that are subject to inundation by the 100-year flood predominantly from ponding, with the same base flood elevations as Zone AO.

The stormwater management design described in Mitigation Measure 4.6-2 for the proposed project would consist of the following measures to safely convey on-site and off-site flows through the project site, and prevent increased flood hazard on downstream areas by limiting peak discharges to below preproject levels.

- ▶ Stormwater would be captured and conveyed in a closed system within the property owned by Wal-Mart, City right-of-way and MID easement/property
- ▶ Detention ponds in the system would be sized based on volume required to hold the stormwater runoff from a 100-year storm event
- ▶ Stormwater would be conveyed to Fairfield Canal (preferred) or Farmdale Lateral (alternative)
- ▶ Discharge would be limited to 2,200 gpm for all storm events.

The finish floor elevation of each structure on the site would be at least 2 feet above the existing ground elevation at the location of the structure, pursuant to City requirements for development within Zone A. The proposed project would meet or exceed City requirements for development within Zone A, and the stormwater management system would safely convey runoff from the 100-year storm. Therefore, this impact is ***less than significant***.

Mitigation Measure

No mitigation is required.

IMPACT 4.6-6 Wells Not Properly Decommissioned Could Directly Transport Effluent Irrigation Water to the Groundwater Aquifer. *The irrigation well on the northeastern portion of the proposed project site has a potential for negative impacts to the site if not removed or filled in a proper manner. The well would be decommissioned pursuant to applicable State and City requirements. Therefore, this impact is less than significant.*

If wells are not properly decommissioned, they could act as direct conduits for effluent water to enter the groundwater aquifer. This could cause a significant impact to groundwater quality in the project area. The irrigation well on the site would be decommissioned in conformance with Section 13801 of the California Water Code and City of Merced Standard Designs—Well Destruction. This would reduce the potentially significant impact of improperly decommissioned wells to a less-than-significant-level because California DWR and California Water Code Section 231 standards for wells in California would be met or exceeded. City of Merced Well Destruction standards including grout sealing material and procedures, soil backfill and compaction, and post-decommission inspection would ensure that groundwater contamination and interchange between aquifers would be eliminated. Therefore this impact is **less than significant**.

Mitigation Measure

No mitigation is required.

IMPACT 4.6-7 Potential Exposure to 200-Year Flood Prior to Implementation of SB 5. *The project site is located within an area that will require 200-year flood protection as required by SB5, as described in Section 1.2 “Regulatory Setting” above. The potential exists for exposure of the proposed project to the 200-year flood. Therefore this impact is potentially significant.*

Mitigation Measure 4.6-6: Comply with SB 5 Criteria Establishing 200-Year Urban Flood Protection. Prior to submittal to the City of development agreements, tentative maps or rezones after 2015, but potentially sooner depending on when the Central Valley Flood Protection Plan takes effect, the project applicant would be required to show that one of three conditions would be met:

- ▶ flood management facilities provide level of protection necessary to withstand 200-year flood event;
- ▶ the development agreement or other entitlements include conditions that provide protections necessary to withstand 200-year flood event; or
- ▶ the local flood management agency has made adequate progress on construction of a flood protection system that will result in protections necessary to withstand 200-year flood event by 2025.

Implementation of Mitigation Measure 4.6-6 would reduce the potential for increased risk of flooding from the 200-year storm event to a less-than-significant level because the project applicant would demonstrate to the City that the proposed project would comply with SB 5 criteria protecting the proposed project from the 200-year flood.

4.7 LAND USE

This section describes impacts of the project on land use planning; particularly the relationship between the proposed project and adopted City of Merced (City) planning goals, objectives, and policies intended to reduce environmental impacts of development projects and the compatibility of the proposed project with present and planned surrounding land uses.

4.7.1 ENVIRONMENTAL SETTING

The project site is located near the southeast area of the City. The site is approximately 3 miles southeast of downtown Merced and 2 miles east of State Route (SR) 99. While the site is located within the Merced city limits, unincorporated Merced County borders the site to the east. The City's sphere of influence and its Specific Urban Development Plan (SUDP) continue approximately 0.5 mile east of the site into the unincorporated County.

Land east of the site is primarily agricultural and outside of the Merced city limits (which is located just beyond the east property line). To the north and south of the project site are industrially zoned parcels primarily used for agricultural purposes with a few industrial facilities located north of Childs Road. West of the site is a developing residential area. Farther west and northwest is central Merced, with historic residential areas and downtown commercial areas. The center of the City is bisected by SR 99, which runs in a northwest-southeast course through the City. Industrial areas are located west of central Merced, with suburban-style residential and commercial neighborhoods located north of central Merced. At the far northeast corner of the City's planning area is the recently opened University of California at Merced campus.

The project site is currently designated in the General Plan as Industrial and is zoned Heavy Industrial. The Heavy Industrial, or I-H, zoning district is intended for industrial development, including manufacturing, processing, assembling, research, wholesale, or storage uses. The site contains no structures or improvements, except for an irrigation well. An almond orchard comprises the western one-third of the site, and the eastern two-thirds consist of agricultural fields. Irrigation ditches run along the on-site fields. An easement containing overhead power lines runs north and south through the eastern portion of the site (this easement would not be altered as part of the project).

PLANNED SURROUNDING LAND USES

The Merced City General Plan (City General Plan) designates the site for Industrial uses and the zoning map designates the site as part of a Heavy Industrial District. Merced County General Plan (County General Plan) and City General Plan land use designations are shown in Exhibit 3-5, and City zoning districts are shown in Exhibit 3-6. The parcels adjacent to the project site to the north, west, south, and northeast have a Industrial land use designation. Adjacent to the east is Merced County (County) land designated as Agriculture. Following a similar grid pattern, the parcels to the north, west, south, and northeast are zoned Heavy Industrial, with County property adjacent to the east. The City's sphere of influence borders farther to the east of the adjacent Agriculture parcels, and corresponds with the SUDP area.

Directly west of the project site is zoned Heavy Industrial District, and designated as Industrial. Properties farther west, northwest, and southwest of the said industrial parcels include Low to Medium Density Residential, Neighborhood Commercial, Regional Community Commercial, and Business Park land use designations; and Low Density Residential (R-1-6, R-1-5, R-1-20), Medium Density Residential (R-3-2), Residential Planned Development (RP-D), Restricted Agriculture, and Neighborhood Commercial Residential (C-N) zoning. (Refer to Exhibits 3-5 and 3-6 for land use designations and zoning maps.)

PROPOSED LAND USES

Buildings and Operations

The proposed project includes the construction of a warehouse building with related administrative and support functions, truck maintenance, fueling, fire pump house building, truck gate and aerosol storage, as well as parking areas, all of which would be built on sections of the site west of the existing overhead power lines. As mentioned, the power lines would remain on site, protected by an easement. All buildings would be single story and constructed of pre-engineered steel components with metal panels. Maximum building height would be 40 feet above finish floor.

The largest structure to be built as part of the proposed project would be an approximately 1.1-million-square-foot warehouse and distribution building, which would be centrally located on the site. This building's footprint would consist of a large rectangular main extension with a narrower rectangular extension jutting out to the west at the main extension's northwest corner. Semi-tractor and trailer parking would surround this building to the west, north, east, southeast, and to the south of the smaller extension. The employee parking area would be located adjacent to the south side of the larger extension of the building; this parking area would be connected to Gerard Avenue via a driveway. Security fencing would encircle the entire complex except for the employee entrance, fire pump house and storage tanks, employee parking lot, and the front of the main section of the warehouse and distribution building.

Located at the front area of the main warehouse section is the employee entrance. Near the southeast corner of the main warehouse section would be the 17,000-square-foot truck maintenance building and adjacent fuel island. A fire pump house and two storage tanks are located along the employee parking lot driveway, and west of the entire complex is a long driveway that would be used as the truck entrance. A truck gate and security fencing are located on both sides. The truck gate would include approximately 500 square feet of building space. The security fencing would consist of 6-foot-high chain-link fencing with three strands of barbed wire on top.

Landscaping and Lighting

Site lighting would consist of pole-mounted metal halide lamps located approximately 45 feet above the ground surface. The lighting is designed so that intrusive light does not cross the property boundaries except possibly at roadway intersections. The lighting is designed for an average lighting level of 0.5-foot candles and has not been designed based on a uniformity ratio. To design based on a uniformity ratio would require more lamps than would be provided for the site. Landscaping would be provided for the public road improvements, as required by local ordinance. Onsite landscaping would be minimal, and is not planned to be provided within any of the proposed parking areas. There would be security fencing surrounding the buildings, parking areas, and driveways.

4.7.2 REGULATORY SETTING

Relevant information regarding plans and regulations relevant for the proposed project are summarized below.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

There are no federal plans, policies, regulations, or laws related to land uses that are applicable to the proposed project.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

There are no state plans, policies, regulations, or laws related to land uses that are applicable to the proposed project.

LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

Merced Vision 2015 General Plan

The City General Plan was adopted in 1997. It identifies goals, policies, and programs to guide the direction of growth desired by the community. Policies with relevance to the proposed project and physical environmental impacts related to implementation of the proposed project are contained within the various elements of the City General Plan, and are summarized in the “Environmental Impacts” subsection.

Land use designations for the project site and surrounding quarter-mile radius within the Merced city limits are described below and in Exhibit 3-5.

The project site is designated Industrial in the City General Plan. This designation’s (also known as Industrial [IND]) purpose is to provide land for industrial uses in the City, including combination industrial/office uses, such as proposed in this project. The land use intensity is intended to have an approximate floor area ratio of 0.30 to 0.50 square foot of building space per net acre (approximately 0.17 per gross acre). This designation allows for light industrial uses such as light manufacturing, warehouses, distribution, storage, wholesale, packaging, light fabrication and assembly, bottling, electronic manufacturing, lumber yards, public utility substations, corporation yards, and nurseries. The designation also allows for heavy industrial uses such as heavy manufacturing, food processing, metal fabricating plants, railroad yards, and truck depots.

Land within the Merced city limits within 0.25 mile of the site is designated Industrial. Land 0.25 mile or more to the west is predominately designated Low Density Residential. The purpose of this designation is to provide land for low density single-family residential development served by City services. Other compatible residential uses such as condominiums and zero-lot line single-family residential units are also allowed. The allowed density is 2.0 to 6.0 dwelling units per acre.

Other land use designations along Childs Avenue, just west of the future Campus Parkway include High to Medium Density Residential, Low to Medium Density Residential, and Neighborhood Commercial. The area 0.25 mile west of the project site south of Gerard Avenue is designated Business Park (BP). According to the City General Plan, the purpose of this designation is “To provide areas for a mix of commercial, office, and industrial uses with shared access and parking facilities. Uses could include a wide variety of light manufacturing, warehousing, office, and service business activities. This designation is meant to have an approximate average floor area ratio of 0.40 square foot of building space per net acre (approximately 0.17 square feet per gross acre)” (City of Merced 1997).

Refer to Exhibit 3-5 for City and County General Plan land use designations for the project site and surrounding area.

Specific Plans

The project site is not within an adopted specific plan; no specific plans apply to the project site. A specific plan has not been adopted for the predominately residential-zoned area known as the Weaver Development Agreement Area that extends from 0.25 mile to 0.75 mile west of the project site.

City of Merced Zoning Ordinance

The Merced Zoning Ordinance sets forth the rules and regulations that govern land use and development throughout the City regarding allowable land uses within each zoning district.

The zones that encompass the land covered by the project site and/or other land within the Merced city limits within 0.25 mile of the project site are described below.

The project site is located in the Heavy Industrial (I-H) zone. According to Municipal Code Section 20.36.010, the purpose of this zone is “to encourage sound industrial development by providing and protecting an environment exclusively for such development subject to regulations necessary to insure the protection of nearby residential and commercial uses of land.” Permitted here are most manufacturing, processing, assembling, research, wholesale, and storage uses as well as railroad yards, truck depots, service stations, public utility uses, substations, communication equipment buildings, and signs appurtenant to any of the above uses. Incidental services and accessory uses serving the above uses are also allowed. Conditional uses include other, more nuisance-prone manufacturing uses, salvage and wrecking operations, appropriate public and quasi-public uses, and retail commercial uses such as restaurants and service stations. Several uses are listed as prohibited including the storage of explosives except in cases where this is incidental to a permitted use, as would be the case with any explosive aerosol stored in the proposed project’s aerosol storage facility.

At the southwest corner of Childs Avenue and the future Campus Parkway are parcels zoned Medium Density Residential (R-3-2). According to Municipal Code Section 20.14.010, the purpose of R-3 designation is to “stabilize, protect and encourage the establishment and maintenance of a suitable environment for medium density multifamily dwellings.” There are two R-3 designations: R-3-2, which applies here, and R-3-1.5. The R-3-2 district has larger lot and dwelling unit minimum sizes than the R-3-1.5 district.

In the vicinity of the project site, most of the land west of the future Campus Parkway is in the Low Density Residential (LD) City General Plan designation, which corresponds here to the land in the Low Density (R-1-5) zoning designation. According to Municipal Code Section 20.10.010, the purpose of this zoning district is to “stabilize, protect, and encourage the establishment and maintenance of a suitable environment for single family dwellings.” The R-1-5 zoning district has smaller lot and dwelling unit size minimums and a larger lot coverage maximum than the other three R-1 districts.

The land to the southwest of the future Campus Parkway/Mission Ave intersection is within unincorporated Merced County and is designated Agriculture on the County General Plan. This area is within the City SUDP and, per the City General Plan is designated Business Park Reserve and Industrial Park Reserve. This area is presently shown on the County zoning map as Restricted Agricultural (A-1-20). This district, among other restrictions, has a minimum 20-acre lot area and a minimum 20-acre area per dwelling unit.

Refer to Exhibit 3-6 for zoning designations for the project site and surrounding area.

Merced County General Plan

The County General Plan was adopted in 2000. It identifies goals, policies, and programs representative of the direction of growth and land preservation desired by the community. Policies in the County General Plan are implemented through actions taken by the County’s Planning Commission and Board of Supervisors and other decision making bodies, supported by County staff. Agriculture is the only County General Plan land use designation within a quarter-mile radius of the project site in the unincorporated County. This land use designation is intended to provide land for active agricultural operations in the County. Land to which this designation applies may also include livestock facilities, waste water lagoons, and agricultural commercial facilities. Some nonagricultural uses may also be allowed, including mineral resource extraction and processing, outdoor public and private recreational facilities, and all accessory uses to these uses. Housing is considered an accessory use to the primary activity of a site and may consist of manufactured or conventional single-family dwelling units or group quarters for farm laborers. The designation allows for one dwelling per 20 acres. Agricultural commercial and appropriate nonagricultural structures should generally not exceed 10% lot coverage. Additional dwellings and higher building coverages (up to 99%) can be allowed under a conditional use permit (Merced County 1990).

The County has designated “the Specific Urban Development Plan area or ‘SUDP’, which is a broad General Plan boundary designation intended to accommodate all classification of urban land use.” “All land within the SUDP is

planned for eventual development in a mixture of urban and urban-related uses, as designated on the SUDP diagram for each community. The boundaries of these SUDPs are usually the same as the ‘Sphere of Influence’ of the local community service district. An SUDP has a boundary line which is recognized as the ultimate growth boundary of the community over the life of the County General Plan. Whenever land is added to an SUDP, the decision is made that it will ultimately be converted to an urban use.”

SUDP expansion occurs through consideration of the following factors: the agricultural value of the land involved and the impacts of expansion on adjacent agricultural and open space lands, urban service availability, the amount of vacant available land already within the community and consistency of the expansion with local planning goals outlined through the Community Specific Plan. These concerns were formulated to ensure that community growth occurs in a logical and orderly manner so that urban services are committed to viable developments rather than purely speculative projects.

Refer to Exhibit 3-5 for County General Plan land use designations in the areas of the unincorporated County that abuts the project site.

Merced County Zoning Ordinance

The Merced County Zoning Ordinance sets forth the rules and regulations that govern land use and development throughout unincorporated Merced County, regarding allowable land uses within each zoning district. The land east of the project site in the unincorporated County lies within the A-1 General Agricultural zoning district. According to County Code Section 18.02.010, the purpose of the A-1 General Agricultural zone is to “provide for areas for more intensive farming operations dependent on higher quality soils, water availability and relatively flat topography, and agricultural commercial and/or industrial uses dependent on proximity to urban areas or location in sparsely populated low traffic areas.” Parcels of 40 acres or more are preferred in this zone, but parcels of 20 to 40 acres are considered where the size of the parcel does not affect agricultural productivity. Along with agricultural operations, various commercial, industrial, institutional, and retail uses are allowed by right or permit in this zone as well as single-family and accessory residential, bed and breakfasts, employee labor camps, and agricultural processing plants (Merced County Zoning Ordinance Section 18.02.020).

OTHER REGULATIONS

The City has standards and conditions related to environmental review, general plan amendments, subdivision standards, grading standards, traffic and school mitigation, floodplain management, construction and fire standards, and other areas that are intended to reduce environmental impacts of development projects. Many of these existing regulations are relevant for reducing environmental impacts of the proposed project and are referenced throughout this draft environmental impact report (DEIR) in the environmental topic section where they are relevant.

METHODOLOGY

Land use planning impacts are evaluated in this section by determining if the proposed project is in compliance with goals, policies, and other relevant policy documents. The analysis focuses specifically on policies that, if violated, may contribute to some direct or reasonably foreseeable indirect environmental impact. This section also analyzes the compatibility of the proposed project with surrounding existing and proposed land uses. Incompatible land uses can create significant environmental impacts for both the proposed use and the existing use. Potential land use compatibility issues include those related to noise levels, unsafe traffic conditions, adverse changes to the aesthetic environment, odors, and air quality degradation. Compatibility issues have been analyzed and are identified within this section and in the respective sections of this DEIR. Issues related specifically to development of the proposed project are discussed in more detail in the following sections:

- ▶ Section 4.1, “Agricultural Resources,”
- ▶ Section 4.2, “Air Quality,”
- ▶ Section 4.3, “Biological Resources,”
- ▶ Section 4.8, “Noise,”
- ▶ Section 4.10, “Public Health and Hazards,” and
- ▶ Section 4.11, “Traffic and Transportation.”

4.7.3 ENVIRONMENTAL IMPACTS

THRESHOLDS OF SIGNIFICANCE

Based on Appendix G of the State CEQA Guidelines, a land use impact is considered significant if implementation of the proposed project would do any of the following:

- ▶ physically divide an established community;
- ▶ conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect; and/or
- ▶ conflict with any applicable habitat conservation plan or natural community conservation plan.

IMPACT ANALYSIS

IMPACT 4.7-1 *Effects on Adjacent Land Uses/Division of an Established Community. The project site would be located in a planned buildout area and would not divide an established community. This would be a less-than-significant impact.*

Although the City General Plan designates Kibby Road for extension through the project site, which the applicant proposes to eliminate via a General Plan amendment, no roads or trails currently traverse the site and no residences, retail uses, or institutional uses would be destroyed or altered by site development. The residential dwelling units in the site vicinity would retain their access to each other and to the rest of the Merced community via existing roads throughout project development and operation. The project, while covering a large site, is in an area designated for industrial and manufacturing land use. Thus, development of the project site does not divide an established community.

The project site is located at the fringe of existing urbanized land and is in a planned buildout area for the City of Merced. The area surrounding the project site is used primarily for agricultural purposes. A portion of the land in this area has recently been utilized for industrial purposes, and continued conversion of agriculture land to industrial use would increase the likelihood that additional agricultural properties in the vicinity would be converted to nonagricultural use. The potential for growth-inducing effects resulting from the proposed project is further addressed in Chapter 6, “Cumulative and Growth Inducing Impacts.” However, the proposed project complies with the current Merced General Plan land use designation of “Industrial” and zoning of “Heavy Industrial District,” and is consistent with the City’s *Vision 2015 General Plan* growth projections. Although the project would impact future adjacent land uses, the City has made the determination that this area would be developed with industrial uses to meet growing demand.

As noted in Section 4.11, “Traffic and Transportation”, the proposed project would generate 2,399 daily vehicle trips, many of which would be tractor trailer vehicles. While added traffic would increase vehicle congestion and potentially increase the time required for pedestrians to cross streets, this added traffic is not expected to result in a division of an established community. Therefore, the projects effects on adjacent land uses and its potential to divide an established community would be ***less than significant***.

Mitigation Measure

No mitigation is required.

IMPACT **Effects on State and Local Plans and Policies.** *The proposed project is in compliance with all state and*
4.7-2 *local plans and policies and would result in a less-than-significant impact.*

The proposed project is consistent with the City of Merced's General Plan "Industrial" land use designation and the Heavy Industry (I-H) zoning designations for the site. Land immediately surrounding the site within the Merced city limits is similarly designated. The land immediately to the east, while in County jurisdiction and designated for agricultural uses, is designated Specific Urban Development (or SUDP). The SUDP designation is a broad General Plan boundary designation, intended to accommodate all classification of urban land use. The City SUDP area is substantially smaller than the City's sphere of influence area, which is also considered a future growth boundary and is planned to accommodate future buildout. Therefore, the land immediately east of the project site is ultimately planned for urban use.

The project site has a land use designation of Industrial in the City's *Vision 2015 General Plan*. This designation (also known as Industrial [IND] in the City General Plan) has a purpose of providing land for industrial uses in the City of Merced, including combination industrial/office uses, such as those proposed in the project. This designation allows for light industrial uses such as light manufacturing, warehouses, distribution, storage, wholesale, packaging, etc. The designation also allows for heavy industrial uses such as heavy manufacturing, food processing, metal fabricating plants, railroad yards, and truck depots.

The proposed project complies with the existing land use designations and zoning for the site, and is located within a planned buildout area according to the City and County. Therefore, the project would comply with state and local plans and policies and would have a ***less-than-significant*** impact.

Mitigation Measure

No mitigation is required.

IMPACT **Effects on Habitat Conservation Plans.** *The proposed project site is not located in any habitat*
4.7-3 *conservation plan area and would therefore have a no impact.*

No habitat conservation plans are applicable to the proposed project or project area under jurisdiction of resource protection agencies, such as U.S. Army Corps of Engineers, California Department of Fish and Game, or the Central Valley Regional Water Quality Control Board. There is **no impact**.

Mitigation Measure

No mitigation is required.

4.8 NOISE

4.8.1 INTRODUCTION

This section includes a description of acoustic fundamentals and the existing noise environment, a summary of applicable noise regulations, and an analysis of potential noise impacts of the proposed project. Mitigation measures are recommended, as necessary, to reduce significant noise impacts.

4.8.2 EXISTING SETTING

ACOUSTIC FUNDAMENTALS

Noise is generally defined as sound that is loud, disagreeable, unexpected, or unwanted. Sound, as described in more detail below, is mechanical energy transmitted in the form of a wave by a disturbance or vibration that causes pressure variation in air that the human ear can detect.

SOUND PROPERTIES

A sound wave is introduced into a medium (air) by a vibrating object. The vibrating object (e.g., vocal chords, the string of a guitar or the diaphragm of a radio speaker) is the source of the disturbance that moves through the medium. Regardless of the type of source creating the sound wave, the particles of the medium through which the sound moves are vibrating in a back and forth motion at a given rate (frequency). The frequency of a wave refers to how often the particles vibrate when a wave passes through the medium. The frequency of a wave is measured as the number of complete back-and-forth vibrations of a particle per unit of time. One complete back-and-forth vibration is called a cycle. If a particle of air undergoes 1,000 cycles in 2 seconds, then the frequency of the wave would be 500 cycles per second. The common unit used for frequency is in cycles per second, called Hertz (Hz).

Each particle vibrates as a result of the motion of its nearest neighbor. For example, the first particle of the medium begins vibrating at 500 Hz and sets the second particle of the medium into motion at the same frequency (500 Hz). The second particle begins vibrating at 500 Hz and thus sets the third particle into motion at 500 Hz. The process continues throughout the medium; hence each particle vibrates at the same frequency, which is the frequency of the original source. Subsequently, a guitar string vibrating at 500 Hz will set the air particles in the room vibrating at the same frequency (500 Hz), which carries a sound signal to the ear of a listener that is detected as a 500 Hz sound wave.

The back-and-forth vibration motion of the particles of the medium would not be the only observable phenomenon occurring at a given frequency. Because a sound wave is a pressure wave, a detector could be used to detect oscillations in pressure from high to low and back to high pressure. As the compression (high-pressure) and rarefaction (low-pressure) disturbances move through the medium, they would reach the detector at a given frequency. For example, a compression would reach the detector 500 times per second if the frequency of the wave were 500 Hz. Similarly, a rarefaction would reach the detector 500 times per second if the frequency of the wave were 500 Hz. Thus, the frequency of a sound wave refers not only to the number of back-and-forth vibrations of the particles per unit of time but also to the number of compression or rarefaction disturbances that pass a given point per unit of time. A detector could be used to detect the frequency of these pressure oscillations over a given period of time. The period of the sound wave can be found by measuring the time between successive high-pressure points (corresponding to the compressions) or the time between successive low-pressure points (corresponding to the rarefactions). The frequency is simply the reciprocal of the period; thus an inverse relationship exists so that as frequency increases, the period decreases, and vice versa.

A wave is a phenomenon that transports energy along a medium. The amount of energy carried by a wave is related to the amplitude (loudness) of the wave. A high-energy wave is characterized by large amplitude; a low-energy wave is characterized by small amplitude. The amplitude of a wave refers to the maximum amount of

displacement of a particle from its rest position. The energy transported by a wave is directly proportional to the square of the amplitude of the wave. This means that a doubling of the amplitude of a wave is indicative of a quadrupling of the energy transported by the wave.

SOUND AND THE HUMAN EAR

Because of the ability of the human ear to detect a wide range of sound-pressure fluctuations, sound-pressure levels are expressed in logarithmic units called decibels (dB) to avoid a very large and awkward range in numbers. The sound-pressure level in decibels is calculated by taking the log of the ratio between the actual sound pressure and the reference sound pressure and then multiplied by 20. The reference sound pressure is considered the absolute hearing threshold (Caltrans 1998). Use of this logarithmic scale reveals that the total sound from two individual 65-dB sources is 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB).

Because the human ear is not equally sensitive to all audible frequencies, a frequency-dependent rating scale was devised to relate noise to human sensitivity. An A-weighted dB (dBA) scale performs this compensation by discriminating against frequencies that are more sensitive to humans. The basis for compensation is the faintest sound audible to the average ear at the frequency of maximum sensitivity. This dBA scale has been chosen by most authorities for the purpose of regulating environmental noise. Typical indoor and outdoor noise levels are presented in Exhibit 4.8-1.

With respect to how humans perceive increases in noise levels, a 1 dBA increase is imperceptible, a 3 dBA increase is barely perceptible, a 6 dBA increase is clearly perceptible, and a 10 dBA increase is subjectively perceived as approximately twice as loud (Egan 1988). These perception parameters were developed on the basis of test subjects' reactions to changes in the levels of steady-state pure tones or broad-band noise and to changes in levels of a given noise source. It is probably most applicable to noise levels in the range of 50 to 70 dBA, as this is the usual range of voice and interior noise levels. For these reasons, a noise level increase of 3 dBA or more is typically considered significant and/or substantial in terms of the degradation of the existing noise environment.

SOUND PROPAGATION

As sound (noise) propagates from the source to the receptor, the attenuation, or manner of noise reduction in relation to distance, is dependent on surface characteristics, atmospheric conditions, and the presence of physical barriers. The inverse-square law describes the attenuation caused by the pattern in which sound travels from the source to receptor. Sound travels uniformly outward from a point source in a spherical pattern with an attenuation rate of 6 dBA per doubling of distance (dBA/DD). However, from a line source (e.g., a road), sound travels uniformly outward in a cylindrical pattern with an attenuation rate of 3 dBA/DD. The surface characteristics between the source and the receptor may result in additional sound absorption and/or reflection. Atmospheric conditions such as wind speed, temperature, and humidity may affect noise levels. Furthermore, the presence of a barrier between the source and the receptor may also attenuate noise levels. The actual amount of attenuation is dependent upon the size of the barrier and the frequency of the noise. A noise barrier may be any natural or human-made feature such as a hill, tree, building, wall, or berm (Caltrans 1998).

All buildings provide some exterior-to-interior noise reduction. A building constructed with a wood frame and a stucco or wood sheathing exterior typically provides a minimum exterior-to-interior noise reduction of 25 dBA with its windows closed, whereas a building constructed of a steel or concrete frame, a curtain wall or masonry exterior wall, and fixed plate glass windows of one-quarter-inch thickness typically provides an exterior-to-interior noise reduction of 30–40 dBA with its windows closed (Paul S. Veneklasen & Associates 1973, cited in Caltrans 2002).

EXAMPLES

DECIBELS (dB)*

SUBJECTIVE EVALUATIONS

Near jet engine

Threshold of pain

Rock band

Accelerating motorcycle a few feet away

Noisy urban street/heavy city traffic

Gas lawn mower at 3 feet

Garbage disposal at 3 feet

Vacuum cleaner at 3 feet

Busy restaurant

Near freeway auto traffic

Window air conditioner at 3 feet

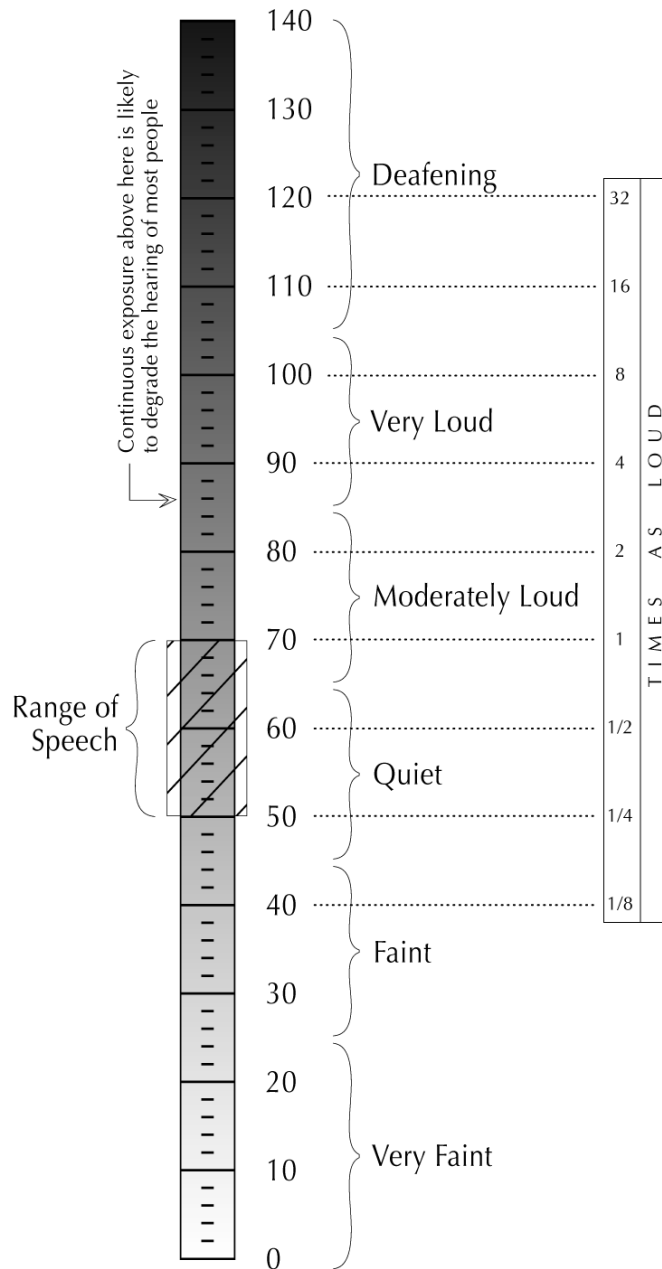
Business office

Soft whisper at 5 feet

Quiet urban nighttime

Quiet rural nighttime

Human breathing



* dB are "average" values as measured on the A-scale of a sound-level meter.

From *Concepts in Architectural Acoustics* (M. David Egan, McGraw Hill, 1988) and *The Noise Guidebook* (U.S. Department of Housing and Urban Development, Office of Community Planning and Development, undated).

Source: Data compiled by EDAW in 2007

Typical Noise Levels

Exhibit 4.8-1

NOISE DESCRIPTORS

The selection of a proper noise descriptor for a specific source is dependent upon the spatial and temporal distribution, duration, and fluctuation of the noise. The noise descriptors most often encountered when dealing with traffic, community, and environmental noise are defined below (Caltrans 1998; Lipscomb and Taylor 1978).

- ▶ $L_{\max}$ (Maximum Noise Level): The maximum instantaneous noise level during a specific period of time. The $L_{\max}$ may also be referred to as the “peak (noise) level.”
- ▶ $L_{\min}$ (Minimum Noise Level): The minimum instantaneous noise level during a specific period of time.
- ▶ L_X (Statistical Descriptor): The noise level exceeded X% of a specific period of time.
- ▶ L_{eq} (Equivalent Noise Level): The energy mean (average) noise level. The instantaneous noise levels during a specific period of time in dBA are converted to relative energy values. From the sum of the relative energy values, an average energy value is calculated, which is then converted back to dBA to determine the L_{eq} . In noise environments determined by major noise events, such as aircraft overflights, the L_{eq} value is heavily, and usually entirely, influenced by the magnitude and number of single events (SENL, see below) that produce the high work levels.
- ▶ L_{dn} (Day-Night Noise Level): The 24-hour L_{eq} with a 10 dBA “penalty” for noise events that occur during the noise-sensitive hours between 10:00 p.m. and 7:00 a.m. In other words, 10 dBA is “added” to single noise events that occur in the nighttime hours, and this generates a higher reported noise level when determining compliance with noise standards. The L_{dn} attempts to account for the fact that noise during this specific period of time is a potential source of disturbance with respect to normal sleeping hours.
- ▶ CNEL (Community Noise Equivalent Level): The CNEL is similar to the L_{dn} described above, but with an additional 5 dBA “penalty” added to single noise events that occur during the noise-sensitive hours between 7:00 p.m. to 10:00 p.m., which are typically reserved for relaxation, conversation, reading, and television. If using the same 24-hour noise data, the reported CNEL is typically approximately 0.5 dBA higher than the L_{dn} .
- ▶ SENL (Single Event [Impulsive] Noise Level): The SENL describes a receiver’s cumulative noise exposure from a single impulsive noise event (e.g., an automobile passing by or an air craft flying overhead), which is defined as an acoustical event of short duration and involves a change in sound pressure above some reference value. SENLs typically represent the noise events used to calculate the L_{eq} , L_{dn} , and CNEL.

NEGATIVE EFFECTS OF NOISE ON HUMANS

Negative effects of noise exposure include physical damage to the human auditory system, interference, and disease. Exposure to noise may result in physical damage to the auditory system, which may lead to gradual or traumatic hearing loss. Gradual hearing loss is caused by sustained exposure to moderately high noise levels over a period of time; traumatic hearing loss is caused by sudden exposure to extremely high noise levels over a short period. Gradual and traumatic hearing loss both may result in permanent hearing damage. In addition, noise may interfere with or interrupt sleep, relaxation, recreation, and communication. Although most interference may be classified as annoying, the inability to hear a warning signal may be considered dangerous. Noise may also be a contributor to diseases associated with stress, such as hypertension, anxiety, and heart disease. The degree to which noise contributes to such diseases depends on the frequency, bandwidth, the level of the noise, and the exposure time (Caltrans 1998).

VIBRATION

Vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure borne noise. Sources of groundborne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, groundborne vibrations may be described by amplitude and frequency.

Vibration amplitudes are usually expressed in peak particle velocity (PPV) or root mean squared (RMS), as in RMS vibration velocity. The PPV and RMS velocity are normally described in inches per second (in/sec). PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is often used in monitoring of blasting vibration because it is related to the stresses that are experienced by buildings (FTA 2006, Caltrans 2002).

Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response. It takes some time for the human body to respond to vibration signals. In a sense, the human body responds to average vibration amplitude. The RMS of a signal is the average of the squared amplitude of the signal, typically calculated over a 1-second period. As with airborne sound, the RMS velocity is often expressed in decibel notation as velocity decibels (VdB), which serves to compress the range of numbers required to describe vibration (FTA 2006). This is based on a reference value of 1 microinch per second ($\mu\text{in/sec}$).

The background vibration-velocity level in residential areas is usually approximately 50 VdB. Groundborne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels (FTA 2006).

Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Construction activities can generate groundborne vibrations, which can pose a risk to nearby structures. Constant or transient vibrations can weaken structures, crack facades, and disturb occupants (FTA 2006).

Construction vibrations can be transient, random, or continuous. Transient construction vibrations are generated by blasting, impact pile driving, and wrecking balls. Continuous vibrations result from vibratory pile drivers, large pumps, horizontal directional drilling, and compressors. Random vibration can result from jackhammers, pavement breakers, and heavy construction equipment. Table 4.8-1 describes the general human response to different levels of groundborne vibration-velocity levels.

Table 4.8-1 Human Response to Different Levels of Groundborne Noise and Vibration	
Vibration-Velocity Level	Human Reaction
65 VdB	Approximate threshold of perception.
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.
Note: VdB = velocity decibels referenced to 1 microinch per second ($\mu\text{in/sec}$) and based on the root mean square (RMS) velocity amplitude. Source: FTA 2006	

4.8.3 EXISTING NOISE ENVIRONMENT

EXISTING SENSITIVE LAND USES

Noise- and vibration-sensitive land uses generally include those uses where exposure to noise would result in adverse effects, as well as uses where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Other noise-sensitive land uses include hospitals, convalescent facilities, parks, schools, hotels, churches, libraries, and other uses where low interior noise levels are essential.

The project site currently consists of undeveloped and fallow farmlands and orchards with no buildings or sensitive receptors on-site. Exhibit 4.8-2 shows the residences located closest to the project site, as well as schools located in the area. The nearest off-site sensitive receptors to the project site include the new housing development located approximately 1,250 feet west of the project site (across vacant land), a farm house located across Gerard Avenue approximately 400 feet from the southwest corner of the project site, a farm house located over 700 feet from the project site's southeast corner, and a farm house located over 800 feet east of the project site (across the Pacific Gas and Electric Company [PG&E] easement and Tower Road). Schools and school grounds are considered to be noise-sensitive receptors while being actively used. The closest schools to the project site are Weaver Elementary School, located at the northeast corner of Coffee Street and Childs Avenue, and Pioneer Elementary School, located at the southwest corner of Coffee Street and Gerard Avenue.

EXISTING NOISE SOURCES

The existing noise environment within the project area is influenced primarily by traffic on local roads, traffic on distant Highway 99, and activities on area farms and residences.

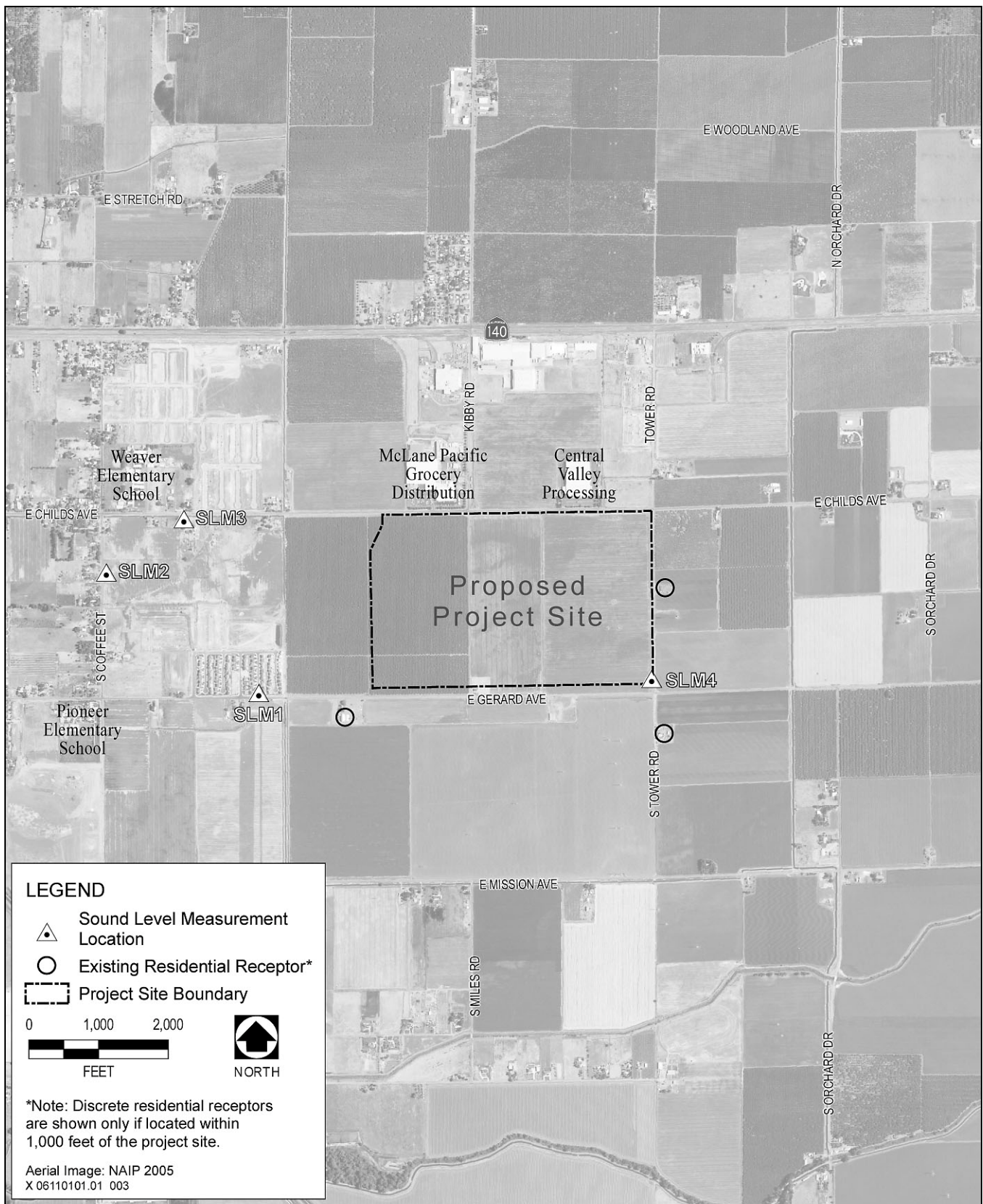
Table 4.8-2 presents existing traffic noise levels on area roadways, which were modeled using the FHWA Traffic Noise Model RD77-108 (FHWA 1988) and traffic data obtained from the traffic analysis prepared for this project (DKS 2008). Additional input data included day/evening/night percentages of autos, medium trucks and heavy trucks, vehicle speeds, and ground attenuation factors. Table 4.8-2 presents the predicted L_{dn} noise levels at 100 feet from the centerline of area roads for existing average daily traffic volumes.

The closest railroad is approximately a half mile to the north and runs east-west along the south side of SR 140. At this distance, train noise is not audible at the project site other than the occasional train horn. This line also has a spur that turns south and extends approximately one third of a mile towards the McLane Pacific Grocery Distribution Center on Childs Road.

EXISTING AMBIENT NOISE SURVEY

An ambient noise survey was conducted by EDAW on Tuesday, November 21, 2006 to document the existing noise environment at various locations within the project area. It should be noted that the nearby schools were still in session and school-related traffic was observed.

Short-term noise level measurements were taken in accordance with the American National Standards Institute (ANSI) acoustic standards at four locations within the project area using a Larson Davis model 824 sound level meter. Exhibit 4.8-2 shows the locations at which ambient noise measurements were collected. The short-term L_{eq} value along with the L_{max} , and L_{min} , for each ambient noise measurement location is presented in Table 4.8-3. Based on the short-term measurements conducted, average daytime noise levels (L_{eq}) within the project area range from 53.8 to 69.4 dBA L_{eq} , depending primarily on prevalence of nearby traffic, while maximum noise levels (L_{max}) range from 71.6 to 84.7 dBA L_{max} .



Source: Adapted by EDAW 2007

Ambient Noise Measurements and Nearby Sensitive Receptors

Exhibit 4.8-2

Table 4.8-2 Summary of Modeled Existing Vehicle Traffic Noise Levels			
Roadway	From	To	L _{dn} (dBA) 100 Feet from Centerline of Roadway
SR 140	SR 99	Parsons Avenue	61.1
SR 140	Parsons Avenue	Santa Fe Avenue	61.1
SR 140	Santa Fe Avenue	Kibby Road	61.5
SR 140	Kibby Road	Tower Road	61.2
Childs Avenue	SR 99	Parsons Avenue	60.5
Childs Avenue	Parsons Avenue	Coffee Street	58.8
Childs Avenue	Coffee Street	Kibby Road	60.5
Childs Avenue	Kibby Road	Tower Road	57.9
Gerard Avenue	Parsons Avenue	Coffee Street	47.2
Gerard Avenue	Coffee Street	Tower Road	52.5
Mission Avenue	SR 99	Coffee Street	52.8
Parson Avenue	Gerard Avenue	Childs Avenue	56.8
Parson Avenue	Childs Avenue	SR 140	59.0
Coffee Street	Mission Avenue	Parsons Avenue	52.3
Coffee Street	Gerard Avenue	Childs Avenue	53.2
Coffee Street	Childs Avenue	Baker Drive	52.3
Kibby Road	Childs Avenue	SR 140	53.9
Baker Drive	SR 140	Coffee Street	52.8
Tower Road	Gerard Avenue	Childs Avenue	42.5
Tower Road	Childs Avenue	SR 140	42.5
Notes: SR = State Route; Traffic noise levels were modeled using the FHWA Traffic Noise Model RD77-108 (FHWA 1988) based on traffic volumes obtained from the traffic report prepared for this project. Calculated noise levels do not consider any shielding or reflection of noise by existing structures or terrain features or noise contribution from other sources. See modeling results in Appendix D for further detail. Source: Modeling performed by EDAW in 2008			

Table 4.8-3 Summary of Monitored Existing Ambient Noise Levels					
Noise Measurement Location	Time of Day on November 21, 2006	Predominant Noise Source(s)	Noise Level (dBA)		
			L _{eq}	L _{max}	L _{min}
1. North side of Gerard Avenue between Coffee Street and proposed project site; 35 feet north of centerline of Gerard Avenue and 15 feet from entrance gate to residential neighborhood.	1:10 pm – 1:26 pm	Traffic on Highway 99 and Gerard Avenue.	53.8	71.6	38.8
2. East side of Coffee Street between Gerard Avenue and Childs Avenue; 70 feet east of centerline of Coffee Street.	1:58 pm – 2:13 pm	Traffic on Coffee Street.	58.8	72.8	40.7
3. South side of Childs Avenue between Coffee Street and Kibby Road; 35 feet south of the centerline of Childs Avenue.	2:47 pm – 3:03 pm	Traffic on Childs Road.	69.4	84.7	44.4
4. Northwest corner of intersection of Gerard Avenue and Tower Road; 57 feet north of centerline of Gerard Avenue and 41 feet west of centerline of Tower Road.	3:51 pm – 4:16 pm	Farm tractor over approximately 1,000 feet to the north-northeast.	55.4	73.3	40.4
Note: Ambient noise level measurement locations are shown in Exhibit 4.8-2. Field measurement forms are provided in Appendix D. Source: Data collected by EDAW on November 21, 2006.					

4.8.4 REGULATORY SETTING

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

No federal plans, policies, regulations, or laws related to noise are applicable to the proposed project. However, the FTA has set forth guidelines for maximum-acceptable vibration criteria for different types of land uses to address the human response to groundborne vibration (FTA 1995):

- ▶ 65 VdB (referenced to 1 μ in/sec and based on the RMS velocity amplitude) for land uses where low ambient vibration is essential for interior operations (e.g., hospitals, high-tech manufacturing, laboratory facilities);
- ▶ 80 VdB for residential uses and buildings where people normally sleep; and
- ▶ 83 VdB for institutional land uses with primarily daytime operations (e.g., schools, churches, clinics, offices).

Standards have also been established to address the potential for groundborne vibration to cause structural damage to buildings. These standards were developed by the Committee of Hearing, Bio Acoustics, and Bio Mechanics (CHABA) at the request of the U.S. Environmental Protection Agency (FTA 2006). For fragile structures, CHABA recommends a maximum limit of 0.25 in/sec PPV (FTA 2006).

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

Title 24 of the California Code of Regulations (CCR) establishes standards governing interior noise levels that apply to all new multi-family residential units in California. These standards require that acoustical studies be performed before construction at building locations where the existing L_{dn} exceeds 60 dBA. Such acoustical studies are required to establish mitigation measures that will limit maximum L_{dn} levels to 45 dBA in any habitable room. Although there are no generally applicable interior noise standards pertinent to all uses, many communities in California have adopted an L_{dn} of 45 as an upper limit on interior noise in all residential units.

In addition, the state has developed land use compatibility guidelines for community noise environments. The State of California General Plan Guidelines (California Governor's Office of Planning and Research 2003), published by the state Governor's Office of Planning and Research, provides guidance for the acceptability of projects within specific L_{dn} contours. Table 4.8-4 presents acceptable and unacceptable community noise exposure limits for various land use categories. Generally, residential uses are considered to be acceptable in areas where exterior noise levels do not exceed 60 dBA L_{dn} . Residential uses are normally unacceptable in

**Table 4.8-4
State Land Use Noise Compatibility Guidelines**

Land Use Category	Community Noise Exposure (L_{dn} or CNEL, dBA)			
	Normally Acceptable ¹	Conditionally Acceptable ²	Normally Unacceptable ³	Clearly Unacceptable ⁴
Residential-Low-Density Single-Family, Duplex, Mobile Home	<60	55–70	70–75	75+
Residential-Multi-Family	<65	60–70	70–75	75+
Transient Lodging-Motel, Hotel	<65	60–70	70–80	80+
Schools, Libraries, Churches, Hospitals, Nursing Homes	<70	60–70	70–80	80+
Auditoriums, Concert Halls, Amphitheaters		<70	65+	
Sports Arena, Outdoor Spectator Sports		<75	70+	
Playgrounds, Neighborhood Parks	<70		67.5–75	72.5+

**Table 4.8-4
State Land Use Noise Compatibility Guidelines**

Land Use Category	Community Noise Exposure (L _{dn} or CNEL, dBA)			
	Normally Acceptable ¹	Conditionally Acceptable ²	Normally Unacceptable ³	Clearly Unacceptable ⁴
Golf Courses, Riding Stables, Water Recreation, Cemeteries	<75		70–80	80+
Office Building, Business Commercial and Professional	<70	67.5–77.5	75+	
Industrial, Manufacturing, Utilities, Agriculture	<75	70–80	75+	
¹ Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements. ² New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice. ³ New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design. Outdoor areas must be shielded. ⁴ New construction or development should generally not be undertaken. Source: State of California Governor's Office of Planning and Research 2003				

areas exceeding 70 dBA L_{dn} and conditionally acceptable within 55 to 70 dBA L_{dn}. Schools are normally acceptable in areas up to 70 dBA CNEL and normally unacceptable in areas exceeding 70 dBA CNEL. Commercial uses are normally acceptable in areas up to 70 dBA CNEL. Between 67.5 and 77.5 dBA CNEL, commercial uses are conditionally acceptable, depending on the noise insulation features and the noise reduction requirements. The guidelines also present adjustment factors that may be used to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution.

With respect to vibration, the California Department of Transportation (Caltrans) recommends a threshold of 0.2 in/sec PPV for the protection of normal residential buildings and 0.08 in/sec PPV for the protection of old or historically significant structures (Caltrans 2002). These standards are more stringent than the federal standard established by CHABA, presented above.

LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

Merced Vision 2015 General Plan (City)

The *Merced Vision 2015 General Plan* (City of Merced 1997) Noise Element contains several policies for controlling and reducing environmental noise, which are applicable only to the areas inside the City of Merced. The following policies and implementing actions are applicable to the proposed project:

► **Policy N-1.2.** Reduce Surface Vehicle Noise.

1.2a: Continue to discourage truck traffic and through traffic in residential areas in Merced.

1.2b: Evaluate the need to prepare and adopt a Noise Ordinance for the City of Merced.

► **Policy N-1.3.** Reduce Equipment Noise Levels.

1.3a: Limit operating hours for noisy construction equipment used in the City of Merced.

1.3b: Review City functions (e.g., constructions, refuse collection, street sweeping, tree trimming) to insure that noise generated by equipment has been reduced to the lowest practicable level.

1.3c: Include maximum noise level permitted for City equipment purchases and construction contracts.

► **Policy N-1.4.** Reduce Noise Levels at the Receiver where Noise Reduction at the Source is Not Possible.

1.4a: Require new residential projects to meet acceptable noise level standards as follows:

- A maximum of 45 dB CNEL for interior noise level for residential projects.
- A maximum of 60 dB CNEL for exterior noise level, especially when outdoor activities are important components of a project.
- A maximum of 65 dB CNEL when all the best available noise-reduction techniques have been exhausted without achieving 60 dB CNEL and the strict application of such a maximum becomes a hindrance to development needed or typical for an area.
- A maximum of 70 dB CNEL for rail noise when 45 dB CNEL is maintained in bedrooms and the accumulation of the total number of noisy events does not exceed 45 dB for more than 30 minutes during night-time hours (11:00 p.m. to 7:00 a.m.) and does not exceed an accumulated 60 minutes during any 24-hour period.

1.4c: Use the “normally acceptable” noise levels as established in the “Noise and Land Use Compatibility Guidelines” (Figure 10.6 [Table 4.8-5 in this document]) for the review of nonresidential land uses.

► **Policy N-1.5.** Coordinate planning efforts so that noise-sensitive land uses are not located near major noise sources.

1.5c: As feasible, require noise barriers and/or increased setbacks between heavy circulation corridors and noise-sensitive land uses (see Figures 10.2a and 10.2b).

1.5d: Require field noise measurements when new development may be impacted by high noise levels.

Table 4.8-5
City of Merced Noise Compatibility Guidelines

Land Use Category	Community Noise Exposure (L _{dn} or CNEL, dBA)			
	Normally Acceptable ¹	Conditionally Acceptable ²	Normally Unacceptable ³	Clearly Unacceptable ⁴
Residential	<60	60–70	70–75	75+
Transient Lodging - Motels, Hotels	<65	60–75	75–80	80+
Schools, Libraries, Churches, Hospitals, Nursing Homes	<60	60–70	70–80	80+
Auditoriums, Concert Halls, Amphitheaters		<70		70+
Sports Arena, Outdoor Spectator Sports		<75		75+
Playgrounds, Neighborhood Parks	<70		70–75	72.5+
Golf Courses, Riding Stables, Water Recreation, Cemeteries	<70		70–80	80+
Office, Business, Commercial, Professional	<65	65–77.5	75+	
Industrial, Manufacturing, Utilities, Agriculture	<70	70–80	75+	

**Table 4.8-5
City of Merced Noise Compatibility Guidelines**

Land Use Category	Community Noise Exposure (L_{dn} or CNEL, dBA)			
	Normally Acceptable ¹	Conditionally Acceptable ²	Normally Unacceptable ³	Clearly Unacceptable ⁴
¹ Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.				
² New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.				
³ New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design. Outdoor areas must be shielded.				
⁴ New construction or development should generally not be undertaken.				
Source: California Governor's Office of Planning and Research 2003				

► **Policy N-1.6.** Mitigate all significant noise impacts as a condition of project approval for sensitive land uses.

1.6a: Consider site design techniques for new construction as the primary means to minimize noise impacts, such as building placement, increased landscape setbacks, orientation of noise-tolerant components (i.e., parking, utility areas, maintenance facilities) between the noise source and the receptor, use of a combination of noise barriers and landscaped berms, etc. (see Figures 10.2a and 10.2b).

1.6b: Encourage developers to consider alternative architectural designs as a means of meeting noise reduction requirements, such as:

- Use noise tolerant rooms (kitchen, garages, bathrooms) to shield other noise sensitive rooms or areas (living rooms, bedrooms).
- Locate bedrooms away from major roadways.
- Use architectural design techniques and materials for building facades that will help shield noise.
- Avoid balconies or operable windows facing major travel routes.

Furthermore, Section 10.3.5 of the noise element stresses the following pertinent considerations, along with the guidelines for land use compatibility shown in Table 4.8-5, should be taken into account when evaluating proposed development:

- A maximum outdoor noise level of 60 L_{dn} in residential areas where outdoor use is a major consideration, and whenever the realm of economic or aesthetic consideration makes it possible; a maximum of 65 L_{dn} in any other case.
- The indoor noise level as required by the State of California Noise Insulation Standards must not exceed 45 L_{dn} in multi-family dwellings. This maximum should also be used for single-family homes.

With regard to implementing action 1.2b under Policy N-1.1, the City has not developed a noise ordinance (Espinosa, pers. comm. 2006). For this reason, noise standards within the City are established by the General Plan.

Merced County General Plan 2000

The *Merced County General Plan 2000* (County General Plan) includes land use compatibility standards for residential land uses, which are shown in Table 4.8-6. These standards apply to unincorporated areas of Merced County, including areas adjacent to the project site that are not inside the City of Merced limits.

Table 4.8-6 Merced County General Plan Land Use Compatibility Noise Levels Shown as dBA, L_{dn} or CNEL		
Noise Source	Exterior Standard	Interior Standard ¹
Traffic on public roadways, railroad line operations, and aircraft in flight	65 dBA L _{dn} /CNEL	45 dBA L _{dn} /CNEL
Other sources	Daytime (7:00 a.m.–10:00 p.m.) Hourly L _{eq} of 55 dBA L _{max} of 75 dBA	Nighttime (10:00 p.m.–7:00 a.m.) Hourly L _{eq} of 45 dBA L _{max} of 65 dBA
¹ Windows and doors closed. Source: Merced County 2000		

The County General Plan also sets forth Goals, Objectives, Policies, and Implementation measures to protect residences and other noise sensitive land uses. The following items are pertinent to the proposed project.

- ▶ **Goal 1:** All citizens of the County free from the harmful effects of excessive noise.
 - **Objective 1.A.:** Residential areas are not significantly impacted by excessive exterior noise
 - **Objective 1.B.:** Interior noise levels for residential dwelling units in residential areas do not exceed 45 dBA.
 - Policy 5: For existing houses in residential areas, the County will provide technical assistance to property owners to achieve an interior noise level which does not exceed 45 dBA.
 - **Objective 1.C.:** Hospitals and Schools are not significantly impacted by excessive exterior noise levels.
 - Policy 8: The County should assist owners of schools and hospitals in reducing excessive noise exposure.

Implementation: During the review of conditional use applications or capital improvement plans, all hospital and school expansions will be reviewed for exposure to noise levels exceeding 70 dBA. Otherwise, when requested by hospital or school authorities, the County will provide technical assistance to help reduce existing noise exposure to hospitals and schools.
 - **Objective 1.D.:** Existing noise conflicts are reduced or eliminated.
 - Policy 9: Existing residential areas that are exposed to an exterior noise level greater than 65 dBA shall be considered “noise impacted.”
 - Policy 10: Existing schools and hospitals exposed to an exterior noise level of greater than 70 dBA shall be considered “noise impacted.”

- Policy 11: The County should evaluate and identify means to reduce noise conflicts for noise sensitive land uses that are “noise impacted.”

Implementation: As noise impacted areas are identified through complaints and during the review of building permits and discretionary applications, the County will work with property owners or responsible agencies to determine appropriate noise reduction measures.

- **Goal 1:** Noise generating land uses and facilities important to the economic health of the County are not adversely affected by incompatible land uses.
- **Objective 2.A.:** The current operation and expansion of existing Commercial and Industrial designated areas are not significantly impaired by the encroachment of new incompatible noise sensitive land uses.
 - Policy 1: New noise sensitive land uses and land use designations should not be approved where existing and projected noise levels from Commercial or Industrial designated areas will result in those noise sensitive uses being “noise impacted.”

Implementation: All noise sensitive land uses, including but not limited to, hospitals, schools and residential dwellings, will be reviewed at the building permit or discretionary review stage to determine noise exposure levels. Discretionary applications generally include general plan amendment and/or zone change applications to redesignate property to accommodate a noise sensitive land use, as well as conditional use applications, location and development applications and administrative permits.

- **Objective 2.B.:** New Commercial and Industrial areas are located to minimize encroachment by incompatible noise sensitive land uses.
 - Policy 2: When establishing new Commercial and Industrial land use designations, the potential for encroachment by residential and other noise sensitive land uses on adjacent lands which could significantly impact the viability of the Commercial or Industrial area shall be considered.

Implementation: Recognition of future land uses will be evaluated during the general plan amendment and zone change application review process.

Merced County Noise Ordinance

The noise standards of the Merced County Code (Code 18.41.070) apply to unincorporated areas of Merced County, including areas adjacent to the project site that are not inside the City of Merced limits: Noise generated by mechanical equipment, buzzers, bells, loud speakers or other noise generating devices shall comply with the noise standards below at any boundary line of the parcel, except fire protection devices, burglar alarms and church bells. The following general plan standards for unacceptable noise levels shall apply:

- If the proposed use is adjacent to property that is zoned for residential use, the maximum noise level shall not exceed 65 dBA L_{dn} or 75 dBA L_{max} at the property line.
- If the proposed use is adjacent to a parcel that is not zoned for residential land use, the maximum noise level at the property line shall not exceed 70 dBA L_{dn} or 80 dBA L_{max} at the property line.
- The maximum noise level for uses receiving noise shall be 65 dBA L_{dn} for uses in Residential Zones and 70 dBA L_{dn} for Institutional, Commercial, Industrial, and Agricultural Zones.

Elevated Noise Level During Construction. During construction, the noise level may be temporarily elevated. To minimize the impact, all construction in or adjacent to urban areas shall follow the following procedures for noise

control: Construction hours shall be limited to the daytime hours between 7 a.m. and 6 p.m., and all construction equipment shall be properly muffled and maintained.

Code Section 10.60.030 – Sound level limitations – provides further:

- A. No person shall cause, suffer, allow, or permit the operation of any sound source on property or any public space or public right-of-way in such a manner as to create a sound level that exceeds the background sound level by at least 10 dBA during daytime hours (7 a.m. to 10 p.m.) and by at least 5 dBA during nighttime hours (10 p.m. to 7 a.m.) when measured at or within the real property line of the receiving property, which shall constitute a noise disturbance, provided, however, that if the background sound level cannot be determined, the absolute sound level limits set forth in Table 4.8-7, Maximum Permissible Sound Levels, provided that if the sound source in question is a pure tone, the limits of Table 4.8-7 shall be reduced by 5 dBA.

Table 4.8-7 Maximum Permissible Noise Levels of Merced County Code	
Residential Property (dBA)	Nonresidential Property (dBA)
65 L _{dn} or 75 L _{max}	70 L _{dn} or 80 L _{max}
Source: Merced County Code 2004	

- B. The following are exempt from the sound level limits of Section 10.60.030(A):

1. Noise from emergency signaling devices;
2. Noise from an exterior burglar alarm of any building provided such burglar alarm shall terminate its operation within five minutes of its activation;
3. Noise from domestic power tools, lawn mowers, and agricultural equipment when operated between seven a.m. and eight p.m. on weekdays and between eight a.m. and eight p.m. on weekends and legal holidays, provided they generate less than 85 dBA at or within any real property line of a residential property;
4. Sound from church bells and chimes when a part of a religious observance or service;
5. Noise from construction activity, provided that all construction in or adjacent to urban areas shall be limited to the daytime hours between 7 a.m. and 6 p.m., and all construction equipment shall be properly muffled and maintained.

- C. When the source being analyzed is a stereo system with low frequency signals as part of its output, the stereo shall not cause a C-weighted level of 10 dB or greater above the C-weighted ambient level at a distance of ten (10) feet from the source, or the complainant's real property line, whichever is greater.

4.8.5 ENVIRONMENTAL IMPACTS

METHOD OF ANALYSIS

To assess potential construction, area, and stationary source noise impacts, sensitive receptors and their relative exposure were identified. Noise levels of specific equipment expected to be used in project construction or operation were determined and resultant noise levels at sensitive receptors were calculated using the Roadway Construction Noise Model (RCNM) (FHWA 2006). RCNM default noise levels for construction equipment and

usage rates were used for a standard list of heavy duty development equipment. Because the City of Merced has no established policies regarding construction noise or hourly L_{eq} standards, those policies and standards established by the County of Merced are applied to sensitive receptors located in both the unincorporated areas of Merced County and in the City of Merced. One reason this approach is considered reasonable is because many of the noise-sensitive receptors located near the project site are in unincorporated areas of the County.

The Federal Highway Association Traffic Noise Model (FHWA 1988) was used to model traffic noise levels along affected roadways, based on the trip distribution estimates obtained from the traffic analysis prepared for this project (DKS 2008). The project's contribution to the baseline traffic noise levels along area roadways was determined by comparing the predicted noise levels at 50 feet from the centerline of the near travel lane with and without project-generated traffic. Predicted traffic noise levels at particular sensitive receptors were calculated assuming a noise reduction of 3.0 dBA/DD from the roadway (i.e., the centerline of the near traffic lane), unless otherwise noted due to intervening "soft" or vegetated ground. Separate thresholds of significance are applied based on whether the noise-sensitive receptor is located within Merced's city limits or in the unincorporated area of Merced County according to the differing noise level standards of the two jurisdictions. All estimated noise levels from traffic noise modeling are expressed in L_{dn} (and not CNEL) because the traffic analysis did not provide complete day/evening/night temporal distribution for background traffic volumes on the area roadways.

The thresholds of significance applied in this analysis primarily address the exterior noise standards established by the City of Merced and Merced County. Unless otherwise stated, an exceedance of interior noise level standards would not occur if exterior noise standards are achieved because of sufficient exterior-to-interior noise reduction of common buildings.

Groundborne vibration impacts were qualitatively assessed based on existing documentation (e.g., vibration levels produced by specific construction equipment) and the distance of sensitive receptors from the given vibration source. Attenuation of groundborne vibration levels at receptors were calculated according to formulas and methodologies established by the Federal Transit Administration (FTA) (2006).

THRESHOLDS OF SIGNIFICANCE

Based on Appendix G of the State CEQA Guidelines, a noise impact is considered significant if implementation of the proposed project would do any of the following:

- ▶ result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- **Short-Term Construction Noise Impacts.** Short-term construction noise impacts would be significant if construction-generated noise levels would exceed the Land Use Compatibility Noise Levels from the County General Plan (Table 4.8-6) or result in a noticeable increase (i.e., 3 dBA or greater, according to Caltrans 1998) in ambient noise levels at nearby noise-sensitive land uses during the more noise-sensitive early morning, evening and nighttime periods of the day (i.e., outside the hours considered exempt by the Merced County Noise Ordinance [i.e., 7 a.m. to 6 p.m., daily]). While the City of Merced has a policy to limit the operating hours for noisy construction equipment (*Merced Vision 2015 General Plan* Noise Element Policy N-1.3a), the policy does not designate specific hours during which construction activity is prohibited. Therefore, the City of Merced has elected to, for the purposes of this EIR only, use the time-of-day exemption established by the Merced County Noise Ordinance for construction noise. (Note: The ordinances of most cities and counties exempt construction-generated noise during daytime hours.)
- ▶ expose persons to or generation of noise levels in excess of standards establish in the local general plan or noise ordinance, or applicable standards of other agencies;

- ▶ result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- ▶ expose people residing or working in the project area to excessive noise levels; or
- **Traffic Noise Impacts.** For the analysis of long-term traffic noise, separate thresholds of significance were applied based on whether the nearest affected noise-sensitive receptor is located in the City of Merced or in the unincorporated area of Merced County.
 - At noise-sensitive receptors located in the City of Merced, long-term traffic noise impacts would be significant if traffic generated by operation of the proposed project would cause the overall exterior noise level to exceed the “normally acceptable” standard for land use compatibility established by the City of Merced’s general plan (Table 4.8-5) (e.g., 60 dBA L_{dn} /CNEL for residential land uses).
 - At noise-sensitive receptors located in unincorporated areas of Merced County, long-term traffic noise impacts would be significant if traffic noise generated by implementation of the proposed project would cause the exterior noise level at a residential land uses to exceed the Land Use Compatibility Noise Levels from the County General Plan for traffic on public roadways (Table 4.8-6) (i.e., 65 dBA L_{dn} /CNEL).
 - For all affected residential land uses, regardless of location, long-term traffic noise impacts would be significant if, without mitigation, traffic noise generated by implementation of the proposed project would resulting a noticeable increase in exterior noise levels (i.e., 3 dBA or greater, according to Caltrans 1998), or if traffic noise generated by implementation of the proposed project would exceed 45 dBA L_{dn} /CNEL in any habitable rooms (under 24 CCR 10.3.5 of the *Merced Vision 2015 General Plan* Noise Element, and the County General Plan Land Use Compatibility Noise Levels for traffic on public roadways [Table 4.8-6]).
 - For all affected interior rooms of residential structures, regardless of location, SENLs generated by truck pass-bys generated by the project would be significant if they are higher than 64.8 dBA SENL, which is the level determined by the Federal Interagency Committee on Aviation Noise (FICAN) to result in sleep disturbance to 5% of the exposed population (FICAN 1997).
- **Stationary- and Area-Source Noise Impacts.** Long-term stationary source noise impacts would be significant if stationary and area noise sources associated with operation of the proposed project would result in noise levels that exceed the County General Plan Land Use Compatibility Noise Levels for nontransportation noise sources (Table 4.8-6) at residential land uses. As shown in Table 4.8-6, the noise control standards limit exterior noise levels at residential land uses to 55 dBA hourly- L_{eq} and 75 dBA L_{max} during the daytime hours (7 a.m. to 10 p.m.) and 45 dBA hourly- L_{eq} and 65 dBA L_{max} during the nighttime hours (10 p.m. to 7 a.m.). As shown in Table 4.8-7, the maximum permissible exterior noise levels at residential properties is 65 dBA L_{dn} or 75 dBA L_{max} . It shall be noted that projects that comply with these General Plan standards would also comply with the Maximum Permissible Noise Levels of 65 L_{dn} and 75 L_{max} established by the Merced County Noise Ordinance for residential land uses (Table 4.8-7). Because the *Merced Vision 2015 General Plan* Noise Element does not contain specific standards for stationary and area noise sources, the City has elected to, for the purposes of this EIR only, also use these standards to evaluate the impact significance at residential land uses located in the City of Merced as well as in unincorporated areas of the County of Merced.
- **Land Use Compatibility with On-site Noise Levels.** Development of the proposed land uses would have a significant impact if predicted on-site ambient noise levels under existing or future cumulative conditions would exceed the “normally acceptable” land use compatibility standard established by the City of Merced Noise Compatibility Guidelines (Table 4.8-5) and pursuant to Policy N-1.4c of the

Merced Vision 2015 General Plan Noise Element. As a light industrial land use the “normally acceptable” noise standard would be 75 dBA for the proposed Wal-Mart distribution facility.

- ▶ expose persons to or generation of excessive groundborne vibration or groundborne noise levels.
- **Exposure of Sensitive Receptors or Generation of Excessive Vibration Levels.** Short- and long-term vibration impacts would be significant if construction or operation of the proposed project would result in the exposure of sensitive receptors to or generate vibration levels that exceed Caltrans’s recommended standard of 0.2 in/sec PPV with respect to the prevention of structural damage for normal buildings (Caltrans 2002) or the FTA’s maximum acceptable vibration standard of 80 VdB with respect to human response for residential uses (i.e., annoyance) (FTA 2006) at any nearby existing sensitive land uses.

IMPACT ANALYSIS

IMPACT 4.8-1 *Short-Term Construction Noise. Short-term construction-generated noise levels could exceed local exterior noise standards for non-transportation noise sources (Table 4.8-6) or result in a noticeable increase in ambient noise levels (i.e., 3 dBA CNEL) at existing nearby off-site sensitive land uses. This would be a significant impact.*

Construction activities at the project site would include site preparation (e.g., excavation, grading, and clearing), trenching, pouring of concrete foundations, paving, frame erection, equipment installation, finishing, cleanup, and other miscellaneous activities. No pile driving or rock blasting would occur as part of project construction.

The on-site equipment required is not known at this time but, based on similar projects, would be anticipated to include excavators, graders, scrapers, loaders, backhoes, haul trucks, and cranes. Equipment noise levels were calculated with the RCNM using default program noise and usage data. The noise levels of primary concern are typically associated with the site preparation phase because of the on-site equipment associated with clearing, grading, and excavation. Depending on the operations conducted, individual equipment noise levels can range from 80 to 85 dBA at 50 feet, as indicated in Table 4.8-8. The simultaneous operation of the on-site heavy-duty equipment associated with the project, as identified above, could result in combined intermittent noise levels of approximately 87 dBA at 50 feet from the project site. This value assumes default equipment distribution and usage from RCNM . Based on the output from RCNM, exterior noise levels at sensitive receptors located within approximately 2,150 feet of the project site could exceed the County’s daytime hourly L_{eq} standard of 55 dBA (Table 4.8-6) without feasible noise controls. Residential subdivisions are located within this distance to the west and north of the site, as are farm houses located to the east and south of the site, as shown in Exhibit 4.8-2. This 55 dBA construction noise contour would not extend as far as Pioneer Elementary School and Weaver Elementary School, which are over 3,800 feet and 3,200 from the respective closest portions of the project site, respectively. Noise levels at the four closest sensitive receptors were modeled by RCNM as presented in Table 4.8-9. The levels do not include any shielding or intervening attenuation and thus would represent the most conservative estimates of noise levels at the receptors.

**Table 4.8-8
Typical Construction Equipment Noise Levels**

Type of Equipment	Noise Level in dBA at 50 feet	
	Without Feasible Noise Control	With Feasible Noise Control ¹
Dozer or Tractor	85	75
Excavator	85	80
Compactor	80	75
Front-end Loader	80	75

Table 4.8-8 Typical Construction Equipment Noise Levels		
Type of Equipment	Noise Level in dBA at 50 feet	
	Without Feasible Noise Control	With Feasible Noise Control ¹
Backhoe	80	75
Grader	85	75
Crane	85	75
Generator	82	75
Truck	84	75

¹ Feasible noise control includes the use of intake mufflers, exhaust mufflers, and engine shrouds in accordance with manufacturer's specifications.

Sources: U.S. Environmental Protection Agency 1971, FTA 2006, FHWA 2006

Table 4.8-9 Construction Noise Levels at Nearby Sensitive Receptors		
Sensitive Receptor(s)	Distance from Project Site (feet)	Resulting Noise Level (dBA L _{eq}) ¹
Baseline Construction Noise Level	50	87.1
Crossing and River Oaks/Sandcastle Residential Development	1,250	59.2
Farm house 400 feet from southwest corner of project site (and on south side of Gerard Avenue)	400	69.1
Farm house 700 feet from southeast corner of project site (and on south side of Gerard Avenue and east side of Tower Road)	700	64.2
Farm house 800 feet east of project site (and on the east side of Tower Road)	800	63.1
Pioneer Elementary School	3,800	49.5
Weaver Elementary School	3,200	51.0
Daytime hourly L _{eq} standard of Merced County (Table 4.8-6)	—	55

¹ Noise levels do not include attenuation from intervening topography or structures.

Source: Modeling performed by EDAW in 2008 using Roadway Construction Noise Model (FHWA 2006)

Noise from construction activities between the hours of 7 a.m. to 6 p.m. is exempt from local standards by the City of Merced, which is consistent with the hours exempt by the Merced County Noise Ordinance (Espinosa, pers. comm., 2007). Though construction activity would likely only occur during the daytime, the exact hours are not stated in the project description. If construction operations were to occur during the noise-sensitive hours outside of these hours, the applicable noise standards could be exceeded at residential land uses near the proposed project. Thus, if construction activities are not limited to the hours exempt by the Merced County Noise Ordinance, the temporary construction noise generated by on-site equipment could expose off-site sensitive receptors to, or generate noise levels in excess of, the applicable noise standards and/or result in a noticeable increase in ambient noise levels at noise-sensitive receptors. This would be a **significant** impact.

Mitigation Measure 4.8-1: Regulate Construction before Approval of Implementation Plans. Prior to approval of Implementation Plans and subsequent projects, the City shall require the applicant to regulate construction as follows:

- ▶ Construction shall occur only in the daytime hours between 7 a.m. to 6 p.m., daily.
- ▶ Construction staging areas shall be set back from nearby off-site sensitive receptors, as much as possible, including the new Crossing at River Oaks/Sandcastle housing development located west of the site, the existing farmhouse located across Gerard Avenue near the southwest corner of the site, and the existing farmhouse located east of the site across Tower Road.
- ▶ Construction equipment mufflers shall be well tuned and maintained according to the manufacturer's specifications, and the equipment's standard noise reduction devices shall be maintained in good working order.
- ▶ Construction equipment noise shall be minimized during project construction by muffling and shielding intakes and exhaust on construction equipment (according to the manufacturers' specifications) and by shrouding or shielding impact tools. All equipment shall have sound-control devices no less effective than those provided by the manufacturer.
- ▶ To further address the nuisance impact of project construction, construction contractors shall implement the following:
 - Signs shall be posted at the construction site that include permitted construction days and hours, a day and evening contact number for the job site, and a day and evening contact number for the City in the event of problems.
 - An on-site complaint and enforcement manager shall be posted to respond to and track complaints and questions related to noise.
- ▶ The transportation management plan that is required by Mitigation Measure 4.11-2a and 2b in Section 4.11, "Traffic and Transportation," shall route construction-related traffic away from Weaver Elementary School, Pioneer Elementary School, and residences in the area.

Combined with the transportation management plan included as a mitigation measure in Section 4.11, this mitigation measure would ensure that construction operations would be consistent with the daytime exemption provided by Merced County Noise Ordinance and that construction would not result in a noticeable increase in ambient noise levels at noise-sensitive receptors during the more noise-sensitive hours of the day, thereby reducing potential impacts to a ***less-than-significant*** level.

IMPACT 4.8-2	Stationary- and Area-Source Noise. <i>Noise levels generated by stationary- and area-noise sources on the project site would not exceed local land use compatibility noise level standards at existing nearby noise-sensitive land uses. This would be a less-than-significant impact of the proposed project.</i>

Multiple sound level measurements were collected at an existing Wal-Mart distribution facility in Apple Valley to identify stationary and area noise sources typical of distribution center operations and identify their respective sound levels. The Apple Valley facility has the same design, size, and operating parameters of the proposed project, and was therefore considered representative of the types and magnitude of sound generation that would occur with the project. The short-term noise level measurements were collected in accordance with ANSI acoustic standards at multiple locations of the Apple Valley facility using a Larson Davis model 824 sound level meter on August 7 and 8, 2006. Table 4.8-10 lists the various noise sources identified on the site and their measured noise levels.

**Table 4.8-10
Summary of Stationary and Area Noise Sources**

Activity/Noise Source	L _{max} (dBA) at 50 feet ¹	Closest Distance to Off-Site Receptor (feet)	L _{max} (dBA) at nearest sensitive receptor ²
Voices of workers or truck drivers	57.2–59.2	575 (truck entrance)	36.0—38.0
Idling semi-truck	63.9–64.6	575 (truck entrance)	42.7—43.4
Truck with trailer passing at approx. 5 mph	64.6	575 (truck entrance)	43.4
Truck with trailer passing at approx. 10 mph	66.4–68.4	575 (truck entrance)	45.2—47.2
Yard truck revving engine, pulling away from stop	73.1	700 (trailer yard)	50.2
Compression brakes of truck in fuel shed	78.2	575 (truck entrance)	57.0
Yard truck coupling with trailer in trailer yard	79.5	700 (trailer yard)	56.6
Truck revving engine, pulling away from stop	69.0–80.4	575 (truck entrance)	47.8—59.2
Acceleration of truck without trailer in trailer yard passing at approx. 10 mph	84.6	700 (trailer yard)	61.7
Truck compression brakes	74.4–86.1	575 (truck entrance)	53.2—64.9
Back-up alarm and engine acceleration of yard truck in trailer yard	76.3–86.2	700 (trailer yard)	53.4—63.2
Air horn of yard truck in trailer yard	86.8–88.0	700 (trailer yard)	63.9—65.1
Notes: ¹ The durations of all measurements were less than 10 seconds. Because sound level measurements were collected at varying distances from the measured noise source, all measurements have been normalized to a distance of 50 feet. A range of sound levels is shown when the sound level of a particular activity type was measured more than once. ² The nearest off-site noise sensitive receptor to on-site noise activity would be the farm house on the south side of Gerard Avenue. The attenuated sound level measurements do not account for additional attenuation associated with the “soft” acoustical environmental provided by the vegetated ground surface between the project site and this receptor. Refer to Appendix D for detailed measurement distances and attenuation calculations. Sources: Measurement data collected by EDAW on August 7 and 8, 2006.			

The closest off-site noise-sensitive receptor to these on-site noise sources would be the farm house on the south side of Gerard Avenue. The southwest corner of the project site would be approximately 400 feet from the location of this existing farm house. More pertinently, the truck entrance off of Gerard Avenue would be the closest location to the house where on-site noise-generating activity would occur and this location would be a distance of 575 feet from the farm house.

The loudest noise generated at the truck entrance would be the sound of truck compression brakes while trucks pull in and out of the entrance. The sound level of truck compression brakes was measured as loud as 86.1 dBA L_{max} at a distance of 50 feet. At a distance of 575 feet this sound level would attenuate to 64.9 dBA L_{max} at the farm house through distance alone. Some additional attenuation would be provided by the vegetated ground cover between the source and receptor. Thus, the resultant noise level at the farm house would be less than the nighttime standard of 65 dBA L_{max} established by County General Plan (Table 4.8-6).

The two loudest noise sources observed were the horn and back-up alarm of yard trucks, measured at 88.0 dBA L_{max} and 86.2 dBA L_{max}, respectively, from a distance of 50 feet. Yard trucks are used to pull trailers between the trailer yard and the loading docks, which are shown in Exhibit 3-3. Drivers of the yard truck occasionally honk the truck horns to caution others when driving around a blind corner. Back-up alarms automatically deploy when the trucks operate in reverse gear. Yard truck activity would generally occur in the trailer yard, which would be

more than 700 feet from the existing farm house south of Gerard Avenue. At this distance, the noise of a yard truck horn and back-up alarm would attenuate to 65.1 dBA L_{max} and 63.2 dBA L_{max} , respectively, through distance alone. Some additional attenuation would occur because much of the ground surface is vegetated and therefore is indicative of a “soft” acoustic environment. Thus, at this distance, neither noise source would exceed the nighttime standard of 65 dBA L_{max} established by County General Plan (Table 4.8-6).

All other noise sources observed at the Apple Valley site, and shown in Table 4.8-10 have lower sound levels than the three sources discussed above and, therefore, also would not exceed the nighttime L_{max} standard.

The only on-site noise source that could potentially occur for an extended period of time would be the idling of trucks at the truck gate. State law prohibits individual trucks from idling for more than 5 minutes continuously (13 CCR Section 2485). Even if high-turnover at the gate resulted in up to four trucks idling at any one point in time during an entire 1-hour period, the cumulative sound level of truck idling would be 70.6 dBA L_{eq} at a distance of 50 feet. This noise level would attenuate to the County’s more-stringent nighttime 45 dBA L_{eq} standard at a distance of 1,000 feet. Thus, the standard could be exceeded at any locations located within 1,000 feet of the truck gate or other areas where idling by multiple trucks could occur for an extended period. Because no off-site residences, including the farm house across Gerard Avenue, are located within 1,000 feet of the truck gate, which is approximately 900 feet north of Gerard Avenue, noise generated by constant truck idling would not result in an exceedance of the nighttime standard of 45 dBA L_{eq} established by County General Plan (Table 4.8-6). Furthermore, while extensive truck idling could potentially occur at the on-site truck waiting area(s) required by Mitigation Measure 4.11-2 in the traffic analysis, this mitigation measure also stipulates that the truck waiting area(s) shall be located at least 1,000 feet from the nearest off-site residence. If an on-site waiting area is located within 1,000 feet of an off-site residence, then the sound barrier(s) required by Mitigation Measure 4.8-3 to reduce traffic noise would provide the added benefit of ensuring that on-site truck idling would not result in an exceedance of the nighttime standard of 45 dBA L_{eq} established by the County General Plan (Table 4.8-6).

The loading and unloading of pallets and goods onto truck trailers and the opening and closing of trailer doors were not observed to be a substantial exterior noise source during the noise measurement survey on August 7 and 8 at the existing Wal-mart distribution center in Apple Valley. Furthermore, all loading and unloading of truck trailers would occur at the loading docks along the north sides of the warehouse building, which is more than 3,000 feet from the nearest off-site noise-sensitive receptor. Even if such activity produced a noise level equivalent to that of the air horn of yard truck, which is the loudest noise level observed at the Apple Valley facility at 88 dBA, this noise level would attenuate to 52.5 dBA across a distance of 3,000 feet, not including additional attenuation provided by the building itself. In summary, stationary and area noise generated by the project would not exceed local L_{max} and L_{eq} standards. As a result, this impact would be ***less than significant***.

Mitigation Measure

No mitigation is required.

IMPACT 4.8-3	<i>Long-Term Operational Traffic Noise. Implementation of the proposed project would result in increases in traffic noise levels greater than 3 dBA and cause traffic noise levels to exceed the City’s 60 dBA L_{dn} exterior noise standard at sensitive receptors within the city limits. This would be a significant impact.</i>

The increase in daily traffic volumes resulting from implementation of the proposed project would generate increased noise levels along nearby roadway segments. The FHWA Traffic Noise Model RD77-108 (FHWA 1988) was used to predict traffic noise levels along affected roadways for baseline traffic conditions, with and without implementation of the proposed project, based on the trip distribution estimates obtained from the traffic analysis prepared for this project (DKS 2008). The proportion of truck trips to passenger-car-vehicle trips generated by the project was also accounted for, as well as the time of day (i.e., day, evening, or night) when those trips would occur, according to the employee shift change times and truck counts collected at Wal-Mart’s

existing distribution center in Apple Valley. Baseline traffic conditions include existing traffic levels as well as traffic that would be generated by all approved, projects planned for the future in the project area, as listed in Exhibit 4.11-1 of Section 4.11, “Traffic and Transportation.” The project’s contribution to the 2010 baseline traffic noise levels along area roadways was determined by comparing the predicted noise levels with and without project-generated traffic under 2010 baseline conditions. The traffic volumes used to estimate the traffic noise levels assume that proposed Phase I of the Campus Parkway from the State Route (SR) 99/Mission interchange to Childs Avenue and farther north would be completed before the construction of the distribution center, but Campus Parkway north of Childs would be completed sometime after the buildout of the distribution center but before the year 2030.

Table 4.8-11 displays the L_{dn} at a distance 100 feet from the centerline of each modeled road segment for the 2010 and 2030 baseline years with and without traffic generated by the proposed project. Note that most of the noise levels presented in Table 4.8-11 would be lower at the nearest sensitive receptors if they are located further than 100 feet from the modeled road segments. Table 4.8-11 also shows the net increase in roadside noise levels as compared to both baseline conditions (i.e., 2010 and 2030 no project). The roadway noise levels presented in the table represent worst-case potential traffic noise exposures, which assume no natural or artificial shielding between the roadway and a noise receptor located 100 feet from the roadway centerline. Sound barriers may already be planned to protect some of the future planned receptors. For instance, at the time sound level measurements were collected, a sound wall was being constructed along the north side of Gerard Avenue east of Coffee Street, which would provide some protection for receptors in the new housing development under construction there. The increases in traffic sound levels along many of the roadway segments are particularly large because the trips generated by the project include a disproportionately high number of truck trips and disproportionately high number of trips during the more-sensitive nighttime hours (10:00 p.m.–7:00 a.m.).

As shown by Table 4.8-11, project-generated traffic would result in a noticeable increase in traffic noise levels (i.e., greater than 3 dBA) on six of the modeled roadway segments (i.e., Gerard Avenue between Campus Parkway and project site entrances, Gerard Avenue between the project site entrances and Tower Road, Mission Avenue between SR 99 and Coffee Street, Campus Parkway between Coffee Street and Gerard Avenue, Tower Road between Gerard Avenue and Childs Avenue, Tower Road between Childs Avenue and SR140). This traffic noise analysis examines exposure of sensitive receptors located within the unincorporated areas of Merced County separately from residences located in the City of Merced because different standards of significance apply in these two jurisdictions.

Sensitive Receptors in Unincorporated Merced County

The traffic noise level 100 feet from the segment of Tower Road between Gerard Avenue and Childs Avenue would increase from 45.5 to 57.2 dBA L_{dn} under baseline 2010 conditions (modeling provided in Appendix D). At the farm house located approximately 94 feet from the road, in an unincorporated area of the County, the noise level would increase to 57.6 dBA L_{dn} , which is less than the County’s applicable threshold of 65 dBA L_{dn} . Similarly, the traffic noise level 100 feet from the segment of Tower Road between Childs Avenue and SR 140 would increase from 45.5 to 53.6 dBA L_{dn} . At the house located approximately 75 feet from this road segment, also in an unincorporated area of the County, the traffic noise level would increase to 55.5 dBA L_{dn} . While the resultant noise levels at the houses located along both road segments would be less than the County’s land use compatibility threshold of 65 dBA L_{dn} , the L_{dn} increase at both sensitive receptors would be noticeable (i.e., greater than 3 dBA). Furthermore, because the size of the noise level increase along both Tower Road between Gerard Avenue and Childs Avenue would be greater than 10 dBA, it would be perceived as a doubling of the sound level (Egan 1988).

It is noted, however, that the traffic noise level increases along these two segments of Tower Road would be less upon completion of the segment of Campus Parkway north of Childs Avenue and past SR 140, which is anticipated to occur sometime after the full buildout of the proposed project and before the year 2030. This is because trucks would no longer use Tower Road to access the site from SR 140, according to the traffic analysis

prepared for this project (DKS 2008). As shown in the Baseline “2030 + Project” column of Table 4.8-11, the traffic noise level along Tower Road between Gerard Avenue and Childs Avenue would be 53.2 dBA L_{dn} , which is a 7.7 dBA increase compared to Baseline 2030 conditions, and the traffic noise level along Tower Road between Childs Avenue and SR 140 would be 52.9 dBA L_{dn} , which is a 7.4 dBA increase compared to Baseline 2030 conditions. These increases are due to the fact that the project would continue to generate some employee-based trips on Tower Road. Because the noise level increases would be noticeable (i.e., greater than 3 dBA) at both residences along Tower Road, during both the near-term and long-term baseline conditions, they would be considered a **significant impact**.

Sensitive Receptors within Merced City Limits

The traffic noise level along the segment of Gerard Avenue between Campus Parkway and the project site entrances would increase from 56.5 to 66.9 dBA L_{dn} at a distance of 100 feet from the road under baseline 2010 conditions, as shown in Table 4.8-11. This segment passes by one off-site sensitive receptor, a farm house located approximately 95 feet south of the road and within the city limits. At this distance the resultant noise level would be approximately 67.3 dBA L_{dn} , which exceeds the City’s “normally acceptable” standard of 60 dBA L_{dn} for residential land uses. Assuming a typical exterior-to-interior noise reduction of 25 dBA, the interior noise level at this residence would be 42.3 dBA L_{dn} , which is less than the interior noise level standard of 45 dBA L_{dn} . Nonetheless, the 10.5 dBA increase in the exterior L_{dn} /CNEL noise level would be perceived as a doubling of sound (i.e., greater than 10 dBA). As a result, the traffic noise level increase at this farmhouse would be considered a **significant impact**.

The traffic noise level would increase by 10.4 dBA along the segment of Gerard Avenue between the project site entrances and Tower Road, by 4.6 dBA along the segment of Campus Parkway between Coffee Street and Gerard Avenue, and by 3.7 dBA along the segment of Mission Avenue between SR 140 and Coffee Street; however, there are no existing or planned noise-sensitive receptors located along these road segments.

Mitigation Measure 4.8-3: Implement Measures to Reduce Exposure to Traffic Noise from Project. The project applicant shall implement the following measures to reduce the exposure of existing sensitive receptors to project-generated traffic noise levels:

- ▶ The applicant shall offer the owners of the two affected residences on the east side of Tower Road between SR 140 and Gerard Avenue and the single residence located on the south side of Gerard Avenue between Campus Parkway and the project site entrances the installation of a sound barrier along the property line of their affected residential properties. The sound barriers must be constructed of solid material (e.g., wood, brick, adobe, an earthen berm, or combination thereof). All barriers shall blend into the overall landscape and have an aesthetically pleasing appearance that agrees with the color and rural character of the houses and the general area, and not become the dominant visual element of the community. Relocation of the driveway at each residence may be necessary in order to preclude having gaps in the sound barrier. Relocation of landscaping may also be necessary to achieve an aesthetically pleasing appearance. The owners of the affected properties may choose to refuse this offer; however, the offer shall be made available to subsequent owners of the property. If an existing owner refuses these measures a deed notice must be included with any future sale of the property to comply with California state real estate law, which requires that sellers of real property disclose “any fact materially affecting the value and desirability of the property” (California Civil Code, Section 1102.1[a]) and shall indicate that the applicant agrees to install a sound barrier, as described above.. The applicant shall be responsible for all costs incurred by the implementation of this mitigation measure.
- ▶ To ensure compliance with applicable noise standards, a site-specific noise study shall be conducted by the City or its approved consultant to determine specific noise barrier design. The applicant shall be responsible for all costs incurred by the implementation of this mitigation measure.

**Table 4.8-11
Summary of Modeled Traffic Noise Levels Along Area Roads**

#	Roadway	From	To	L _{dn} (dBA) 100 ft from Centerline of Near Travel Lane ¹					
				2010 No Project	2010 + Project	Increase	2030 No Project	2030 + Project	Increase
1	SR 140	SR 99	Parsons Avenue	63.2	63.5	0.3	63.6	63.9	0.3
2	SR 140	Parsons Avenue	Santa Fe Avenue	62.3	62.6	0.3	64.7	64.9	0.3
3	SR 140 ²	Santa Fe Avenue	Kibby Road	64.9	65.1	0.2	65.1	65.2	0.1
4	SR 140	Kibby Road	Tower Road	62.6	63.1	0.6	64.4	64.6	0.2
5	Childs Avenue	SR 99	Parsons Avenue	63.1	63.2	0.1	64.1	64.2	0.1
6	Childs Avenue	Parsons Avenue	Coffee Street	62.3	62.5	0.2	62.3	62.5	0.2
7	Childs Avenue	Coffee Street	Campus Parkway ³	63.6	63.7	0.1	61.6	61.8	0.2
8	Childs Avenue	Campus Parkway ³	Kibby Road	61.9	61.9	0.0	62.8	62.8	0.0
10	Childs Avenue	Kibby Road	Tower Road	60.0	60.0	0.0	62.7	62.7	0.0
11	Gerard Avenue	Parsons Avenue	Coffee Street	54.2	54.2	0.0	54.0	54.1	0.1
12	Gerard Avenue	Coffee Street	Campus Parkway ³	56.5	57.3	0.8	61.3	61.3	0.1
13	Gerard Avenue	Campus Parkway ³	Site Entrance	56.5	66.9	10.5	59.8	65.5	5.7
14	Gerard Avenue	Site Entrance	Tower	45.5	55.9	10.4	51.5	55.2	3.7
16	Mission Ave	SR 99	Coffee Street	60.5	64.2	3.7	65.3	66.8	1.5
17	Campus Parkway ³	Coffee Street	Gerard Avenue	59.2	63.8	4.6	64.8	66.4	1.7
18	Campus Parkway ³	Gerard Avenue	Childs Avenue	53.0	53.5	0.5	61.0	61.6	0.6
19	Parson Avenue	Gerard Avenue	Childs Avenue	58.8	58.8	0.0	60.3	60.3	0.0
20	Parson Avenue	Childs Avenue	SR 140	60.6	60.7	0.1	60.0	60.0	0.0
21	Coffee Street	Mission Avenue	Parsons Avenue	60.6	60.6	0.0	58.8	58.8	0.0
22	Coffee Street	Gerard Avenue	Childs Avenue	60.4	60.6	0.2	58.5	58.7	0.2
23	Coffee Street	Childs Avenue	Baker Drive	58.2	58.3	0.1	52.3	52.3	0.0
24	Kibby Road	Childs Avenue	SR 140	60.0	60.0	0.0	54.5	54.5	0.0
25	Baker Drive	SR 140	Coffee Street	58.3	58.4	0.1	53.8	53.8	0.0
26	Tower Road	Gerard Avenue	Childs Avenue	45.5	57.2	11.8	45.5	53.2	7.7
27	Tower Road	Childs Avenue	SR 140	45.5	53.6	8.1	45.5	52.9	7.4

Notes: SR = State Route

¹ Traffic noise levels were predicted using the FHWA Traffic Noise Model RD77-108 based on traffic information (e.g., average daily traffic, vehicle speeds, roadway width) obtained from the data generated by DKS Associates used to prepare the traffic section for this DEIR. Modeled estimates assume no natural or human-made shielding (e.g., vegetation, berms, walls, buildings). Refer to Appendix D for modeling input assumptions and output results.

² It is anticipated that SR 140 between Santa Fe Avenue and Kibby Road will be widened from two lanes to four lanes before year 2030, as stated in the traffic report (DKS 2008).

³ The exact timing of the development of the planned Campus Parkway extension is not known at this time. The new road is projected to be completed after full buildout of the proposed project and before the year 2030.

Source: Modeling performed by EDAW in 2008

- ▶ The cost to fully implement this mitigation measure, including related studies, and design and installation shall be completely funded by the applicant.
- ▶ The applicant shall maintain its truck fleet in proper working condition, including truck mufflers and exhaust systems, according to manufacturers' specifications.

The sound barriers required along the east side of Tower Road by Mitigation Measure 4.8-3 are considered feasible because they would need to achieve a minimum 4.7 dBA reduction to minimize the traffic noise increase to a ***less-than-significant level under baseline 2030 conditions*** (i.e., to an increase smaller than 3 dBA); however, this would not occur until some of the project-generated traffic is diverted to the future extended Campus Parkway. Until the completion of Campus Parkway north of Childs Road, a reduction of 8.8 dBA would be needed at the house located on the segment of Tower Road between Gerard Avenue and Childs Avenue and a reduction of 5.1 dBA would be needed along the segment of Tower Road between Childs Avenue and SR 140 to offset noticeable traffic noise increases. Because it would not be feasible to design sound barriers that provide 8.3 dBA levels of reduction and meet the required aesthetic and design elements required by Mitigation Measure 4.8-3, this impact would be considered ***significant and unavoidable until Campus Parkway is extended to SR 140***.

The sound barriers study required by Mitigation Measure 4.8-3 along the south side of the segment of Gerard Avenue between Campus Parkway and the project site entrances would provide some protection against the increased levels of traffic noise generated by the project; however, these barriers would not provide enough reduction to offset the 10.5 dBA traffic noise level increase along this road segment. Therefore, because it would not be possible to design a sound barrier that provides enough reduction to reduce the resultant noise level to less than the City's "normally acceptable" standard of 60 dBA L_{dn} for residential land uses and meet the required aesthetic and design requirements, this impact would be considered ***significant and unavoidable***.

IMPACT 4.8-4	Intermittent Single-Event Noise from Trucks Passing Off-Site Sensitive Receptors. <i>Intermittent Single-Event Noise Level increases from Trucks Passing Off-Site Sensitive Receptors would result in a significant impact.</i>

In addition to increases in average daily traffic noise, as discussed in Impact 4.8-3, intermittent SENLs and increases in the frequency of occurrence of such levels would be of additional concern, particularly during the more noise-sensitive evening and nighttime hours. Although the average daily noise descriptors (i.e., L_{dn} and CNEL) incorporate a nighttime weighting or "penalty" that is intended to reflect the expected increased sensitivity to noise annoyance at night, L_{dn} and CNEL standards do not fully protect residents from sleep disturbance.

Noise levels generated by passing haul trucks typically range from approximately 87 to 90 dBA SENL at 50 feet (U.S. Environmental Protection Agency 1971). Assuming a typical exterior-to-interior noise reduction of 25 dBA, the interior SENL at residences 50 feet from the roadway would be 62 to 65 dBA SENL. Intermittent SENL impacts would vary considerably depending on various factors, such as background noise levels and the distance from source to receptor. Based on long-term counts collected at the existing Wal-Mart distribution center in Apple Valley, approximately 47% of the 644 truck trips generated by the project would occur during the evening or nighttime hours (i.e., approximately 303 truck trips per evening/night). Truck traffic generated by the project on nearby roads, particularly during nighttime hours on rural roads could potentially result in increased exposure of sensitive receptors along these roads. These SENLs could occur at residences located along those roadways where increased truck traffic would occur. Under baseline 2010 conditions, this impact could be experienced at the farm house located on the south side of the segment of Gerard Avenue between Campus Parkway and the project site entrance, the farm house located on the east side of the segment of Tower Road between SR 140 and Childs Avenue, and the farm house located on the east side of Tower Road between Childs Avenue and Gerard Avenue. The exact degree to which these truck pass-bys would result in sleep awakenings is not known; however, some insight is provided by studies concerning the sleep disturbance effects from aircraft overflights by the FICAN. According to the FICAN, 10% of the exposed population is estimated to be awakened when the SENL interior noise level of 81 dBA, an estimated 5 to 10% of the population is affected when the SENL interior noise level is

between 64.8 and 81 dBA, and few sleep awakenings (less than 5 percent) are predicted if the interior SENL is less than 64.8 dBA (FICAN 1997). Thus, SENLs generated by truck pass-bys associated with project operations could affect 5 to 10 percent of the exposed population. In fact, assuming no varying topography or intervening barriers and the typical 25 dBA exterior-to-interior reduction of residential structures, the interior 64.8 SENL contour would extend approximately 55 feet from the roadway.

After Campus Parkway is extended to SR 140, all project-generated truck traffic would use the new road. Under these conditions, only the farm house located on the south side of Gerard Avenue between Campus Parkway and the project site entrance could experience high nighttime SENLs from truck trips associated with the project. As a result, this impact is considered **significant** under both baseline 2010 and baseline 2030 conditions.

Implement Mitigation Measure 4.8-3.

The project applicant shall implement the following measures to reduce the exposure of existing sensitive receptors to interior SENLs:

- In addition, the City, at the expense of the applicant, shall conduct a traffic noise study of all residential structures with inhabitable rooms that are within 55 feet of a projected truck route that is part of the traffic study area for this EIR (as shown in Exhibit 4.11-1 of Section 4.11, "Traffic and Transportation"). This study shall estimate the exterior-to-interior attenuation provided by the structure and the resultant interior SENL level from a truck pass-by that would generate an exterior SENL of 90 dBA at a distance of 50 feet. If the interior SENL level estimated by the study exceeds 64.8 dBA, then the owner of the affected residence shall be retrofitted to insure that interior SENL levels do not exceed 64.8 dBA. Retrofit measures may include increased wall insulation, installation of dual-pane windows with laminated glass, and, the installation of central air conditioning/ventilation system to the affected home if one is not already present.
- The party estimating the interior SENLs shall be selected by the City and the analysis shall be funded by the applicant. The cost to fully implement this mitigation measure, including related studies, and design, and building retrofitting shall be provided and completely funded by the applicant. All studies and building retrofitting shall be completed before the project becomes operational.

Implementation of Mitigation Measure 4.8-3 would reduce the loudness of SENLs associated with trucks passing sensitive receptors on nearby roads. Because Mitigation Measure 4.8-5 requires that interior SENLs be evaluated for affected residential receptors and reduced through building retrofitting, the impact at these receptors would also be reduced to a **less-than-significant** level.

IMPACT 4.8-5	Exposure of Sensitive Receptors or Generation of Excessive Vibration Levels. <i>Short-term construction-generated vibration levels and truck vibration levels during long-term operations would not exceed Caltrans's recommended standard of 0.2 in/sec PPV with respect to the prevention of structural damage for normal buildings or FTA's maximum acceptable vibration standard of 80 VdB regarding human response for residential uses (i.e., annoyance) at nearby existing residential dwellings. This impact would be less than significant.</i>

Construction activities have the potential to result in varying degrees of temporary groundborne vibration, depending on the specific construction equipment used and operations involved. Vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. Table 4.8-12 displays vibration levels for typical construction equipment.

As discussed under Impact 4.8-1 above, on-site construction equipment would include excavators, graders, scrapers, loaders, backhoes, and haul trucks; and no pile driving would occur. The closest off-site structures are the farm house and barn located across Gerard Avenue approximately 400 feet from the southwest corner of the project site. Based on the vibration levels presented in Table 4.8-12, there would be no potential structural

damage to these structures because construction vibration levels would not exceed Caltrans's recommended standard of 0.2 in/sec PPV (Caltrans 2002) with respect to the prevention of structural damage for normal buildings.

According to FTA, and as shown in Table 4.8-12, vibration levels associated with the use of large bulldozers is 87 VdB (referenced to 1 μ in/sec and based on the RMS velocity amplitude) at a distance of 25 feet. Using FTA's recommended procedure for applying a propagation adjustment to these reference levels, the vibration levels would attenuate to 69 VdB at a distance of 100 feet. Therefore, construction vibration levels would not exceed FTA's maximum-acceptable vibration standard of 80 VdB (FTA 2006) with respect to human annoyance at residential uses.

Table 4.8-12 Typical Construction Equipment Vibration Levels			
Equipment		PPV at 25 feet (in/sec) ¹	Approximate L _v (VdB) at 25 feet ²
Pile Driver (impact)	Upper range	1.518	112
	Typical	0.644	104
Pile Driver (sonic)	Upper range	0.734	105
	Typical	0.170	93
Large Bulldozer		0.089	87
Caisson Drilling		0.089	87
Trucks		0.076	86
Jackhammer		0.035	79
Small Bulldozer		0.003	58
¹ Where PPV is the peak particle velocity ² Where L _v is the velocity level in decibels (VdB) and based on the root mean square (RMS) velocity amplitude. Source: FTA 1995			

Vibration sources associated with long-term operation of the project would consist of haul trucks and yard trucks maneuvering on site and haul trucks traveling over area roadways. Similar to the heavy-duty equipment operated during project construction, vibration generated by on-site truck activity would have no potential to cause structural damage to off-site structures because truck vibration levels would not exceed Caltrans's recommended standard of 0.2 in/sec PPV (Caltrans 2002) with respect to the prevention of structural damage for normal buildings or FTA's maximum-acceptable vibration standard of 80 VdB (FTA 2006) with respect to human annoyance at residential uses. In addition, the project would not generate truck trips on area roads that pass within 50 feet of off-site residences (e.g., SR 140, Tower Road, proposed Campus Parkway).

Thus, short-term construction and long-term operation would not result in the exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. As a result, this impact is considered ***less than significant***.

Mitigation Measure

No mitigation is required.

IMPACT 4.8-6 Land Use Compatibility of Proposed Project with On-Site Noise Levels. *As a light industrial land use, the proposed project would not be considered a noise sensitive receptor and existing and future projected noise levels are not expected to exceed the City's "normally acceptable" noise standard of 75 L_{dn} for industrial land uses. Therefore, exposure of proposed facility to noise generated at surrounding land uses would be a less-than-significant impact.*

The proposed project would not be considered a noise-sensitive land use and would be located near other light industrial land uses (i.e., Central Valley Processing and McLane Pacific Grocery Distribution Center) to the north across Childs Avenue, agricultural land uses to the east and south, and residential neighborhoods located over 1,200 feet to the west. These nearby land uses are not expected to generate noise levels that would exceed the City's "normally acceptable" noise standard of 75 L_{dn} for industrial land uses. In addition, future projected traffic noise levels on nearby roads are not expected to exceed 75 L_{dn} at the project site, as shown in Table 4.8-11. Furthermore, the proposed project is not located within an airport land use plan or within 2 miles of a public airport or public use airport. The closest airport, Merced Municipal Airport, is located more than 4 miles away. Therefore, the development of a distribution facility at the proposed project site would be noise-compatible with surrounding land uses. As a result, this impact would be **less than significant**.

Mitigation Measure

No mitigation is required.

4.9 POPULATION AND HOUSING

This section analyzes the impacts of the proposed project on population and housing in the City of Merced and the region and the compatibility of the proposed project with the population and housing goals of the City of Merced's (City) *Merced Vision 2015 General Plan*.

4.9.1 ENVIRONMENTAL SETTING

CITY AND COUNTY POPULATION

The project is located at the east end of the City and borders unincorporated Merced County. Both the City and County are located in the fast-growing San Joaquin Valley in central California and both are experiencing significant rates of population growth. Table 4.9-1 shows that the City has experienced a higher percentage growth in the first 6 years of this decade (2000–2006) than it did in the previous full decade (1990–2000). Similarly, the County experienced a growth rate almost as high (and greater growth in numbers) during the first 6 years of this decade as it did during the previous full decade.

Table 4.9-1					
City of Merced and Merced County Population					
Area	Population			Growth Percentage	
	1990	2000	2006	1990–2000	2000–2006
City of Merced	56,216	63,893	76,225	13.7	19.3
Merced County	178,403	210,554	246,751	18.0	17.2
Source: 1990 and 2000 U.S. Census, California Department of Finance					

The Specific Urban Development Plan (SUDP) is the area including and immediately surrounding the City for which the *Merced Vision 2015 General Plan* (City General Plan) serves. The City General Plan, adopted in 1997, estimates that there will be approximately 145,000 people in the SUDP by 2015 and approximately 240,000 people in the SUDP by 2035 (City of Merced 1997a). The City of Merced accounts for just over 30% of the County's population (Table 4.9-2) and is the largest City in Merced County. It is also the largest City in the section of the San Joaquin Valley between Modesto (approximately 40 miles to the northwest) and Fresno (approximately 60 miles to the southeast).

Table 4.9-2			
Population Estimates and Projections¹			
	2000 ²	2005	2010
City of Merced	63,893	81,263	92,014
Merced County	210,554	242,846	273,923
¹ Population projections apply to Merced's SUDP, not the city limits			
² 2000 U.S. Census			
Source: MCAG, Regional Housing Needs Plan, January 1, 2001–June 30, 2008			

Planned Population Density

Development in accordance with the *Merced Vision 2015 General Plan* would result in a population density that is expected to be distributed in a relatively even manner throughout the City's planning area. In-fill activities within the built-up areas of the City and "Village" areas, which promote higher densities around transit nodes, will increase overall population densities. In terms of services and infrastructure, the City General Plan specifies buildout areas to accommodate the level of future anticipated growth (Table 4.9-3).

Table 4.9-3 City of Merced Proposed Specific Urban Development Plan Study Areas—Planned Population Density					
Study Area	Total Land Area (acres) ¹	1990 Population	Potential New Population ²	Total Potential Population	Population Growth Factor ³
Northern Merced	7,948	6,710	58,300	65,010	9.69
North Central Merced	2,952	18,910	12,720	31,630	1.67
West Central Merced	1,047	7,320	1,060	8,380	1.14
East Central Merced	948	8,540	2,121	10,660	1.25
Southwestern Merced	2,200	9,150	7,420	16,570	1.81
South Merced	2,753	6,710	15,900	22,610	3.37
Southeastern Merced	2,692	3,660	8,480	12,140	3.32
Total	20,540	61,000	106,000	167,000	
				Average	2.74
Notes:					
¹ From the geographic information system files of Merced County Association of Governments for the expanded Specific Urban Development Plan area.					
² Figures based on planned land use capacity and less existing populated area with 5% housing unit vacancy potential.					
³ Growth factor can be used to multiply existing population to determine future population.					
Source: City of Merced 1997b					

Age Distribution

Age-group changes in the local population provide indicators to future housing needs. The primary age group for purchasing homes is the 30–45-year-old age group, which overall has decreased slightly since 1990 (Table 4.9-4). However, the demand for both renter- and owner-occupied housing is expected to increase throughout the planning period as the new University of California, Merced campus attracts students, faculty, and staff.

Table 4.9-4 Age Distribution, 1990–2000				
Merced	1990		2000	
	Population	Percent	Population	Percent
Under 5 Years	6,319	11.2	5,860	9.2
5 to 9	5,984	10.6	6,487	10.2
10 to 14	4,588	8.2	6,187	9.7
15 to 19	4,231	7.5	5,917	9.3
20 to 24	4,706	8.4	4,967	7.8
25 to 34	10,270	18.3	8,845	13.8
35 to 44	7,289	13.0	8,682	13.6
45 to 54	4,286	7.6	6,908	10.8
55 to 59	1,875	3.3	2,241	3.5
60 to 64	1,611	2.9	1,778	2.8
65 to 74	2,944	5.2	3,106	4.9
75 to 84	1,596	2.8	2,117	3.3
85 and over	517	0.9	798	1.2
Total	56,216	100.0	63,893	100.0
Source: 1990 and 2000 U.S. Census				

Median Family and Household Income

Median household income in the City increased 23% from 1990 to 2000 to total \$30,429 (Table 4.9-5). Median household income in 2000 in the City was also lower than the County. The City's median family and median household incomes were significantly lower than California and the nation in both 1990 and 2000.

Table 4.9-5				
Median Family and Household Income, 1990–2000				
Area	1990		2000	
	Median Family	Median Household	Median Family	Median Household
City of Merced	25,548	24,727	32,470	30,429
Merced County	28,269	27,388	38,009	35,532
California	40,559	35,798	53,025	47,493
United States	35,225	30,056	50,046	41,994
Source: U.S. Bureau of the Census, 1990 and 2000 Census of Population and Housing				

Families and Individuals below Poverty Level

In 1989, 20.2% of all Merced families lived below the poverty level, compared to 15.4% of the families in the County. For individuals, the percentages living below the poverty level were 25.1% in the City and 19.9% in the County (Table 4.9-6).

By 1999, the percent of families living under the poverty level had increased to 22.4% of City families and 16.9% of County families. Similarly, the percentage of individuals living below the poverty level increased to nearly 28% in the City and 21.7% in the County.

According to the California Food Policy Advocates, Merced County ranks third among the 58 counties in California in poverty.

Table 4.9-6				
Families and Individuals below Poverty Level, 1989 and 1999				
	Poverty Status in 1989			
	Families	%	Individual	%
City of Merced	2,717	20.2	13,804	25.1
Merced County	6,765	15.4	34,813	19.9
	Poverty Status in 1999			
	Families	%	Individuals	%
City of Merced	3,296	22.4	17,489	27.9
Merced County	8,481	16.9	45,059	21.7
Source: U.S. Bureau of the Census, 1990 and 2000 Census of Population and Housing				

CITY AND COUNTY HOUSING

Housing Units

The number of housing units in both the City and the County is increasing. Table 4.9-7 shows the growth in housing units in the City and County between 1990 and 2000. The growth rates in housing units are comparable

to the population growth rates for each respective area during this same time period. As is the case with population, Merced accounts for just over 30% of the housing units in the County.

Table 4.9-7 City of Merced and Merced County Housing Units			
Area	1990 Housing Units	2000 Housing Units	1990–2000 Percent Increase
City of Merced	18,965	21,532	13.5
Merced County	58,410	68,373	17.0
Source: 1990 and 2000 U.S. Census			

Average Household Size

In 1990, the City of Merced’s average household size was 3.03 persons while the County’s average household size was 3.17 persons. Average household size in 2000 was 3.06 persons per household for the City and 3.25 persons per household for the County, showing a slight growth in household size for the general area (Table 4.9-8). A slight increase may occur by the end of the current decade with the expected influx of students attending the University of California (UC), Merced.

Table 4.9-8 Average Household Size (City of Merced and Merced County, 1990–2010)				
Area	Year	Number of Households	Population in Households	Average Household Size
City of Merced	1990	18,154	55,350	3.03
City of Merced	2000	20,435	62,523	3.06
Merced County	1990	55,331	175,172	3.17
Merced County	2000	63,815	207,699	3.25
Source: 1990 and 2000 U.S. Census				

Occupied Housing Units

Table 4.9-9 shows total occupied housing units and owner- and renter-occupied housing units for 1990 and 2000. The U.S. Census reported that owner-occupied housing units increased, and renter-occupied housing units decreased, each by 1.9% between 1990 to 2000. As Table 4.9-9 shows, the County’s percentage of owner-occupied housing units was higher than the City’s in both 1990 and 2000.

Table 4.9-9 Occupied Housing Units (City of Merced and Merced County, 1990–2000)					
1990	Total Occupied Housing Units	Owner Occupied Housing Units	Owner Occupied Housing Units (%)	Renter Occupied Housing Units	Renter Occupied Housing Units (%)
City of Merced	18,282	8,159	44.6	10,123	55.4
Merced County	55,331	30,082	54.4	25,249	45.6
2000					
City of Merced	20,435	9,508	46.5	10,927	53.5
Merced County	63,815	37,483	58.7	26,332	41.3
Source: 1990 and 2000 U.S. Census					

Housing Units by Type and Tenure

The majority of the housing in both the City and the County consists of single-family housing. Approximately 37.8% of housing in the City and 26.1% of housing in the County consists of multifamily housing (two units or more). Of the multifamily housing in the County, 45.6% is within the City of Merced (U.S. Census 2000).

As shown in Table 4.9-10, the vast majority of units built between 1990 and 2000 were single-family residences.

Table 4.9-10 Housing Inventory Trends by Unit Type (City of Merced 1990–2000)				
Unit Type	1990		2000	
	Units	Percent of Total	Units	Percent of Total
1-unit, detached	10,570	55.7	12,465	57.9
1-unit, attached	982	5.2	942	4.4
2	1,014	5.3	921	4.3
3 or 4	1,790	9.4	1,797	8.3
5 to 9	1,624	8.6	1,671	7.8
10 to 19	1,091	5.8	775	3.6
20 or more units	1,227	6.5	2,265	10.5
Mobile home or trailer	565	3.0	700	3.2
Other	102	0.5	8	0.0
Total Housing Units	18,965	100	21,544	100
Source: 1990 and 2000 U.S. Census				

CITY AND COUNTY EMPLOYMENT

The project is expected to employ approximately 1,200 people at full buildout. Merced County, for the past several years, has had a higher unemployment rate than the state as a whole. Table 4.9-11 shows the unemployment rates for Merced County and the state since 2000. Out of the 58 counties in the state, Merced County had between the third and seventh highest unemployment level in the state during each time period listed in the table.

Table 4.9-11 County and State Unemployment Rates (Not Seasonally Adjusted)			
Period	State Rate (%)	Merced County Rate (%)	Merced County Rank in State ("1" Meaning Highest Unemployment)
2008 September	7.5	10.9	4
2007 Annual Average	5.4	10.1	4
2006 Annual Average	4.9	9.5	3
2005 Annual Average	5.4	10.1	4
2004 Annual Average	6.2	11.0	6
2003 Annual Average	6.8	11.5	6
2002 Annual Average	6.7	11.0	7
2001 Annual Average	5.4	10.1	6
2000 Annual Average	4.9	9.6	7
Source: California Employment Development Department 2008			

Merced County's May 2006 unemployment rate was 8.9%, or an estimated 21,961 people, according to the Department of Finance 2006 population estimate for the County. This rate suggests there is an ample local and available labor pool to serve the project.

One of the factors that can contribute to an increase in demand for housing is expansion of the employment base. The 2000 census classified 22,567 civilian and noncivilian persons in the Merced labor force (Table 4.9-12). The three industries in Merced that employ the greatest number of people, in order of largest to smallest, are educational, health and social services; retail trade; and manufacturing. By comparison, the County's largest industries are educational, health and social services; manufacturing; and agriculture, forestry, fishing and hunting, and mining. The County's employment by industry is similar to that of the City's with the exception of the agricultural, forestry, fishing and hunting and mining industry, of which the County has 12.5% compared to the City's 5.3% of total employed persons 16 years and over. Additionally, the UC Merced campus has created a large amount of jobs locally with the future buildout capacity to serve 6,000 jobs directly and the creation of an equal amount of new jobs induced indirectly into the regional economy.

Table 4.9-12 Employment by Industry (City of Merced and Merced County, 2000)				
Industry	City of Merced		Merced County	
	Number	Percent	Number	Percent
Employed Persons 16 Years and Over	22,267	100.0	75,321	100.0
Agriculture, Forestry, Fishing and Hunting, and Mining	1,173	5.3	9,378	12.5
Construction	1,272	5.7	5,081	6.7
Manufacturing	2,387	10.7	9,781	13.0
Wholesale Trade	691	3.1	3,383	4.5
Retail Trade	2,466	11.1	8,071	10.7
Transportation and Warehousing, and Utilities Information	923	4.1	3,620	4.8
Finance, Insurance, Real Estate, and Rental and Leasing	954	4.3	2,533	3.4
Professional, Scientific, Management, Administrative, and Waste Management Services	1,859	8.3	4,547	6.0
Educational, Health and Social Services	5,624	25.3	15,296	20.3
Arts, Entertainment, Recreation, Accommodation, and Food Services	1,695	7.6	5,158	6.8
Other Services (Except Public Administration)	989	4.4	3,241	4.3
Public Administration	1,323	5.9	3,198	4.2
Source: 2000 U.S. Census				

4.9.2 REGULATORY SETTING

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

There are no federal plans, policies, regulations, or laws related to population and housing that are applicable to the proposed project.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

There are no state plans, policies, regulations, or laws related to population and housing that are applicable to the proposed project.

LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

Merced Vision 2015 General Plan

The City's *Merced Vision 2015 General Plan* contains several specific goals and policies that address identified potential adverse impacts associated with population concentration or displacement, housing quality and availability, and jobs/housing balance. Specifically, City General Plan goals and policies do the following.

Population Concentration or Displacement:

- ▶ Promote a “Compact Urban Form” as a means of concentrating population growth on nonprime agricultural soils and to provide efficient and cost effective urban service delivery (Chapter 2-Urban Expansion, Policies UE-1.2, 1.4, and 1.6; Chapter 3-Land Use, Policy L-3.2; Chapter 5-Public Facilities, Policy P-1.2).
- ▶ Promote “Compact Urban Village Design for New Growth Areas” to facilitate the use of alternative transportation services and facilities (Chapter 3-Land Use, Policies L-1.1, 3.1, and 3.3; Chapter 6-Urban Design, Policies UD-1.1, 3.1, and 3.3; Chapter 6-Urban Design, Policies UD-1.1, 1.2, and 1.3).
- ▶ Promote “Efficient Urban Expansion” to assure that adequate land is available to support anticipated population growth and facilitate the cost effective extension of infrastructure into undeveloped areas (Chapter 2, Urban Expansion, Policies UE-1.1, 1.3, 1.5, and 1.6; Chapter 5-Public Facilities, Policies P-1.2 and 1.3).

Jobs/Housing Balance:

- ▶ Accommodate a wide array of employment opportunities for the citizens of Merced, and a diversified and balanced economy, while preserving the City's economic base and providing ready access to commercial services throughout the City (Chapter 3-Land Use, Policies L 2.1, 2.6, and 2.8).
- ▶ Provide housing opportunities in relationship to jobs created in the Merced Urban Area (Chapter 3-Land Use, Policy L-1.1).

The City General Plan specifies “the number of people and dwelling units per net acre of land for each property planned for residences, and the building intensity for all other proposed development” (City of Merced 1997c). The land use diagram and text in the City General Plan together work to assign land use designations and to delineate what is and is not acceptable within each land use designation. This helps to ensure coordinated and balanced planning, including in relation to the City's jobs/housing balance.

The purposes of land use designations are to accommodate population growth in a planned and coordinated manner, promote compatibility of adjacent urban development, allow long-range planning for infrastructure and service provision, and allow for economic development. The project site is designated Industrial by the City General Plan Land Use Diagram. This designation “provides for the full range of industrial activities, including but not limited to manufacturing, food processing, trucking, packing, and recycling, as well as related office and production facilities” (City of Merced 1997d).

Housing Element:

The City's Housing Element was adopted by the Merced City Council on December 15, 2003. It was revised on June 21, 2004. As noted elsewhere, the project site is designated for industrial use. Therefore, development of the

proposed distribution center would not result in the loss of land designated for residential development. The Housing Element contains a number of goals and policies aimed at addressing housing needs for all segments of the community. Goals and policies that are most relevant to industrial development are those that address housing affordability for the City's workforce. Goal H-3 contains several policies and actions programs that address housing affordability.

4.9.3 ENVIRONMENTAL IMPACTS

THRESHOLDS OF SIGNIFICANCE

Implementation of the project would result in a significant impact on population and housing if it would:

- ▶ induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure);
- ▶ displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or
- ▶ displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

IMPACT ANALYSIS

IMPACT 4.9-1	Potential for Directly or Indirectly Inducing Substantial Unplanned Population Growth in an Area. <i>Development of the proposed project would not directly or indirectly induce population growth, but is expected to induce retail service development near the site. The potential impact is less than significant.</i>

As shown in Table 4.9-3, which shows planned population density in Merced, the largest projected future growth area is in the northern Merced area with a population growth factor of 9.69, while southern and southeastern Merced follow with a population growth factor of 3.37 and 3.32 respectively. The northern area's growth projection is mostly related to the new UC Merced campus, while the south and southeastern areas are designated for future industrial growth.

As described in Section 4.12, public water and wastewater infrastructure is in close proximity to the project site. For example, there are 16-inch diameter water lines in Childs Avenue and in Kibby Road, and a 16-inch line exists within the Kibby Road right-of-way that transects the site. With regard to wastewater infrastructure, there is a 12-inch line in Childs, a 36-inch line in Gerard Avenue, and a 30-inch line in Kibby. Like the water line, the wastewater line transects the site within the Kibby Road right-of-way. Other critical utility infrastructure, such as electricity, natural gas, and telecommunication are in place near the site. This existing infrastructure would have the ability to serve other development in the vicinity of the project site; no new major infrastructure is required to serve the project. The extent to which this infrastructure may induce growth in the area is discussed in Chapter 6 under "Growth Inducement."

The proposed project is expected to accommodate up to 644 tractor/trailer trips per day (322 in and 322 out) and would employ up to 1,200 people. The project would directly affect traffic on Campus Parkway, Gerard Avenue, and SR 99, as these would be the project's primary traffic routes through the Merced area. The proposed project may also affect levels of traffic on the roads that connect the project area to SR 99, which are SR 140, Childs Avenue, and Mission Avenue. Other nearby streets may also be affected by project traffic. The project's connection to SR 99 is proposed via Campus Parkway at the new Mission Avenue interchange. The segment of Campus Parkway between the Mission Avenue/SR 99 interchange and Childs Avenue is expected to be operational by July 2009. The Mission Avenue interchange has been completed. Major roadway improvements described above were planned before the Wal-Mart facility was proposed and would be in place before the facility

becomes operational. Importantly, the proposed project is consistent with development expectations in the southeast area of Merced and the Merced General Plan and zoning ordinance.

The proposed project would provide an estimated 1,200 jobs. As noted above, Merced County has experienced persistent, high unemployment rates. The County has a higher unemployment rate than California as a whole, and as indicated in Table 4.9-9, the number of families and individuals below the poverty level is higher in the City than in the County. As indicated in Table 4.9-11, the County currently experiences a 10.9% unemployment rate, which is the fourth highest in California.

The large majority of jobs generated by the proposed project would not require advanced degrees or specialized training; therefore, it is anticipated that the proposed project would likely draw largely from the local employment pool, including the unemployed. As a result, the employment opportunities provided by the project would not result in a large number of employees relocating from areas outside the region and would therefore not be expected to result in significant population growth.

The City General Plan states that economic development and urban expansion is a City goal, and available commercial and industrial uses are currently limited in the City. The project’s conformance with the existing land use designation and zoning would ensure that the project has a ***less-than-significant*** impact on population and housing in Merced. As also discussed in Section 6.2.2 “Growth Inducing Impacts of the Proposed Project”, the addition of 1,200 employees, coupled with a large influx of truck drivers making deliveries to and from the distribution center is likely to induce retail service development in the area around the proposed project to serve the 1,200 new employees with goods and services (i.e. restaurants, gas stations, and other small retail), but is not expected to induce population and growth and housing development.

Mitigation Measure

No mitigation is required.

IMPACT 4.9-2	Potential to Displace People or Housing, Necessitating Construction Elsewhere. <i>The project site is undeveloped. There is no housing or population that would be displaced by the proposed construction. There is no impact.</i>

Mitigation Measure

No mitigation is required.

4.10 PUBLIC HEALTH AND HAZARDS

This section of the draft environmental impact report (DEIR) addresses potential impacts related to hazardous materials and hazards associated with historic and current use of the project site and surrounding areas. It is based on review of the Phase I environmental site assessment (ESA) prepared for the project site by ENGEO, Inc. (ENGEO) in April 2004; on the updated Phase I ESAs prepared by ENGEO in June 2005, December 2005, and March 2006; on the peer review of the Phase I ESAs by Geocon Consultants, Inc. in June 2006; and on EDAW's review of the U.S. Environmental Protection Agency's (EPA's) Envirofacts Web site databases. The potential for impacts on emergency response plans is addressed in Section 4.11, "Traffic and Transportation," service levels by fire personnel and other emergency responders are discussed in Section 4.12, "Utilities and Public Services," and potential impacts of the project on groundwater are discussed in Section 4.6, "Hydrology and Water Quality" of this DEIR.

4.10.1 ENVIRONMENTAL SETTING

DEFINITIONS OF TERMS

For purposes of this section, the term "hazardous materials" refers to both hazardous substances and hazardous wastes. A "hazardous material" is defined in the Code of Federal Regulations (CFR) as "a substance or material that...is capable of posing an unreasonable risk to health, safety, and property when transported in commerce" (49 CFR 171.8). California Health and Safety Code Section 25501 defines a hazardous material as follows:

"Hazardous material" means any material that, because of its quantity, concentration, or physical, or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. "Hazardous materials" include, but are not limited to, hazardous substances, hazardous waste, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

"Hazardous wastes" are defined in California Health and Safety Code Section 25141(b) as wastes that:

... because of their quantity, concentration, or physical, chemical, or infectious characteristics, [may either] cause, or significantly contribute to an increase in mortality or an increase in serious illness[, or] pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

LAND USE CONDITIONS ON THE PROJECT SITE

The site currently has no existing structures except for a well and high-voltage power lines. The western one-third of the site consists of an almond orchard, and the eastern two-thirds consist of agricultural fields. The northern, southern, and part of the northeastern boundary of the fields contain irrigation ditches that connect to the Wilson Substation (approximately 1 mile northeast of the site) along State Route 140. The project site includes an irrigation water supply well in the northeast corner of the project site, high-power transmission lines that transect the site from north to south within the western portion of the project site, water lines in the south-central portion of the project site, and underground irrigations lines and an aboveground sprinkler system associated with operation of the orchard (ENGEO 2005).

The project site is surrounded by agricultural fields and a few rural residential dwellings across Tower Road to the east, Gerard Avenue to the south, undeveloped open lands and industrial lands to the north, and an orchard and the Merced Irrigation District (MID) canal to the west.

USE OF AGRICULTURAL CHEMICALS

Pesticides were applied to the project site in conjunction with past and current agricultural production. A review of historic aerial photos of the property dating back to 1942 show the cultivation of row crops, and photos after 1986 shows the property used for orchards (ENGEO 2004). Chemicals potentially used in agricultural activities could result in residual concentrations of persistent pesticides in the soil. Persistent pesticides leave residues that remain in the environment without breaking down, such as organochlorine pesticides (e.g., dichlorodiphenyltrichloroethane [DDT], Toxaphene, and Dieldrin).

ELECTROMAGNETIC FIELDS

Electric and magnetic fields (EMFs) are invisible energy fields that surround any electrical device, including electrical transmission lines. Together these fields are called EMFs. Electric and magnetic energy travels in waves that are commonly referred to as electromagnetic radiation or radiofrequency radiation. EMF indicates the presence of electromagnetic or radiofrequency energy. There are several forms of EMFs, depending on the wavelength and frequency of the radiation. The frequency is usually expressed in terms of a unit called the hertz (Hz). One million hertz is known as a megahertz (MHz). The different forms of EMFs are produced by a variety of sources, including electrical energy facilities. EMFs may also be differentiated based on the ability of the particular EMF to cause ionization, a process that can produce molecular changes that can lead to damage in biological tissue, including genetic material. Changes in genetic material may be a cause of cancer. Those types of electromagnetic radiation with enough energy to ionize biological material include X-radiation (1 trillion MHz) and gamma radiation (FCC 2003).

All types of electric energy facilities and appliances generate EMFs. In part because of their visibility in areas of human habitation, electric energy transmission facilities generate the greatest public concern. Electric energy facilities generate EMFs at a frequency of 60 Hz. At this frequency, the EMF is considered nonionizing and is not expected to cause molecular changes that lead to the damage of body tissue. Once emitted from the source, an EMF dissipates in a circular pattern and weakens with distance from the emitting source. Electrical fields are shielded or weakened by materials that conduct electricity (including trees, buildings, and human skin). Magnetic fields pass through most materials and are therefore more difficult to shield (CPUC 2006).

A variety of epidemiological and laboratory studies, including those sponsored and funded by international, federal, and state organizations and agencies, have been carried out regarding EMF exposure and its potential human health risks. Regarding electric energy facilities, a connection between exposure to the type of EMF generated by electric energy facilities and childhood cancer (e.g., leukemia) has been suggested. However, studies have not concluded that there is such a connection.

Two Pacific Gas and Electric parallel transmission lines, a 115-kilovolt (kV) line and a 230-kV line, generally run north to south through the central area of the site and terminate northeast of the project site at the Wilson Substation. The area containing these power lines would remain as an easement, and all site development would take place on the approximately 80% of the project site that lies west of this easement.

RESULTS OF RECORDS SEARCH FOR HAZARDOUS MATERIALS

A Phase I ESA was prepared by ENGEO in April 2004 for the project site. Supplemental Phase I ESAs were conducted in June 2005, December 2005, and March 2006 to evaluate any changes in the property since the Phase I ESA. These additional Phase I ESAs included supplemental site reconnaissance, updated state and federal environmental database searches for the property site and surrounding area, and review of previously unavailable data. The purpose of the Phase I ESA and the Phase I ESA updates was to document recognized environmental concerns (RECs) on the subject property related to current and historical uses of the area and to evaluate the potential for a release of hazardous materials from on-site or off-site sources that could significantly affect environmental conditions at the project site. The site reconnaissance and records search conducted for the Phase I

ESAs did not find documentation or physical evidence of RECs in soil or groundwater associated with the use of the proposed project site.

During completion of the Phase I ESA (2004), ENGEO reviewed historical U.S. Geological Survey (USGS) topographic maps dated 1917, 1948, 1961, 1976, and 1987 with coverage of the project area. No evidence was observed on the maps to suggest that the property included historical buildings or was disturbed by human activities such as quarrying, subsurface or surface mining or dredging. ENGEO observed no stained soil, stressed vegetation, solid waste disposal, wastewater conveyance, or septic systems on the project site. Similarly, ENGEO observed no hazardous substances, petroleum products, underground storage tanks (USTs), odors, unidentified substance containers or drums, or polychlorinated biphenyls (PCBs) associated with pole-mounted transformers. No structures that could potentially contain lead-based paint or asbestos were identified on the project site. (ENGEO 2004, 2005a, 2005b.)

A review of regulatory agency lists indicated the presence of two known contaminated sites within a 1-mile radius of the project site:

- ▶ The Weaver Union and Weaver Union Elementary School site is located at 3076 Childs Avenue, approximately one-quarter to one-half mile northwest of the project site. One leaking UST and contaminated soil were removed from this site. The Merced County Division of Environmental Health (MCDEH) closed the case in 1988.
- ▶ The McLane Pacific site is located at 3876 Childs Avenue, approximately one-half to 1 mile from the project site. One leaking UST and contaminated soil were removed from this site and MCDEH closed the case in 1998.

MCDEH's 1984 samples of domestic and industrial water supply wells in the vicinity of the former General Electric Company (GE)/Kendall Plant located at 1715 Kibby Road identified the presence of trichloroethene (TCE). GE's surface disposal pond for spent TCE is reported to be approximately 2,500 feet north of the project site. (ENGEO 2006.) This location is hydrologically side-gradient of the project site, and any contaminated groundwater would generally flow south.

A shallow groundwater monitoring well, MW-9, was observed on the property near the northern boundary. This well is associated with the monitoring well network for the GE study of TCE in groundwater. In February 2006, ENGEO collected groundwater samples from MW-9 for analysis of volatile and semivolatile organic compounds. Laboratory analysis of these samples showed no volatile or semivolatile organic compounds that exceeded laboratory reporting limits. In addition, groundwater flow on the project site is along an east-west axis indicating that the site is side-gradient to the TCE plume. Given the analytical data and groundwater flow direction, it is very unlikely that TCE is present in groundwater on the project site. (ENGEO 2006.) Additionally, for the past several years GE has been conducting shallow groundwater remediation activities at the site (Tucker and Raggio, pers. comm., 2008)

EDAW searched EPA's Envirofacts Web site and the State Water Resources Control Board's (SWRCB's) Geotrack Web site to confirm and update information presented in these ESAs. The EPA's Envirofacts Web site and the SWRCB's GeoTracker Web site identifies toxic releases, hazardous waste, or other violations (EPA 2006, SWRCB 2006). The Envirofacts Web site presents information from several regulatory agencies and databases, including those for the EPA, California Department of Toxic Substance Control (DTSC), and Office of Emergency Services, and contains a variety of environmental information maintained by EPA, such as the locations of releases of more than 650 toxic chemicals. According to these Web sites, no additional sites other than those discussed above are listed in any of the regulatory databases (EPA 2006, SWRCB 2006).

DTSC maintains a hazardous waste and substances site list (Cortese list) pursuant to Government Code Section 65962. As of June 2006, the project site is not on this list (DTSC 2006).

WILDLAND FIRES

Wildland fire hazards exist in varying degrees over most of Merced County in that portion of the County not covered by water and urban uses (City of Merced 1997). Wildland fires can be initiated by natural phenomena, such as lightning; however, wildland fires can also be started by human activities, such as improper disposal of lit cigarettes, use of highly flammable fuels, and malfunctioning electrical equipment. The fire season extends approximately 5–6 months, from late spring to fall, and hazards arise from a combination of climatic, vegetative, and physiographic conditions. Wildland fire hazards exist in varying degrees over approximately 90% of Merced County (Merced County 1990).

According to the California Department of Forestry and Fire Protection's (CDF's) Fire Resource Assessment Program, the City of Merced and the project site is located in a "developed" zone for wildland fires (CDF 1998). The CDF also identifies wildland fire areas and Very High Fire Hazard Severity Zones for all counties in California. None of these areas or zones are located in or near the City of Merced (California Resources Agency 2003). In addition, the City of Merced is not in a State Responsibility Area (SRA), which is defined as part of the state where the CDF is the primary service responsible for providing basic wildland fire protection assistance (CDF 1998). To mitigate risks and impacts from fires, the City of Merced has adopted a Fire Protection Master Plan (FPMP), and responds to wildland fires within the city limits. In 2001, the department responded to 77 wildfires (City of Merced 2003). Additional information on the City of Merced Fire Department is provided in Section 4.12, "Utilities and Public Services."

4.10.2 REGULATORY SETTING

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

U.S. ENVIRONMENTAL PROTECTION AGENCY

EPA is the agency primarily responsible for enforcement and implementation of federal laws and regulations pertaining to hazardous materials. Applicable federal regulations pertaining to hazardous materials are contained mainly in CFR Titles 29, 40, and 49. Hazardous materials, as defined in the CFR (see "Definitions of Terms" above), are listed in 49 CFR 172.101. Management of hazardous materials is governed by the following laws:

- ▶ Resource Conservation and Recovery Act of 1976 (RCRA) (42 U.S. Code [USC] 6901 et seq.);
- ▶ Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA, also called the Superfund Act) (42 USC 9601 et seq.); and
- ▶ Superfund Amendments and Reauthorization Act (SARA) of 1986 (Public Law 99–499).

These laws and associated regulations include specific requirements for facilities that generate, use, store, treat, and/or dispose of hazardous materials. EPA provides oversight and supervision for federal Superfund investigation/remediation projects, evaluates remediation technologies, and develops hazardous materials disposal restrictions and treatment standards.

Hazardous Substances

Hazardous substances are a subclass of hazardous materials. They are regulated under CERCLA and SARA (and the federal Clean Water Act for water resources; see Section 4.6, "Hydrology and Water Quality"). Under CERCLA, EPA has authority to seek the parties responsible for releases of hazardous substances and ensure their cooperation in site remediation. CERCLA also provides federal funding (the "Superfund") for remediation. SARA Title III, the Emergency Planning and Community Right-to-Know Act, requires companies to declare potential toxic hazards to ensure that local communities can plan for chemical emergencies. EPA maintains a

National Priority List of uncontrolled or abandoned hazardous waste sites identified for priority remediation under the Superfund program. EPA also maintains the CERCLIS database, which contains information on hazardous waste sites, potential hazardous waste sites, and remedial activities across the nation.

Hazardous Wastes

Hazardous wastes, although included in the definition of hazardous materials and hazardous substances, are regulated separately under RCRA. A waste can legally be considered hazardous if it is classified as ignitable, corrosive, reactive, or toxic. Title 22, Section 66261.24 of the California Code of Regulations (CCR) (i.e., 22 CCR 66261.24) defines characteristics of toxicity. Under RCRA, EPA regulates hazardous waste from the time that the waste is generated until its final disposal (“cradle to grave”). RCRA also gives EPA or an authorized state the authority to conduct inspections to ensure that individual facilities are in compliance with regulations, and to pursue enforcement action if a violation is discovered. EPA can delegate its responsibility to a state if the state’s regulations are at least as stringent as the federal ones. RCRA was updated in 1984 by the passage of the federal Hazardous and Solid Waste Amendments, which required phasing out land disposal of hazardous waste.

Regulation of Pesticides

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (7 USC 136 et seq.) provides federal control of pesticide distribution, sale, and use. EPA was given authority under FIFRA not only to study the consequences of pesticide usage but also to require users (farmers, utility companies, and others) to register when purchasing pesticides. Later amendments to the law required users to take exams for certification as applicators of pesticides. All pesticides used in the United States must be registered (licensed) by EPA. Registration assures that pesticides will be properly labeled and that if used in accordance with specifications, they will not cause unreasonable harm to the environment.

U.S. DEPARTMENT OF TRANSPORTATION

The U.S. Department of Transportation (DOT), in conjunction with EPA, is responsible for enforcement and implementation of federal laws and regulations pertaining to transportation of hazardous materials. The Hazardous Materials Transportation Act of 1974 (49 USC 5101 et seq.) directs DOT to establish criteria and regulations regarding safe storage and transportation of hazardous materials. Hazardous materials regulations are contained in 49 CFR 171–180 and address transportation of hazardous materials, types of materials defined as hazardous, and the marking of vehicles transporting hazardous materials. In particular, 49 CFR 173, titled “Shippers’ General Requirements for Shipments and Packagings,” defines hazardous materials for transportation purposes; within this portion of the code, 49 CFR 173.3 provides specific packaging requirements for shipment of hazardous materials, and 49 CFR 173.21 lists categories of materials and packages that are forbidden for shipping. 49 CFR 177, titled “Carriage by Public Highway,” defines unacceptable hazardous materials shipments.

OCCUPATIONAL HEALTH AND SAFETY ADMINISTRATION

The Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor is responsible for enforcement and implementation of federal laws and regulations pertaining to worker health and safety. Workers at hazardous waste sites must receive specialized training and medical supervision according to the Hazardous Waste Operations and Emergency Response regulations (29 CFR 1910.120).

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

DTSC, a division of the California EPA, has primary regulatory responsibility over hazardous materials in California, working in conjunction with the federal EPA to enforce and implement hazardous material laws and regulations. DTSC can delegate enforcement responsibilities to local jurisdictions.

The hazardous waste management program enforced by DTSC was created by the Hazardous Waste Control Act (California Health and Safety Code Section 25100 et seq.), which is implemented by regulations described in CCR Title 26. The state program thus created is similar to, but more stringent than, the federal program under RCRA. The regulations list materials that may be hazardous and establish criteria for their identification, packaging, and disposal.

Environmental health standards for management of hazardous waste are contained in CCR Title 22, Division 4.5. The intent of these regulations is to ensure the protection of public health associated with the use of recycled water. The regulations establish acceptable levels of constituents and pathogens in recycled water for a range of uses and prescribe means of assuring reliability in the production of recycled water. The California Department of Health Services has jurisdiction over the distribution of recycled water and the enforcement of Title 22 regulations. In addition, as required by California Government Code Section 65962.5, DTSC maintains a Hazardous Waste and Substances Site List for the state, called the Cortese List.

California's Secretary for Environmental Protection has established a unified hazardous waste and hazardous materials management regulatory program (Unified Program) as required by Senate Bill 1082 (1993). The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities for the following environmental programs:

- ▶ hazardous waste generator and hazardous waste on-site treatment programs;
- ▶ Underground storage tank (UST) program;
- ▶ hazardous materials release response plans and inventories;
- ▶ California Accidental Release Prevention Program;
- ▶ Aboveground Petroleum Storage Act requirements for spill prevention, control, and countermeasure plans; and
- ▶ California Uniform Fire Code (UFC) hazardous material management plans and inventories.

The six environmental programs within the Unified Program are implemented at the local level by local agencies—Certified Unified Program Agencies (CUPAs). CUPAs carry out the responsibilities previously handled by approximately 1,300 state and local agencies, providing a central permitting and regulatory agency for permits, reporting, and compliance enforcement. MCDEH is the designated CUPA in Merced County for both unincorporated areas and incorporated cities.

STATE WATER RESOURCES CONTROL BOARD

The SWRCB has primary responsibility to protect water quality and supply. The project site is located within the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB). As described in Section 4.6, "Hydrology and Water Quality," the RWQCB is authorized by the Porter-Cologne Water Quality Control Act of 1969 to protect the waters of the state. The RWQCB provides oversight for sites where the quality of groundwater or surface waters is threatened. Extraction and disposal of contaminated groundwater because of investigation/remediation activities or because of dewatering during construction would require a permit from the RWQCB if the water were discharged to storm drains, surface water, or land (see Section 4.6, "Hydrology and Water Quality").

In addition, the SWRCB regulates the use of aboveground storage tanks through the Aboveground Petroleum Storage Act (Health and Safety Code Sections 25270–25270.13). The act requires that facilities storing petroleum in a single tank greater than 1,320 gallons or facilities storing petroleum in aboveground tanks or containers with a cumulative storage capacity of greater than 1,320 gallons file a storage statement, pay a facility fee, and prepare and implement a federal Spill Prevention Control and Countermeasure (SPCC) plan.

CALIFORNIA DEPARTMENT OF INDUSTRIAL RELATIONS, DIVISION OF OCCUPATIONAL HEALTH ADMINISTRATION

The California Department of Industrial Relations, Division of Occupational Safety and Health Administration (Cal/OSHA), assumes primary responsibility for developing and enforcing workplace safety regulations within the state. Cal/OSHA standards are more stringent than federal OSHA regulations, and are presented in CCR Title 8. Standards for workers dealing with hazardous materials include practices for all industries (General Industry Safety Orders); specific practices are described for construction, and hazardous waste operations and emergency response. Cal/OSHA conducts on-site evaluations and issues notices of violation to enforce necessary improvements to health and safety practices.

CALIFORNIA OFFICE OF EMERGENCY SERVICES

The California Office of Emergency Services (Cal/OES) is the state office responsible for establishing emergency response and spill notification plans related to hazardous materials accidents. Cal/OES regulates businesses by requiring specific businesses to prepare an inventory of hazardous materials (CCR Title 19).

CALIFORNIA DEPARTMENT OF TRANSPORTATION AND CALIFORNIA HIGHWAY PATROL

The California Department of Transportation (Caltrans) and California Highway Patrol (CHP) enforce and monitor DOT hazardous materials and waste transportation laws and regulations in California. Together, these agencies determine container types used and license hazardous waste haulers for hazardous waste transportation on public roads. All motor carriers and drivers involved in transportation of hazardous materials must apply for and obtain a hazardous materials transportation license from CHP. When transporting explosives, inhalation hazards, and highway route-controlled quantities of radioactive materials, safe routing and safe stopping places are required, as described in 26 CCR Section 13 et seq. A route map must be carried in the vehicle.

ELECTROMAGNETIC FIELDS

In 1991, the California Public Utilities Commission (CPUC) began an investigation into the possible health effects of EMFs. A consensus group consisting of citizens, utility representatives, union representatives, and public officials was established to define near-term research objectives and develop interim procedures to guide electric utilities in educating their customers, reducing EMF levels, and responding to potential health concerns. The consensus group concluded that it “finds that the body of scientific evidence continues to evolve. However, it is recognized that public concern and scientific uncertainty remain regarding the potential health effects of exposure (of EMFs generated by electric energy facilities). The consensus group does not find it appropriate to adopt any specific numerical standards in association with EMF until [there is] a firm scientific basis for adopting any particular value” (CPUC 2006). The result of these findings led CPUC to recommend that the state’s utilities carry out “no and low cost EMF avoidance measures” in construction of new and upgraded utility projects. However, no requirements were established (CPUC 2006). The state does not have setback requirements from electrical transmission lines for uses not related to schools (residential, office, commercial, parks).

LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

MERCED VISION 2015 GENERAL PLAN

The Safety Element of the City's *Merced Vision 2015 General Plan* (City General Plan) contains various goals and policies to ensure that the residents and visitors to the City of Merced are not exposed to unsafe conditions resulting from urban development and activity. The following specific local policies apply to development of the uses proposed in this project:

GOAL AREA S-1: General Disaster Preparedness

- ▶ **Policy S-1.1:** Develop and maintain emergency preparedness procedures for the City.

GOAL AREA S-7: Hazardous Materials Safety for City Residents

- ▶ **Policy S-7.1:** Prevent injuries and environmental contamination due to the uncontrolled release of hazardous materials.
- ▶ **Policy S-7.2:** Ensure that hazardous materials are cleaned up before a property is developed or redeveloped.

MERCED COUNTY DIVISION OF ENVIRONMENTAL HEALTH

The City of Merced has adopted the Merced County Hazardous Waste Management Plan, which MCDEH enforces (City of Merced 1997). As the CPUC for Merced County (both unincorporated areas and incorporated cities), MCDEH issues permits to and inspects businesses that use, store, or handle quantities of hazardous materials and/or waste greater than or equal to 55 gallons, 500 pounds, or 200 cubic feet of a compressed gas at any time. MCDEH is also responsible for:

- ▶ implementing hazardous material management plans and inventories, which include an inventory of hazardous materials used, handled, or stored at any business in the County;
- ▶ permitting and inspecting businesses that handle acutely hazardous materials, such as those that would be used in the project site, that require a risk management and prevention program; and
- ▶ assisting local fire departments in responding to emergencies involving hazardous materials.

Regulated activities, such as the proposed project, are managed by MCDEH, which is overseen by the California Environmental Protection Agency (Cal/EPA) and the Department of Toxic Substances Control via the County's Certified Unified Program Agency (CUPA) certification requirements.

4.10.3 ENVIRONMENTAL IMPACTS

METHOD OF ANALYSIS

This analysis considers the range and nature of foreseeable hazardous materials use, storage, and disposal resulting from the proposed project and identifies the primary ways that these hazardous materials could expose individuals or the environment to health and safety risks. As discussed above, compliance with applicable federal, state, and local health and safety laws and regulations by residents and existing businesses in the project area would generally protect the health and safety of the public. Local and state agencies would be expected to continue to enforce applicable requirements to the extent that they do so now.

The following reports documenting potential hazardous conditions at the project site were reviewed for this analysis:

- ▶ land use plans for the proposed project;
- ▶ available literature, including documents published by city, county, state, and federal agencies;
- ▶ applicable elements from the City General Plan;
- ▶ Phase I Environmental Site Assessment, Merced Distribution Center, prepared by ENGEO (2004);
- ▶ Environmental Site Assessment Update, Proposed Industrial Warehouse Distribution Center, prepared by ENGEO (2005a);
- ▶ Environmental Site Assessment Update, Proposed Industrial Warehouse Distribution Center, prepared by ENGEO (2005b);
- ▶ Phase I Environmental Site Assessment Supplemental Letter, Proposed Industrial Warehouse Distribution Center, prepared by ENGEO (2006); and
- ▶ Wal-Mart Distribution Center Phase I Environmental Site Assessment Peer Review, prepared by Geocon Consultants, Inc (2006).

The information obtained from these sources was reviewed and summarized to establish existing conditions and to identify potential environmental effects, based on the standards of significance presented in this section. In determining the level of significance, the analysis assumes that development in the project area would comply with relevant federal, state, and local ordinances and regulations.

The independent research and analysis of EMFs addresses the health effects associated with EMFs, what is generally accepted as a safe distance for sensitive land uses (schools, residential) near high-tension power lines to avoid EMF-related adverse health effects, and an analysis of whether the proposed project would expose sensitive uses to those effects.

The primary building on the site is the proposed approximately 1.1-million-square-foot regional distribution warehouse that would be used primarily as a materials handling operation whereby most goods typically are conveyed through the distribution center. On an ongoing basis the project would have one 6,000-gallon new oil tank, one 2,500-gallon waste oil tank, two 20,000-gallon diesel USTs, and two aboveground 500-gallon diesel storage tanks, as well as a variety of potentially hazardous household chemicals that are stored in the warehouse before being distributed to retail outlets. This analysis evaluates the potential for these materials to be released to the environment.

THRESHOLDS OF SIGNIFICANCE

For the purpose of this analysis, the following thresholds of significance, as identified by the State CEQA Guidelines (Appendix G) have been used to determine whether implementation of the proposed project would result in significant hazards or hazardous materials impacts. Based on Appendix G of the State CEQA Guidelines, a hazards or hazardous materials impact is considered significant if implementation of the proposed project under consideration would do any of the following:

- ▶ 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 or through the routine transport, use, or disposal of hazardous materials;

- ▶ result in safety hazards to people residing or working in the project area;
- ▶ emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- ▶ be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment;
- ▶ be located within an airport land use plan, within 2 miles of a public airport, or in the vicinity of a public airstrip, such that a safety hazard would result for people residing or working in the project area;
- ▶ impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- ▶ 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.

The project site is located over 4 miles west of the Merced Municipal Airport and approximately 10 miles northwest of the Castle Airport. Therefore, the project is not located within an airport land use plan or within 2 miles of a public or private airport. As such, no safety hazards related to airports are anticipated, and this issue area will not be evaluated further in this DEIR.

IMPACT ANALYSIS

IMPACT 4.10-1 Create a Safety Hazard to Construction Workers and the General Public from Potential Release of Unknown or Previously Undiscovered Hazardous Materials during Construction. *No “recognized environmental concerns” (RECs) have been identified to date on the project site. However, excavation and construction activities in the area could result in the exposure of construction workers and the general public to hazardous materials, including petroleum hydrocarbons, pesticides, herbicides, and fertilizers; contaminated debris; elevated levels of chemicals that could be hazardous; or hazardous substances that could be inadvertently spilled or otherwise spread. In addition, if contaminated sites in the area are not remediated before use of the site, then residents and others could be exposed to hazardous materials. This impact would be significant.*

The site reconnaissance and records search conducted for the Phase I ESAs did not find documentation or physical evidence of RECs in soil or groundwater associated with the use of the proposed project site. The development of the project site could require abandonment of the irrigation water supply well in the northeast corner of the project site. If this action is necessary, the well would be removed and filled in accordance with applicable state and local regulations. The past and present use of the project site has been largely agricultural, and persistent pesticides were likely applied to the project site in conjunction with agricultural production. These chemicals could potentially result in residual concentrations of persistent pesticides in the soil. The Phase I ESA, supplemental Phase I ESAs, and peer review of the Phase I ESAs have concluded that, while environmentally persistent pesticides may be present in the soil, the project does not proposed residential use of the project site, and the proposed light industrial development of the project site would result in land uses that are acceptable even in the presence of potential pesticide concentrations that are persistent (Brake, pers. comm., ENGEO 2005b).

A review of regulatory agency lists identified two known leaking USTs within a 1-mile radius of the project site: the Weaver Union and Weaver Union Elementary School site at 3076 Childs Avenue, and the McLane Pacific site at 3876 Childs Avenue. Leaking USTs and contaminated soils were removed from both of these sites, and both cases were closed by MCDEH (ENGEO 2005b).

TCE has been recorded in domestic and industrial water supply wells by MCDEH in the vicinity of the GE/Kendall Plant facility. GE's surface disposal pond for spent TCE is reported to be approximately 2,500 feet north of the project site. Groundwater flow on the project site is along an east-west axis indicating that the site is side-gradient to the TCE plume. As discussed above, ENGEO collected groundwater samples for analysis of volatile and semivolatile organic compounds. Laboratory analysis of these samples showed no volatile or semivolatile organic compounds that exceeded laboratory reporting limits. Given the analytical data and groundwater flow direction, it is very unlikely that TCE is present in groundwater on the project site. (ENGEO 2006.)

Development of the project would involve site grading, excavation for utilities, trenching, dewatering of open trenches, and backfilling. Construction of proposed facilities could result in the exposure of construction workers and the general public to hazardous materials, including petroleum hydrocarbons, pesticides, herbicides, and fertilizers; contaminated debris; elevated levels of chemicals that could be hazardous; or hazardous substances that could be inadvertently spilled or otherwise spread. For individuals not involved in construction activities, the greatest potential source of exposure to contaminants would be airborne emissions, primarily through construction-generated dust. Excavation and construction activities at or near areas of currently unrecorded soil and/or groundwater contamination could also expose construction workers and the general public to hazardous materials. If contaminated sites in the area are not remediated before use of the site, then residents and others could be exposed to hazardous materials. Any exposure to hazardous materials could pose a health risk to construction workers and the general public; therefore, this impact would be **significant**.

Mitigation Measure 4.10-1: Remediate Unknown or Previously Undiscovered On-Site Hazardous Materials. If, during site preparation and construction activities, previously undiscovered or unknown evidence of hazardous materials contamination is observed or suspected through either obvious or implied indicators (i.e., stained or odorous soil), construction activities shall immediately cease in the area of the find.

MCDEH and the City of Merced Environmental Health Division staff shall be immediately consulted, and the project applicant shall contract with a qualified consultant registered in DTSC's Registered Environmental Assessor Program to assess the extent to which soil and/or groundwater has been adversely affected by past activities. This investigation shall follow DTSC guidelines and shall include, as necessary, analysis of soil and/or groundwater samples taken at or near the potential contamination sites. If necessary, risk assessments shall include a DTSC Preliminary Endangerment Assessment or no further action determination, or equivalent. Any required remediation shall include a DTSC Remedial Action Work Plan or equivalent. The site shall be remediated in accordance with recommendations made by a qualified environmental consultant registered in DTSC's Registered Environmental Assessor Program; MCDEH; the City of Merced Environmental Health Division staff; Central Valley RWQCB; DTSC; or other appropriate federal, state, or local regulatory agencies as generally described above. The agencies involved would be dependent on the type and extent of contamination. Site preparation and construction activities shall not proceed until remediation is completed to the satisfaction of MCDEH and the City of Merced Environmental Health Division.

Implementation of this mitigation measure would remove any known or previously undiscovered contaminated soil or other hazardous materials from the site in accordance with County standards and would reduce the potential hazards associated with known or unknown contaminated soil or other hazardous materials to a **less-than-significant** level.

Implementation of Mitigation Measures 4.2-1c and 4.2-1d would reduce exposure to contaminants through airborne emissions by ensuring compliance with Regulation VIII, which is required by law, and include additional San Joaquin Valley Air Pollution Control District-recommended control measures. As a result, generation of construction-related dust emissions would be reduced to a **less-than-significant** level.

IMPACT **Create a Significant Hazard to Construction Workers and the General Public through the Use of Hazardous Materials during Construction of the Project.** *The proposed project would involve the storage, use, and transport of hazardous materials at the project site during construction activities. Compliance with federal, state, and local hazardous materials regulations, which would be monitored by the state and/or local jurisdictions, would reduce impacts associated with the use, transport, and storage of hazardous materials during construction. Therefore, impacts related to creation of significant hazards to the public or the environment would be less than significant.*

4.10-2

Hazardous materials would be used in varying amounts during construction of the proposed project. Construction and maintenance activities would use hazardous materials, such as fuels (gasoline and diesel), oils and lubricants, paints and paint thinners, glues, and cleaners (which could include solvents and corrosives in addition to soaps and detergents). Construction workers and the general public could be exposed to hazards and hazardous materials as a result of improper handling or use during construction activities (particularly by untrained personnel); transportation accidents; or fires, explosions, or other emergencies. Construction workers could also be exposed to hazards associated with accidental releases of hazardous materials, which could result in adverse health effects. The project applicant, builders, and contractors, would be required to use, store, and transport hazardous materials in compliance with local, state, and federal regulations during project construction.

The proposed project would be required to comply with DOT, Caltrans, and CHP regulations on the transportation of hazardous materials. The DOT, in conjunction with EPA, is responsible for enforcement and implementation of federal laws and regulations pertaining to transportation of hazardous materials. Hazardous materials regulations are codified in 49 CFR 171–180 and address transportation of hazardous materials, types of materials defined as hazardous, categories of materials and packages that are forbidden for shipping, and the marking of vehicles transporting hazardous materials.

Caltrans and the CHP enforce and monitor DOT hazardous materials and waste transportation laws and regulations (e.g. 49 CFR 171–180) in California. Together, these agencies determine container types used and license hazardous waste haulers for hazardous waste transportation on public roads. All motor carriers and drivers involved in transportation of hazardous materials must apply for and obtain a hazardous materials transportation license from CHP. When transporting explosives and inhalation hazards, safe routing and safe stopping places are required, as described in 26 CCR Section 13 et seq. A route map must be carried in the vehicle. Compliance with these regulations would reduce the risk of exposure to humans and the environment related to the transportation of hazardous materials.

Hazardous materials regulations, which are codified in CCR Titles 8 and 22, and their enabling legislation set forth in Chapter 6.5 (Section 25100 et seq.) of the California Health and Safety Code, were established at the state level to ensure compliance with federal regulations to reduce the risk to human health and the environment from the routine use of hazardous substances. Construction specifications would include the following requirements in compliance with applicable regulations and codes (e.g., CCR Titles 8 and 22, Uniform Fire Code, and Division 20 of the California Health and Safety Code):

- ▶ all reserve fuel supplies and hazardous materials must be stored within the confines of a designated construction area;
- ▶ equipment refueling and maintenance must take place only within the staging area;
- ▶ construction vehicles shall be inspected daily for leaks; and
- ▶ an SPCC plan shall be prepared and implemented.

Off-site activities (e.g., utility construction) would also be required to comply with these regulations. These regulations and codes must be implemented, as appropriate, and are monitored by the state and/or local

jurisdictions, including MCDEH, the City of Merced Environmental Health Division, and the City of Merced Fire Department.

Contractors would be required to comply with the California EPA's Unified Program; regulated activities would be managed by MCDEH, the designated Certified Unified Program Agency for Merced County, in accordance with the regulations included in the Unified Program (e.g., hazardous materials release response plans and inventories, California UFC hazardous material management plans and inventories). Such compliance would reduce the potential for accidental release of hazardous materials during construction of the proposed project. As a result, it would lessen the risk of exposure of construction workers to accidental release of hazardous materials, as well as the demand for incident emergency response.

Because construction of the project would implement and comply with federal, state, and local hazardous materials regulations and codes monitored by the state (e.g., Cal/OSHA, DTSC, CHP, Caltrans) and/or local jurisdictions (e.g., City of Merced Fire Department, City of Merced Environmental Health Division, and MCDEH), impacts related to creation of significant hazards on construction workers and the general public through routine transport, use, and disposal would be unlikely with project development. Therefore, this impact would be ***less than significant***.

Mitigation Measure

No mitigation is required.

IMPACT 4.10-3 Create a Significant Hazard to the General Public through the Routine Use of Hazardous Materials during Operation of the Project. *The proposed project would use many materials, some of which are considered hazardous, during the course of its daily operations. Compliance with federal, state, and local hazardous materials regulations, which would be monitored by the state and/or local jurisdictions, would reduce impacts associated with the use, transport, and storage of hazardous materials during operation of the project. Therefore, impacts related to creation of significant hazards to the public or the environment would be less than significant.*

The proposed project would use many materials, some of which are considered hazardous, during the course of its daily operations. On an ongoing basis the project would have one 6,000-gallon new oil tank, one 2,500-gallon waste oil tank, two 20,000-gallon diesel USTs, two aboveground 500-gallon diesel storage tanks, as well as an electric forklift battery charging/maintenance area and a truck maintenance building for routine maintenance of tractor/trailers. In addition, a variety of hazardous materials in the warehouse, most of which are typically found in households (i.e., detergents, solvents, aerosols, paints, fertilizers, pesticides), would remain in the packaging/containers for distribution to retail outlets. For information related to the potential for the project to generate Toxic Air Contaminants and associated health risk, please see Section 4.2 "Air Quality," specifically Impact 4.2-4. Employees and the general public could be exposed to hazardous materials as a result of improper handling or use; transportation accidents; environmentally unsound disposal methods; or fire, explosion, or other emergencies. The project applicant would be required to use, store, and transport hazardous materials in compliance with local, state, and federal regulations during operation of the proposed project.

As discussed above under Impact 4.10-2, the proposed project would be required to comply with DOT, Caltrans, and CHP regulations on the transportation of hazardous materials. DOT regulations address transportation of hazardous materials, types of materials defined as hazardous, categories of materials and packages that are forbidden for shipping, and the marking of vehicles transporting hazardous materials (e.g. 49 CFR 171–180).

Caltrans and the CHP enforce and monitor DOT hazardous materials and waste transportation laws and regulations. These regulations include determining container types used and license hazardous waste haulers for hazardous waste transportation on public roads; requiring all motor carriers and drivers involved in transportation

of hazardous materials to apply for and obtain a hazardous materials transportation license from CHP, and requiring a route map in the vehicle.

Chapter 6.5 (Section 25100 et seq.) of the California Health and Safety Code, was established at the state level to ensure compliance with federal regulations to reduce the risk to human health and the environment from the routine use of hazardous substances in the workplace. Specific requirements include identifying hazardous materials in the workplace, providing safety information to workers that handle hazardous materials, and adequately training workers. These regulations must be implemented by the proposed project, as appropriate, and are monitored by the state (i.e., Cal/OSHA in the workplace and DTSC for hazardous waste) and/or local jurisdictions (i.e., City of Merced Fire Department, City of Merced Environmental Health Division, and MCDEH).

The City of Merced has adopted the Merced County Hazardous Waste Management Plan, which is enforced by MCDEH (City of Merced 1997). As the CPUC for Merced County (both unincorporated areas and incorporated cities), MCDEH issues permits to and inspects businesses that use, store, or handle quantities of hazardous materials and/or waste greater than or equal to 55 gallons, 500 pounds, or 200 cubic feet of a compressed gas at any time. MCDEH is also responsible for:

- ▶ implementing hazardous material management plans and inventories, which include an inventory of hazardous materials used, handled, or stored at any business in the County;
- ▶ permitting and inspecting businesses that handle acutely hazardous materials, such as those that would be used in the project site, that require a risk management and prevention program; and
- ▶ assisting local fire departments in responding to emergencies involving hazardous materials.

Regulated activities, such as the proposed project, are managed by MCDEH as the CUPA, a certification issued and regulated by Cal/EPA and DTSC. Such compliance would reduce the potential for accidental release of hazardous materials during operation of the proposed project. As a result, it would lessen the risk of exposure of the general public to accidental release of hazardous materials, as well as the demand for incident emergency response.

In addition, the SWRCB regulates the use of aboveground storage tanks through the Aboveground Petroleum Storage Act (Health and Safety Code Sections 25270–25270.13). The act requires that facilities storing petroleum in a single tank greater than 1,320 gallons or facilities storing petroleum in aboveground tanks or containers with a cumulative storage capacity of greater than 1,320 gallons file a storage statement, pay a facility fee, and prepare and implement a federal SPCC plan.

The proposed project would be required to comply with all applicable federal, state, and local regulations pertaining to safe-transit practices, workplace safety, spill prevention, and other hazardous materials-related concerns. MCDEH, the City of Merced Environmental Health Division, the City of Merced Fire Department, and other agencies would be required to enforce compliance, including issuing permits and tracking and inspections of hazardous materials transportation and storage. As a result, the proposed project would not create a significant hazard to employees or the general public during materials transport or project operations. Therefore, this impact would be considered *less than significant*.

Mitigation Measure

No mitigation is required.

IMPACT 4.10-4 Create a Significant Hazard through the Transport of Hazardous Materials Adjacent to Schools in the Vicinity of the Project. *The proposed project would require transportation of materials, some of which are considered hazardous, during construction of the proposed project and through the course of its daily operations. Based on the designated truck routes to and from the project site (see Section 4.11, Traffic and Transportation), no tractor trailer traffic is expected to travel past any of these schools; however, there is a potential for trucks to stray from their expected routes occasionally and pass by these schools. Therefore, impacts related to creation of significant hazards to students would be significant.*

Two elementary schools and one high school are located in the vicinity of the proposed project. Pioneer Elementary School is located at 2950 Gerard Avenue approximately 1.4 miles southwest of the project site on the southwest corner of Coffee Street and Gerard Avenue. Weaver Elementary School is located at 3076 East Childs Avenue approximately 1 mile west of the project site on the northeast corner of Coffee Street and Childs Avenue. Golden Valley High School is located at 2121 East Childs Avenue approximately 1.7 miles west of the project site on the northeast corner of Childs Avenue and Parsons Avenue.

Based on the designated truck routes to and from the project site (see Section 4.11, Traffic and Transportation), no tractor trailer traffic is expected to travel past any of these schools during construction or operation of the project. However, there is a potential for trucks to stray from their expected routes occasionally and pass by these schools. Transportation of hazardous materials on roadways adjacent to these schools would potentially expose students to hazardous materials resulting from transportation accidents, such as hazardous materials spills, fires, or explosions. This impact would be **significant**.

Mitigation Measure

Implementation of Mitigation Measure 4.11-2a would reduce significant impacts associated with the exposure of students to hazardous materials resulting from transportation accidents to a **less-than-significant** level by requiring a traffic safety plan during construction of the project and by designating specific truck routes during operation of the project.

IMPACT 4.10-5 Exposure to Electromagnetic Fields. *The proposed project would be in close proximity to electrical transmission lines on the project site and would potentially result in health hazards associated with exposure to EMFs emitted from these lines. Because the proposed warehouse building and associated uses would be constructed approximately 400 feet from these transmission lines, the exposure to EMFs would be minimal and the proposed location of on-site facilities would be adequate to reduce potential hazards associated with electromagnetic fields. This impact would be less than significant.*

According to the Phase I ESA, two overhead power lines, one 115-kV line and one 230-kV line, run north-to-south through the eastern portion of the site, continuing to the north and south off-site. These power lines would remain on the project site following construction of the proposed project. The area containing these power lines would remain as an easement, and all site development would take place on the approximately 80% of the project site that lies west of this easement. Because the proposed project would be in close proximity to these transmission lines, there is the potential for EMFs emitted from these lines to result in potential health hazards to workers on the project site.

The state does not have setback requirements from electrical transmission lines. However, ongoing research shows that once emitted from the source, an EMF dissipates rapidly in a circular pattern and weakens with distance from the emitting source. At a distance of 300 feet and at times of average electrical demand, the EMF from transmission lines would be similar to typical background levels found in most homes. (U.S. Department of Health and Human Services 2002.) Because the proposed warehouse building and associated uses would be constructed approximately 400 feet west of the on-site overhead power lines, the exposure to EMFs would be minimal and the proposed location of site facilities would be adequate to reduce potential hazards associated with electromagnetic fields. This impact would be **less than significant**.

Mitigation Measure

No mitigation is required.

IMPACT 4.10-6 *Exposure of People or Structures to Wildfire Fires. The project site is not located in a designated wildland fire area, a High Fire Hazard Severity Zone, or a SRA area. Therefore, the project would not expose people or structures to significant risk of loss of injury involving wildland fires. This impact would be less than significant.*

The CDF's Fire Resource Assessment Program identifies the City of Merced and the project site as a "developed" zone for wildland fires (CDF 1998). No areas or zones in the City are defined as Very High Fire Hazard Severity, and the City is not in a SRA, which is defined as part of the state where the CDF is the primary service responsible for providing basic wildland fire protection assistance (CDF 1998). The City of Merced Fire Department responds to wildland fires within the Merced city limits, and would be capable of providing fire protection services to the project site (Franco, pers. comm.). The department's response time goal for emergency calls is 4–6 minutes 90% of the time. Refer to Section 4.12 "Utilities and Public Services" for more information related to fire protection service. Therefore, the project would not expose people or structures to significant risk of loss of injury involving wildland fires. This impact would be ***less than significant***.

Mitigation Measure

No mitigation is required.

4.11 TRAFFIC AND TRANSPORTATION

This section establishes the relevant setting and describes the transportation impacts of the proposed Wal-Mart Distribution Center. This section outlines assumptions, methodology, and analysis conducted to determine the traffic impacts of the proposed project, as well as any impacts to transit, bicycle, and pedestrian facilities.

4.11.1 ENVIRONMENTAL SETTING

SOURCES OF INFORMATION

This EIR section is based in large part on a traffic impact analysis conducted by DKS Associates. The DKS traffic impact study is included in full as Appendix E of this EIR. The transportation analysis also is based on data provided by the City of Merced, the County of Merced, data collection from WILTEC in October, 2008, and a traffic impact analysis prepared for Carter & Burgess, Inc. by kdANDERSON Transportation Engineers in June, 2005.

Summary of Traffic Impact Study

Following is a summary of the conclusions of the traffic impact study (Appendix E):

The purpose of the traffic impact study was to determine the potential transportation impacts of the proposed Wal-Mart Distribution Center located in the City of Merced. The proposed project consists of approximately 1.1 million square feet of warehouse, a 37,000 square foot office and support facility, a 17,000 square foot truck maintenance building and a 1,600 square foot fire pump house. It is estimated that the Wal-Mart Distribution Center would generate approximately 2,400 net new daily trips with 143 net new AM peak hour trips (87 inbound, 56 outbound) and 328 net new PM peak hour trips (45 inbound, 283 outbound trips).

The report analyzes the traffic conditions of intersection and roadway segments during the weekday A.M. and P.M. peak hours. The operation of these intersections and roadway segments was evaluated for the following scenarios: Existing Condition, 2010 Background Condition, 2010 Background with Project Condition, 2030 Cumulative No Project Condition and 2030 Cumulative with Project Condition.

It should be noted that under the 2010 Background and 2010 Background with Project Conditions, Campus Parkway was assumed to be constructed between Mission Interchange and Childs Avenue. It was assumed that the corridor would be extended north from Childs Avenue and completed by year 2030 and serve as a main corridor that would carry traffic to the area north of Merced. The traffic travel patterns within the area would, therefore, be different between 2010 Project Condition and 2030 Cumulative Condition.

Based on the analysis results and the threshold criteria, the proposed project would result in one significant transportation impact to the study intersections under the 2030 Cumulative with Project Condition PM peak period due to the development of the Wal-Mart Distribution Center. Additionally, one significant transportation impact to the roadway segment of SR 140 between Santa Fe Avenue and Kibby Road under the 2030 Cumulative with Project Condition PM peak period due to the development of the distribution center.

Existing Condition

Under the Existing Condition, all study intersections and all roadway segments operate at acceptable Level of Services (LOS D or better) during the AM and PM peak hours.

2010 Background Condition

During the AM peak hour, one intersection, SR 140 at Baker Drive, would operate at LOS E. The intersections of Childs Avenue at SR 99 northbound off-ramp would operate at LOS F. The other intersections would continue to operate at acceptable LOS (LOS D or better). During the PM peak hour, four intersections, SR 140 at Baker Drive, Childs Avenue at SR 99 southbound off-ramp, Childs Avenue at SR 99 northbound off-ramp and Childs Avenue at Parsons Avenue would operate at deficient LOS (LOS F). All other intersections would continue to operate at acceptable LOS (LOS D or better). All study roadway segments would continue to operate at an acceptable LOS under 2010 Background Conditions during the AM and PM peak hours.

2030 Cumulative Condition

During the AM peak hour, six intersections, SR 140 at Parsons Avenue, SR 140 at Baker Drive, SR 140 at Kibby Road, Childs Avenue at SR 99 southbound off-ramp, Childs Avenue at SR 99 northbound off-ramp, and Mission Avenue at Coffee Street would operate at LOS F. Childs Avenue and Parsons Avenue would operate at LOS E while all other intersections would continue to operate at acceptable LOS (LOS D or better). During the PM peak hour, five intersections, SR 140 at Baker Drive, SR 140 at Kibby Road, Childs Avenue at SR 99 southbound off-ramp, Childs Avenue at SR 99 northbound off-ramp, and Mission Avenue and Coffee Street would all operate at LOS F. Two intersections, Childs Avenue and Parsons Avenue and Mission Avenue at SR 99 southbound off-ramp, would operate at LOS E. All other intersections would continue to operate at acceptable LOS (LOS D or better). The roadway segment of SR 140 between Santa Fe Avenue and Kibby Road would deteriorate from LOS D under 2010 Background Conditions to operate at LOS E under the 2030 Cumulative Conditions during the AM peak hour, but would continue to operate at acceptable LOS (LOS D) during the PM peak hour.

A Caltrans Peak Hour Signal Warrant analysis was performed at all unsignalized intersections. Based on the signal warrant analysis, the intersection of Childs Avenue and SR 99 northbound off-ramp meets the signal warrant under the Existing Condition PM peak hour. In addition, a signal warrant is also satisfied under the 2010 Background Condition at the intersections of SR 140 at Baker Drive, Childs Avenue at SR 99 southbound off-ramp, and Childs Avenue at SR 99 northbound off-ramp. Under the 2030 Cumulative Condition, the signal warrant would also be met at two other intersections, SR 140 and Kibby Road and Mission Avenue at Coffee Street.

One intersection, Mission Avenue at SR 99 northbound off-ramps would experience a significant impact under the 2030 Cumulative with Project scenarios under the PM peak hour. This impact would be mitigated by restriping the northbound and westbound approach would restore the operations to an acceptable LOS of C, fully mitigating this impact resulting no significant impacts for the project.

In addition, mitigation measures have been recommended for six intersections as a means to improve level of service from a deficient level, E or F, to an acceptable level of D or better. For the unsignalized intersections that would operate at a deficient Level of Services (LOS E or F), the installation of a traffic signal control (sometimes with lane additions as well) was recommended as an mitigation measure to improve intersection operation to an acceptable level.

One roadway segment, SR 140 between Santa Fe Avenue and Kibby Road, experienced a significant impact in the 2030 Cumulative with Project scenario for the PM peak hour. This impact would be mitigated by adding on lane in each direction in this segment. With the proposed mitigation, this segment would operate under LOS A, fully mitigating this impact resulting in no significant impacts.

Additionally, one mitigation measure is recommended for the roadway segment of Tower Road between SR 140 and Gerard Avenue. Restriping this segment is necessary since the existing striping has faded. In addition, at the intersections of Tower Road and Gerard Avenue and Tower Road and SR 140, intersection geometry should be improved to provide proper turning radii to accommodate the turning movements of standard trucks.

Note that the cumulative traffic impacts are analyzed in Section 6 “Cumulative and Growth Inducing Impacts.”

PROJECT LOCATION

The project is located toward the southern edge of the City of Merced, approximately three miles from downtown and two miles east of State Route (SR) 99. The project site is bounded by Childs Avenue to the north, Gerard Avenue to the south, Tower Road to the east, and approximately a quarter mile east of the future Campus Parkway.

ROADWAYS IN THE PROJECT VICINITY

Based on the proposed operations on-site, the traffic analysis conducted to support this EIR focused on several area roadways and intersections. Key roadways are described as follows.

SR 99 is oriented northwest and southeast through the City of Merced. It is a major regional freeway that runs parallel with Interstate 5 (I-5) and serves both local and regional traffic. SR 99 connects with I-5 in Red Bluff in the northern portion of the state and again with I-5 in Bakersfield, roughly 160 miles south of Merced. SR 99 carries approximately 63,000 vehicles per day in Merced County. The project site is located approximately two miles east of SR 99.

SR 140 (SR 140/Yosemite Parkway) is a two-lane highway oriented east to west and connecting Merced with Yosemite National Park. SR 140 between SR 99 and Santa Fe Avenue is classified as an urban roadway. SR 140 carries approximately 12,300 vehicles per day between SR 99 and Parsons Avenue. The project site is located approximately ½ mile south of SR 140.

Childs Avenue is a two-lane urban street serving as a minor arterial road in the project area and includes one lane in each direction between SR 59, west of 99, to east of the Specific Urban Development Plan boundary, east of Tower Road.. Childs Avenue is oriented from east to west in the project vicinity, connecting West Avenue (west of SR 99) and Cunningham Road (beyond the City’s eastern boundary). Between SR 99 and Parsons Avenue, Childs Avenue carries approximately 10,700 vehicles per day. The project site is located immediately south of Childs Avenue.

Gerard Avenue is a two-lane urban street serving as a local collector road. Gerard Avenue is oriented east to west, extending from west of SR 99 to the unincorporated community of Planada, which is roughly 10 miles east of Merced. Gerard Avenue carries approximately 3,900 vehicles per day between Parsons Avenue and Coffee Street. The project site is located north of and adjacent to Gerard Avenue.

Mission Avenue is designated as a “Divided Arterial” and is an urban street serving as a local collector road and includes two lanes in each direction. Mission Avenue runs in the east-west direction starting west of SR 140 and ends at Coffee Street. It carries a traffic volume of approximately 1,800 vehicles per day between SR 99 and Coffee Street. The project site is located approximately one and a half mile north and east of Mission Avenue. The interchange at Mission Avenue and SR 99 and extension of Mission Avenue to Coffee Street opened in summer 2008.

Parsons Avenue is a two-lane urban street serving as a minor arterial road from Childs Avenue north to Old Lake Road. It is a collector road from Childs Avenue south to Coffee Road. A “collector” is described in the *Merced Vision 2015 General Plan* (Merced General Plan) (City of Merced 1997) as a residential street that collects traffic from and distributes traffic onto the local streets in a neighborhood. Collector roads, in terms of traffic volumes and design speed, are typically between arterials and local roadways. For more information, please refer to the *Merced Vision 2015 General Plan*, Chapter 4, “Transportation and Circulation.” Parsons Avenue is oriented north to south between SR 140 and SR 99. The road has a northwest to southeast orientation from SR 99 to Gerard

Avenue. Parsons Avenue carries approximately 4,600 vehicles per day between Childs Avenue and Gerard Avenue. The project site is located roughly 1½ miles east of Parsons Avenue.

Coffee Street is a two-lane urban street serving as a local collector road. Coffee Street is oriented north to south connecting Baker Drive to the north with Gerard Avenue to the south. Coffee Street then picks up again at South Parsons Avenue and continues south. The road carries approximately 2,000 vehicles per day between Childs Avenue and Gerard Avenue. The project site is located roughly one mile east of Coffee Street.

Kibby Road is a two-lane urban street serving as a local collector road. Kibby Road is oriented from north to south, connecting Childs Avenue on the south with East Yosemite Avenue on the north, roughly three miles north of the proposed project site. This road carries approximately 1,400 vehicles per day. Kibby Road ends at Childs Avenue directly adjacent to the proposed project site.

Tower Road is a two-lane rural street having a north to south orientation. The road connects to SR 140 on the north and to Gerard Avenue on the south. Tower Road currently carries approximately 200 vehicles per day. The project site is located west of and adjacent to Tower Road.

Baker Drive is a two-lane urban street serving as a local road. Baker Drive is oriented east to west, connecting SR 140 on the west and Coffee Street on the east. The road carries approximately 1,000 vehicles per day. The project site is located roughly 0.7 mile east of Baker Drive.

Campus Parkway will be constructed in phases as funding becomes available. Construction of the first phase will begin in 2009 and be completed in 2010 and includes:

1. Two through lanes in each direction from Coffee Street to Gerard Avenue.
2. A reduction to one through lane in each direction from Gerard Avenue to Childs Avenue.
3. The intersection of Campus Parkway and Gerard Avenue will be signalized with dual left turn pockets from all approaches. Both westbound left turn pockets are being designed to accommodate STAA vehicles.
4. The intersection of Campus Parkway and Childs Avenue will be an unsignalized three-way approach intersection in the 2010 condition and a four-way approach signalized intersection in the 2030 condition.

The segment of Campus Parkway between the Mission Avenue/SR 99 interchange and Childs Avenue is expected to be operational by mid-2010. Construction of subsequent phases has not yet been scheduled. Design has begun on the remaining portions of Campus Parkway from Childs Avenue to Yosemite Avenue. At this point, there is insufficient information to confirm whether or not later phases of Campus Parkway will be completed by mid-2010. (Pers. Com, Steve Rough, Merced County Public Works)

SR 152 was not included in the traffic analysis since trucks traveling to/from SR 152 would access the site via SR 99.

TRANSIT, PEDESTRIAN, AND BICYCLE FACILITIES IN THE PROJECT VICINITY

The Transit Joint Powers Authority of Merced County (The BUS) has jurisdiction over public transit in the County of Merced. Currently, there are no bus routes that operate within the vicinity of the project site. The closest bus route is Route 5, East-West City Shuttle. East-West City Shuttle provides weekday service between Merced Municipal Airport and Pioneer Elementary School between 9:30 a.m. and 5:45 p.m. at 45-minute intervals.

Pedestrian and bicycle activity is relatively light in the vicinity of the proposed project. There are no pedestrian sidewalks or bicycle facilities provided along the roadway segments adjacent to the project site.

SCHOOLS IN THE STUDY AREA

The proposed project site is located within the Weaver Union Elementary School District for elementary and Merced Union High School District for high schools.

Elementary and Middle Schools

Pioneer Elementary School (Grades K–3) is located at the southwest corner of the Coffee Street and Gerard Avenue. Regular school days begin at 8:30 a.m. and end at 2:30 p.m. The campus is open from 8:00 a.m. to 4:00 p.m. Vehicular access to the site is provided via Gerard Avenue with a designated area for parent pick-up/drop-off and visitor parking lot. A secondary entrance is provided via Coffee Street with designated areas for school bus pick-up/drop-off and staff parking and visitor parking for school related events.

Based on information received from school staff, several on-street parking activities including curbside and double parking occur along Gerard Avenue and Coffee Street during the after school pick-up period of 2:00 to 3:00 p.m.

Weaver Elementary School (Grades 4-8) is located at the northeast corner of Coffee Street and Childs Avenue. Regular school days begin at 8:30 a.m. and end at 3:30 p.m. The campus is open from 8:00 a.m. to 4:30 p.m. Vehicular access to the site is provided via Childs Avenue with a designated area for parent pick-up/drop-off and school staff parking lot. A secondary entrance is provided via Coffee Street with designated areas for school bus pick-up/drop-off.

Based on information received from school staff, several on-street parking activities including curbside and double parking occur along Childs Avenue and Coffee Street.

High Schools

Golden Valley High School (Grades 9–12) is located at the northeast corner of Parsons Avenue and Childs Avenue. Regular school days begin at 8:00 a.m. and end at 3:00 p.m. The campus is open from 7:00 a.m. to 4:00 p.m. Vehicular access to the site is provided via Childs Avenue and Parsons Avenue. Vehicular accesses are provided from Parsons Avenue with designated areas for parent pick-up/drop-off, school bus pick-up/drop-off and student parking lot. The visitor and school staff parking lot is provided via Childs Avenue.

STUDY AREA AND SCENARIOS

The following intersections and roadway segments were evaluated to determine the traffic conditions during the weekday a.m. and p.m. peak hours. The selection of the study intersections and roadway segments was based on traffic activities around the study area roadway network and the anticipated increase in traffic volumes due to the project, as well as the travel patterns of the project trips. The first phase, from the Mission Avenue interchange to Childs Avenue, of Campus Parkway is anticipated to begin construction in July 2008 and be built by July 2009. It is anticipated this new roadway would connect a new SR 99 interchange at Mission Avenue with Childs Avenue, near the proposed project site. The intersections of Childs Avenue at Campus Parkway and Gerard Avenue at Campus Parkway were analyzed only under the future scenarios. For more information on the study area, scenarios analyzed, and methodology, please refer to Traffic Study, included as Appendix E of this EIR.

Study Intersections

- ▶ SR 140 (Yosemite Parkway)/Parsons Avenue
- ▶ SR 140/Baker Drive
- ▶ SR 140/Kibby Road
- ▶ Childs Avenue/SR 99 Southbound Off-Ramp
- ▶ Childs Avenue/SR 99 Northbound Off-Ramp

- ▶ Childs Avenue/Parsons Avenue
- ▶ Childs Avenue/Coffee Street
- ▶ Childs Avenue/Kibby Road
- ▶ Childs Avenue/Tower Road
- ▶ Gerard Avenue/Coffee Street
- ▶ Gerard Avenue/Tower Road
- ▶ Mission Avenue/SR 99 Southbound Off-Ramp
- ▶ Mission Avenue/SR 99 Northbound Off-Ramp
- ▶ Mission Avenue/Coffee Street
- ▶ Childs Avenue/Campus Parkway
- ▶ Gerard Avenue/Campus Parkway

Roadway and Freeway Segments

- ▶ SR 99 between SR 140 and Mission Avenue
- ▶ SR 140 between SR 99 and Parsons Avenue
- ▶ SR 140 between Parsons Avenue and Santa Fe Avenue
- ▶ SR 140 between Santa Fe Avenue and Kibby Road
- ▶ Parsons Avenue between Childs Avenue and SR140
- ▶ Coffee Street between Baker Drive and Childs Avenue
- ▶ Coffee Street between Childs Avenue to Gerard Avenue
- ▶ Gerard Avenue between Parsons Avenue and Coffee Street
- ▶ Gerard Avenue between Coffee Street to project site
- ▶ Kibby Road between SR 140 and Childs Avenue
- ▶ Childs Avenue between SR 99 and Parsons Avenue
- ▶ Childs Avenue between Parsons Avenue and Coffee Street
- ▶ Childs Avenue between Coffee Street and Kibby Road
- ▶ Childs Avenue between Kibby Road and Tower Road
- ▶ Campus Parkway between Coffee Street and Gerard Avenue
- ▶ Campus Parkway between Gerard Avenue and Childs Avenue
- ▶ Campus Parkway between Childs Avenue and SR-140

Intersections and roadway segments were evaluated for the traffic scenarios listed below. These scenarios were selected to be consistent with other traffic studies prepared for the City of Merced, and are typical of a comprehensive traffic analysis. The Background Scenario is a near-term future baseline condition, and the project condition is measured against this condition. This provides an accurate comparison rather than a comparison to the Existing Conditions, since the Background Scenario includes other known approved development that will be built and occupied prior to the proposed project.

- ▶ Existing Condition—Operation analysis based on existing peak-hour volumes and intersection and roadway segment lane geometry.
- ▶ 2010 Background Condition—Based on forecasted 2010 traffic volumes plus net new trips related to approved projects in the vicinity of the proposed project.
- ▶ 2010 Background with Project Condition—2010 Background Condition plus project-generated traffic estimated for the proposed project.
- ▶ 2030 Cumulative No-Project Condition—Based on growth factors estimated from the County of Merced’s Transportation Demand Model plus net-new trips related to approved residential project in the vicinity of the proposed project. 2030 is horizon year in the County’s MCAG model, which is the reason it was used in the traffic analysis. Please refer the Cumulative impacts section of this EIR for more information.

- 2030 Cumulative with Project Condition—2030 Cumulative No-Project Condition plus project generated traffic estimated for the proposed project. Please refer the Cumulative impacts section of this EIR for more information.

EXISTING LEVEL OF SERVICE

“Level of service” (LOS) is a way of describing the relative amount of traffic congestion along a roadway segment or intersection. Refer to the discussion later in this section or in Appendix E of this EIR for more information regarding level of service.

As shown in Table 4.11-1, under the existing condition, all study intersections and roadway segments operate at acceptable level of services (LOS D or better) during the a.m. and p.m. peak hours.

Intersections

Level of service calculations were performed for the weekday a.m. and p.m. peak hours. The a.m. peak hour is the busiest one-hour between 7:00 and 9:00 a.m. The p.m. peak hour is the highest one-hour traffic volume between 4:00 and 6:00 p.m. Exhibit 4.11-1 illustrates the existing traffic volumes for each study intersection. Table 4.11-1 summarizes the results of the intersection level of service for the existing condition. Based on the LOS results, all study intersections operate at an acceptable LOS D or better. Please refer to Appendix E for more information.

Table 4.11-1 Existing Condition Intersection Level of Service Analysis						
No	Intersection Location	Control	AM Peak Hour		PM Peak Hour	
			Delay ^a	LOS ^b	Delay	LOS
1	SR 140 / Parsons Avenue	Signalized	24.1	C	24.4	C
2	SR 140 / Baker Drive	Unsignalized	1.8		2.3	
	SB Approach		18.8	C	20.7	C
	EB Left		8.9	A	8.2	A
3	SR 140 / Kibby Road	Unsignalized	3.7		2.3	A
	NB Approach		13.7	B	13.1	B
	SB Approach		12.7	B	12.0	B
	EB Left		7.8	A	7.6	A
	WB Left		7.5	A	0.0	A
4	Childs Avenue / SR 99 Southbound Off-Ramp	AWSC ^c	12.3	B	13.0	B
5	Childs Avenue / SR 99 Northbound Off-Ramp	AWSC	18.5	C	18.1	C
6	Childs Avenue / Parsons Avenue	Signalized	33.8	C	32.0	C
7	Childs Avenue / Coffee Street	Signalized	30.4	C	22.8	C
8	Childs Avenue / Kibby Road	Unsignalized	3.2		2.0	
	SB Approach		9.4	A	9.2	A
	EB Left		7.5	A	7.4	A
9	Childs Avenue / Tower Road	Unsignalized	1.2		0.6	
	NB Approach		9.8	B	9.6	A
	SB Approach		9.4	A	9.6	A
	EB Left		7.4	A	7.3	A
	WB Left		0.0	A	0.0	A
10	Gerard Avenue / Coffee Street	AWSC	8.3	A	7.1	A

Table 4.11-1 Existing Condition Intersection Level of Service Analysis						
No	Intersection Location	Control	AM Peak Hour		PM Peak Hour	
			Delay ^a	LOS ^b	Delay	LOS
11	Gerard Avenue / Tower Road	Unsignalized	6.9		6.9	
	SB Approach		6.5	A	6.9	A
	EB Left		7.1	A	7.0	A
14	Mission Avenue / SR 99 Southbound	Signalized	17.8	B	17.6	B
15	Mission Avenue / SR 99 Northbound	Signalized	24.1	C	18.6	B
16	Mission Avenue / Coffee Street	AWSC	8.1	A	7.8	A
Notes: ¹ Delay is in seconds per vehicle. For signalized intersections, delay is based on average stopped delay. For unsignalized intersections, delay is based at the worst approach for two-way stop controlled intersection. ² LOS = level of service. ³ AWSC = All-way stop control Source: DKS Associates 2008						

Roadway Segments

Eight roadway segments were evaluated for the existing A.M. and P.M. peak hour operating conditions. Table 4.11-2 provides a summary of the roadway segments operational condition under the existing condition. As shown, all roadway segments currently operate at or above LOS D. Please refer to Appendix E for more information.

2010 BACKGROUND LEVELS OF SERVICE

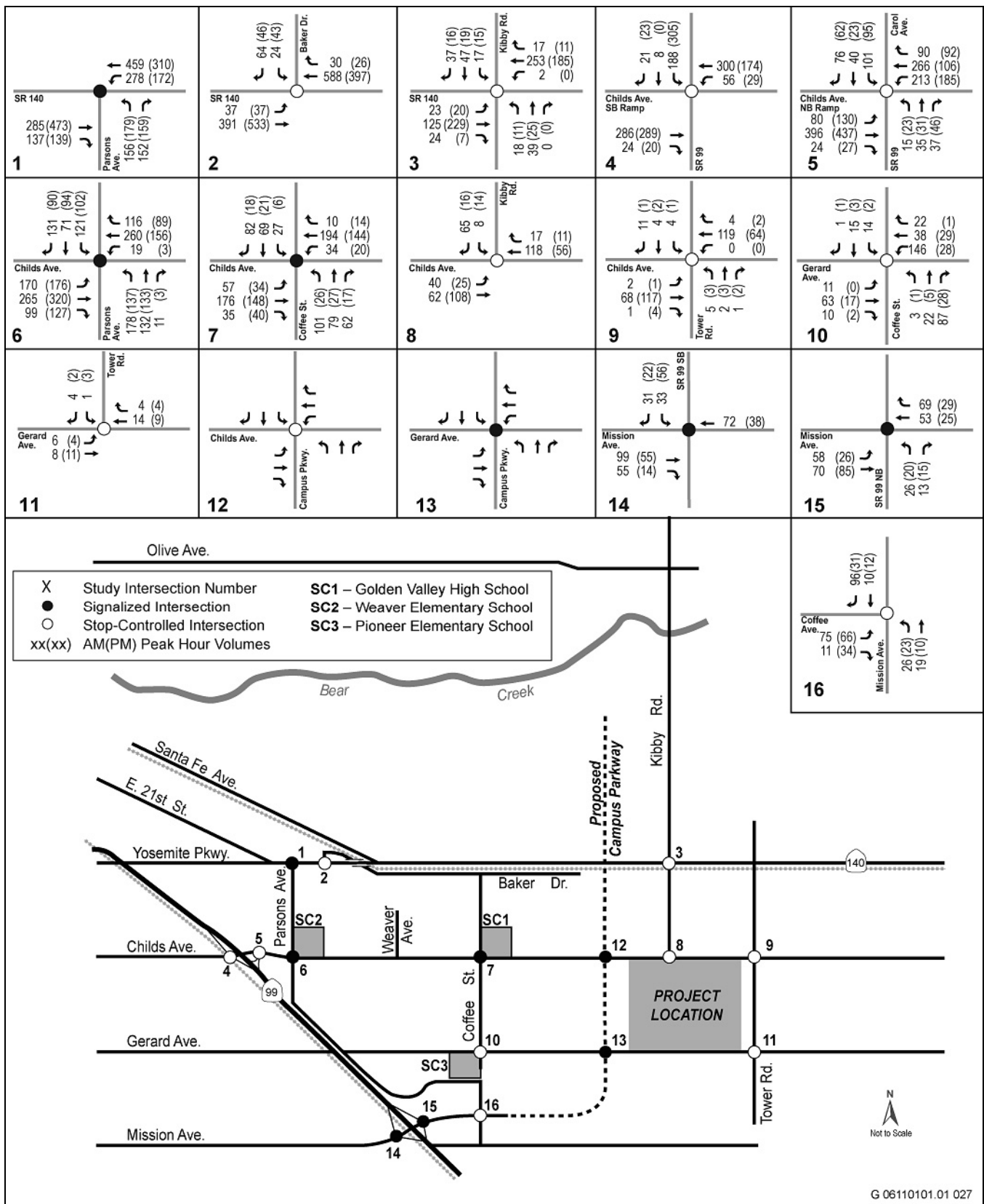
The traffic analysis conducted to support this EIR calculated the levels of service for study area intersections and roadway segments in 2010 without any project traffic. This “background” traffic is compared to level of service *with* project traffic to determine impacts. The impacts of the project are described later in this chapter.

Taking into account anticipated urban development between the present and 2010, during the A.M. peak hour, the intersection of Childs Avenue at northbound off-ramp of SR 99 would operate at LOS F while the intersection of Baker Drive and SR 140 would operate at LOS E. The other study area intersections would continue to operate at acceptable LOS (LOS D or better).

During the P.M. peak hour, the addition of forecasted (non-project) traffic volumes and trips from approved developments would cause three intersections to deteriorate from an acceptable LOS (LOS D or better) to a deficient LOS (LOS E or F) during both peak hours:

- ▶ SR 140 at Baker Drive (LOS F);
- ▶ Childs Avenue at SR 99 southbound off-ramp (LOS F); and
- ▶ Childs Avenue at SR 99 northbound off-ramp (LOS F)

All other intersections would continue to operate at acceptable LOS (LOS D or better). Please refer to Table 4.11-3 for a summary of intersection LOS under 2010 peak-hour conditions. Exhibit 4.11-2 illustrates the 2010 Background Condition traffic volumes for each study intersection. Please refer to Appendix E for more detail.



Source: DKS Associates 2007

Existing Condition Weekday Peak Hour Intersection Volumes

Exhibit 4.11-1

**Table 4.11-2
Existing Condition Roadway Segment-Level of Service Analysis**

Roadway Segment	Type of Facilities	Location	Measure of Effectiveness (MOE)	AM Peak Hour			PM Peak Hour		
				Volume (veh/hr)	MOE ^a	LOS ^b	Volume (veh/hr)	MOE	LOS
1 SR 99	Freeway	from Mission Avenue to SR 140	Density (pc/mi/ln)	422	34.9	A	612	34.5	A
		from SR 140 to Mission Avenue	Density (pc/mi/ln)	615	34.5	A	489	34.8	A
2 SR 140	Urban Class III	from SR 99 to Parsons Avenue	Travel Speed (mi/hr)	737	39.9	A	482	40.0	A
		from Parsons Avenue to SR 99	Travel Speed (mi/hr)	437	40.0	A	632	39.9	A
	Urban Class II	from Parsons Avenue to Santa Fe Avenue	Travel Speed (mi/hr)	422	34.9	A	612	34.5	A
		from Santa Fe Avenue to Parsons Avenue	Travel Speed (mi/hr)	615	34.5	A	489	34.8	A
	Two-lane Highway Class I	between Santa Fe Avenue and Kibby Road	Percent Time-Spent-Following	1,230	68	D	1,176	68	D
3 Parson Avenue	Urban Class III	from Childs Avenue and SR 140	Travel Speed (mi/hr)	418	34.9	A	398	34.9	A
		from SR 140 and Childs Avenue	Travel Speed (mi/hr)	415	34.9	A	311	35.0	A
4 Coffee Street	Urban Class IV	from Baker Drive to Childs Avenue	Travel Speed (mi/hr)	146	30.0	A	75	30.0	A
		From Childs Avenue to Baker Drive	Travel Speed (mi/hr)	178	30.0	A	45	30.0	A
	Urban Class IV	from Childs Avenue to Gerard Avenue	Travel Speed (mi/hr)	242	30.0	A	70	30.0	A
		from Gerard Avenue and Childs Avenue	Travel Speed (mi/hr)	138	30.0	A	81	30.0	A
5 Gerard Avenue	Urban Class III	from Parson Avenue and Coffee Street	Travel Speed (mi/hr)	84	35.0	A	19	35.0	A
		from Coffee Street to Parson Avenue	Travel Speed (mi/hr)	42	35.0	A	31	35.0	A
	Urban Class II	from Coffee Street to Project Site	Travel Speed (mi/hr)	164	40.0	A	47	40.0	A
		from Project Site to Coffee Street	Travel Speed (mi/hr)	206	40.0	A	58	40.0	A

Table 4.11-2

Table 4.11-2 Existing Condition Roadway Segment-Level of Service Analysis										
Roadway Segment	Type of Facilities	Location	Measure of Effectiveness (MOE)	AM Peak Hour			PM Peak Hour			
				Volume (veh/hr)	MOE ^a	LOS ^b	Volume (veh/hr)	MOE	LOS	
6 Kibby Road	Urban Class II	from SR 140 to Childs Avenue	Travel Speed (mi/hr)	57	45.0	A	36	45.0	A	
		from Childs Avenue to SR 140	Travel Speed (mi/hr)	73	45.0	A	30	45.0	A	
7 Childs Avenue	Urban Class III	from SR 99 to Parsons Avenue	Travel Speed (mi/hr)	534	34.7	A	623	34.5	A	
		from Parsons Avenue to SR 99	Travel Speed (mi/hr)	569	34.6	A	383	34.9	A	
	Urban Class III	from Parsons Avenue to Coffee Street	Travel Speed (mi/hr)	397	34.9	A	425	34.9	A	
		from Coffee Street to Parsons Avenue	Travel Speed (mi/hr)	395	34.9	A	248	35.0	A	
	Urban Class II	from Coffee Street to Kibby Road	Travel Speed (mi/hr)	295	40.0	A	405	40.0	A	
		from Kibby Road to Coffee Street	Travel Speed (mi/hr)	238	40.0	A	370	40.0	A	
	Urban Class II	from Kibby Road to Tower Road	Travel Speed (mi/hr)	112	40.0	A	179	40.0	A	
		from Tower Road to Kibby Road	Travel Speed (mi/hr)	160	40.0	A	133	40.0	A	
	8 Campus Parkway	Urban Class III	from Coffee Street to Gerard Ave	Travel Speed (mi/hr)	n/a	n/a	n/a	n/a	n/a	n/a
			from Gerard Avenue to Coffee Street	Travel Speed (mi/hr)	n/a	n/a	n/a	n/a	n/a	n/a
Urban Class III		from Gerard Avenue to Childs Avenue	Travel Speed (mi/hr)	n/a	n/a	n/a	n/a	n/a	n/a	
		from Childs Avenue to Gerard Avenue	Travel Speed (mi/hr)	n/a	n/a	n/a	n/a	n/a	n/a	
Urban Class III		from Childs Avenue to SR 140	Travel Speed (mi/hr)	n/a	n/a	n/a	n/a	n/a	n/a	
		from SR 140 to Childs Avenue	Travel Speed (mi/hr)	n/a	n/a	n/a	n/a	n/a	n/a	
Notes: a. MOE= Measures of Effectiveness. For freeway facilities, MOE is measured in density (passenger cars per mile per lane). For urban facilities, MOE is measured in travel speed (miles per hour). For two-lane highway facilities, MOE is measured in percent time-spent following (percent). b. LOS = Level of Service is based on Transportation Research Board, Highway Capacity Manual 2000. Source: DKS Associates 2008										

**Table 4.11-3
2010 Background Condition Intersection-Level of Service Analysis**

No	Intersection Location	Control	AM Peak Hour		PM Peak Hour	
			Delay ^a	LOS ^b	Delay	LOS
1	SR 140 / Parsons Avenue	Signalized	27.5	C	47.9	D
2	SR 140 / Baker Drive	Unsignalized	9.4		13.9	
	SB Approach		40.2	E	>50.0	F
	EB Left		9.2	A	9.2	A
3	SR 140 / Kibby Road	Unsignalized	5.2		4.7	
	NB Approach		12.2	B	13.4	B
	SB Approach		14.3	B	16.3	C
	EB Left		7.8	A	7.7	A
	WB Left		7.6	A	7.9	A
4	Childs Avenue / SR 99 Southbound Off-Ramp	AWSC ^d	22.0	C	>50.0	F
5	Childs Avenue / SR 99 Northbound Off-Ramp	AWSC	>50.0 ^c	F	>50.0	F
6	Childs Avenue / Parsons Avenue	Signalized	46.4	D	43.1	D
7	Childs Avenue / Coffee Street	Signalized	36.9	D	33.1	C
8	Childs Avenue / Kibby Road	Unsignalized	4.2		4.2	
	SB Approach		9.9	A	10.1	B
	EB Left		7.8	A	7.6	A
9	Childs Avenue / Tower Road	Unsignalized	1.1		0.6	
	NB Approach		10.3	B	10.4	B
	SB Approach		9.7	A	9.5	A
	EB Left		7.5	A	7.5	A
	WB Left		0.0	A	0.0	A
10	Gerard Avenue / Coffee Street	AWSC	9.7	A	8.4	A
11	Gerard Avenue / Tower Road	Unsignalized	6.9		6.9	
	SB Approach		6.5	A	6.9	A
	EB Left		7.1	A	7.0	A
12	Childs Avenue / Campus Parkway	AWSC	7.6	A	7.4	A
13	Gerard Avenue / Campus Parkway	Signalized	23.4	C	23.3	C
14	Mission Avenue / SR 99 Southbound	Signalized	18.3	B	13.6	B
15	Mission Avenue / SR 99 Northbound	Signalized	29.8	C	28.5	C
16	Mission Avenue / Coffee Street	Signalized	26.6	C	33.3	C

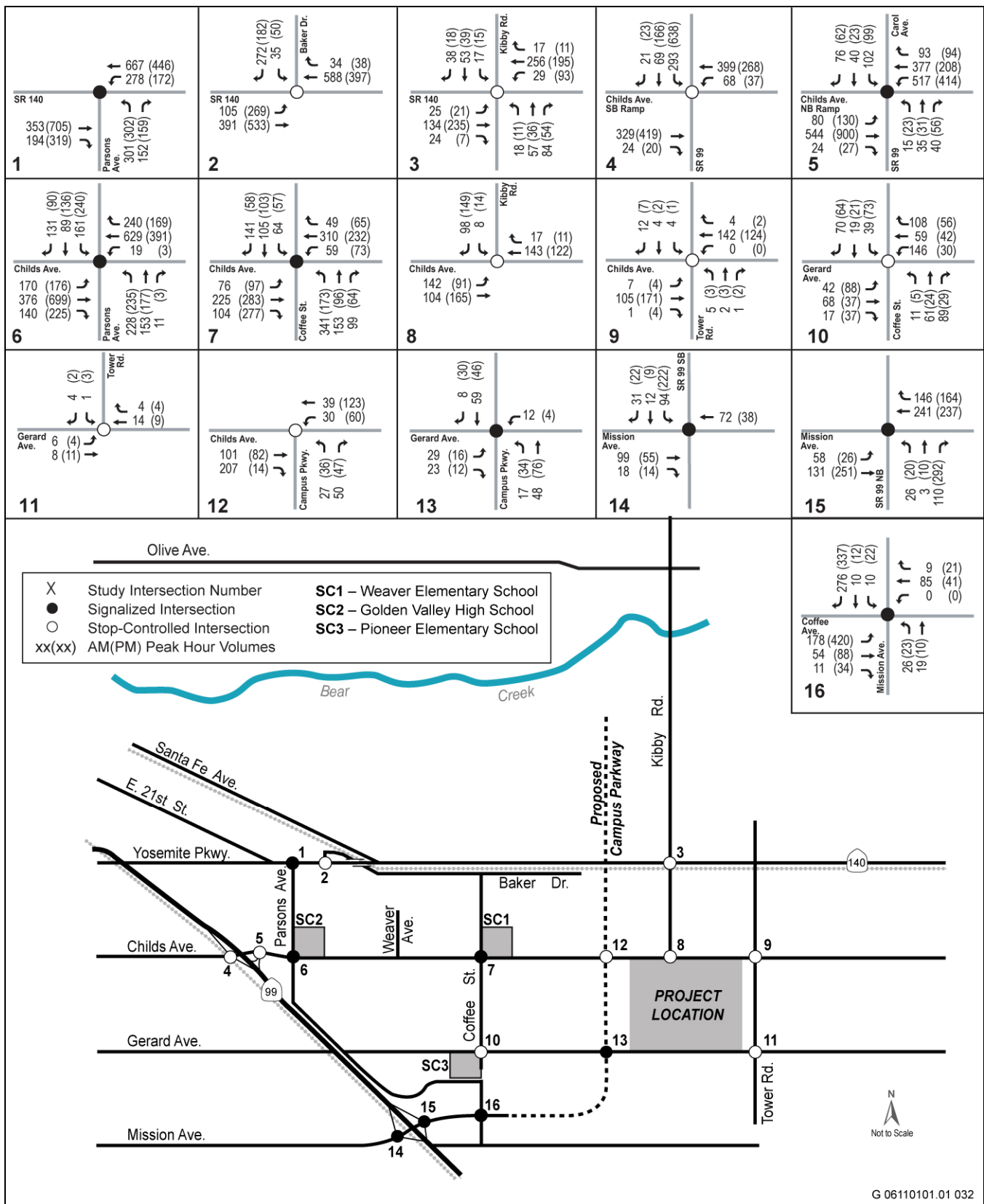
Notes: ^a Delay is in seconds per vehicle. For signalized intersections, delay is based on average stopped delay. For unsignalized intersections, delay is based at the worst approach for two-way stop controlled intersection.

^b LOS = Level of Service

^c For unsignalized intersections, delays >50 are beyond the upper limits of LOS delay estimation equations under the HCM 2000 methodologies.

^d AWSC = All-way stop control

Source: DKS Associates 2008



2010 Background Conditions Weekday Peak Hour Intersection Volumes

Exhibit 4.11-2

Background Traffic

The 2010 background condition includes the existing traffic volumes plus the addition of net-new trips expected to be generated by the approved projects within the study area.

The trip generation for the approved projects in the study area was determined based on the standard trip rates published in the Institute of Transportation Engineers (ITE), Trip Generation, 7th Edition, 2003 for weekday conditions, as summarized in Table 4.11-4.

Tables 4.11-5 and 4.11-6 provide a summary of the trip distribution estimates of the approved projects within the study area.

Roadway Improvement Assumptions

The following roadway improvements have been funded, are under construction, and were assumed to be implemented before the anticipated completion date of the distribution center, and thus were included in this analysis:

- ▶ Campus Parkway Phase 1 Project. The completion of this phase will connect the SR 99-Mission Interchange with Childs Avenue.
- ▶ The intersection of Mission Avenue and Coffee Street will change from all-way stop-controlled to signalized-controlled as a measure to accommodate the construction of Campus Parkway and other approved projects near the intersection.
- ▶ Signalization of Gerard Avenue/Campus Parkway intersection. According to the Campus Parkway design plan provided by Merced County, each of the intersection approaches will consist of two through lanes, two left-turn lanes and one right-turn lane in each approach. Campus Parkway will be a four-lane roadway north of Gerard Avenue and will end at Childs Avenue.
- ▶ The intersection of Childs Avenue and Campus Parkway will be four-way, stop controlled intersection.

4.11.2 REGULATORY SETTING

Key relevant regulatory and policy guidance is described below.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

There are no specific federal regulations pertaining to transportation impacts of the proposed project.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

California Department of Transportation level of service standards and methodologies are used in the analysis conducted to support this EIR. There are no other specific state regulations for transportation impacts related to this project. For State highway facilities, Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on State highway facilities. However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS, in accordance with the Caltrans Guide for the Preparation of Traffic Impact Studies.

Trip Generation of Approved Projects¹

Outbound

³ Square feet

Table 4.11-5 Approved Residential Projects – Trip Distribution Assumptions	
Original/Destination	Distribution Percentage
State Route (SR) 99 North	14.0
SR 99 South	14.0
SR 140 East	10.0
SR 140 West	25.0
16th Street North	25.0
Kibby Road north	2.0
Childs Avenue East	2.0
Childs Avenue West	8.0
Total	100.0
Source: Traffic Impact Analysis for Merced Distribution Center prepared by KdANDERSON Transportation Engineering in June 2005, based on MCAG Travel Forecast Model data.	

Table 4.11.6 Approved Commercial Development Projects – Trip Distribution Assumptions	
Original/Destination	Distribution Percentage
State Route (SR) 99 North	30
SR 99 South	30
North Merced	20
Childs Avenue West	10
Childs Avenue East	10
Total	100.0
Source: General Plan Amendment #00-01 for Steiner Development Expanded Initial Study #00-05	

LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

Merced Vision 2015 General Plan

The Merced General Plan has several policies that pertain to the project and transportation impacts. Campus Parkway, as is described in this EIR, was identified in Merced’s General Plan as an arterial roadway—at that time called “Eastern Beltway.” Childs Avenue is also designated as an arterial roadway. In the project vicinity, SR 99 and SR 140 are both designated as State Highways in Chapter 4 of the *Merced Vision 2015 General Plan*. A grade-separated railroad crossing is identified for Campus Parkway along SR 140 near the proposed project site. The Mission Avenue/SR 99 interchange is identified in the Merced General Plan.

The minimum standard for traffic congestion provided in the Merced General Plan is LOS D during peak traffic periods.

Several goals, policies, and implementation strategies related to transportation and circulation are spelled out in Chapter 4 of the *Merced Vision 2015 General Plan*, starting on page 4-41. Designing streets consistent with circulation function and affected land uses, coordination with other relevant agencies, designing major roads to maximize efficiency, minimizing unnecessary travel demand on major streets, and minimizing adverse impacts on the environment from road systems are among the policies presented here. Travel demand measures for major employers, such as the proposed project are described starting on page 4-40 of Chapter 4 with additional information on page 4-49 and thereafter.

Bikeways

The Merced and Atwater Bicycle Plan (Merced County Association of Governments 2003) incorporates concepts from the County and City bikeway plans. *The MCAG plan* (<http://www.mercedrides.com/BIKE/images/maps/merced/mercedbike.pdf>) identifies the Campus Parkway alignment for Class I/II bikeway improvements, near the project site.

City of Merced Standards and Municipal Code

Mitigation Fees

As per the City of Merced Standards and the Municipal Code requirements, Wal-Mart will be required to comply with the following:

- ▶ Full right-of-way dedication and street improvements around the perimeter of the site, including Gerard Avenue, Childs Avenue, and Tower Road
- ▶ The City of Merced's Public Facilities Impact Fees (PFIF) (in 2009 dollars but will increase over time with annual adjustments each January, etc.), which are calculated at a 2009 rate of \$3,812 per every 1,000 square feet of building area for a Light Industrial use, of which \$2,900 per 1,000 square feet are set aside for traffic signals and roadway improvements (the rest covers fire, police, and parks/bikeways);
- ▶ The Regional Transportation Impact Fees (RTIF), which are calculated at a September 2008 of \$1,409 per each 1,000 square feet of building area, and are also subject to annual increases in July of each year;
- ▶ The special fee for a traffic signal at Highway 140 and Kibby Road spelled out in Section 3.06 of the Development Agreement for Lyons Investments (dated October 19, 1998) to which this property is a part. Section 3.06 reads as follows:

"In lieu of having to install a traffic signal at Highway 140 and Kibby Road, Owner agrees to pay the City the sum of Three Hundred and Fifty Thousand Dollars (\$350,000), increased by percent change in the All Urban Consumers Index, U.S. City Average (USCA), as supplied by the Bureau of Labor Statistics (base index of ____) and payable at building permit at \$0.125 per square feet of building. For example, for 10,000 square feet of construction, Owner would pay \$1,250 adjusted by multiplying \$1,250 by current quarter CPI (USCA divided by the base index. The funds collected shall be used for the signal at Highway 140 and Kibby Road and/or arterial roads, Eastern Beltway [now known as Campus Parkway], or collection streets within the vicinity of the Property."

4.11.3 ENVIRONMENTAL IMPACTS

THRESHOLDS OF SIGNIFICANCE

Based on the City of Merced's *General Plan*, an acceptable operating level of service (LOS) is defined at LOS D or better at all intersections and roadway segments.

A traffic impact would be considered significant if the project would:

- ▶ Cause an increase in traffic congestion resulting in intersection or roadway segment level of service (LOS) E or worse. For unsignalized intersections, the need for a traffic signal is to be determined based on the Manual of Uniform Traffic Control Devices Supplement to the California Traffic Manual traffic signal warrants,
- ▶ Cause an increase in the total intersection volumes or roadway segment volumes by more than five percent at an intersection or segment that is already operating at Level of Service E or F under the background condition,

- ▶ Cause an increase in traffic congestion that would exceed a level of service standard established in the countywide Congestion Management Plan or Caltrans for designated roads or highways,
- ▶ Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment),
- ▶ Block or fail to provide adequate emergency access,
- ▶ Result in inadequate parking capacity that would cause substantial vehicle stacking or otherwise compromise safety or,
- ▶ Conflict with adopted policies, plans, or programs supporting alternative transportation

As part of the project conditions, the City of Merced would abandon the Kibby Road right-of-way between Childs Avenue and Gerard Avenue to make way for the proposed project. As a result, Kibby Road would function in the street network as it would under existing conditions.

Intersection Level of Service

The analysis of intersection LOS was conducted using the *Traffix* analysis program. The analysis uses procedures from the 2000 Transportation Research Board *Highway Capacity Manual* (HCM) method for signalized intersections. The correlation between average stopped delay and level of service for both signalized and unsignalized intersections is shown in Table 4.11-7.

Table 4.11-7 Signalized and Unsignalized Intersection LOS Thresholds			
Level of Service	Vehicle Delay (seconds/vehicle)		Description
	Signalized Intersections	Unsignalized Intersections ^a	
A	Delay ≤ 10.0	Delay ≤ 10.0	Free Flow/Insignificant Delays: No approach phase is fully utilized and no vehicle waits longer than one red indication.
B	10 < Delay ≤ 20.0	10.0 < Delay ≤ 15.0	Stable Operation/Minimal Delays: An occasional approach phase is fully utilized. Many drivers design to feel somewhat restricted within platoon of vehicles.
C	20.0 < Delay ≤ 35.0	15.0 < Delay ≤ 25.0	Stable Operation/Acceptable Delays: Major approach phases fully utilized. Most drivers feel somewhat restricted.
D	35.0 < Delay ≤ 55.0	25.0 < Delay ≤ 35.0	Approaching Unstable/Tolerable Delays: Drivers may have to wait through more than one red signal indication. Queues may develop but dissipate rapidly, without excessive delays.
E	55.0 < Delay ≤ 80.0	35.0 < Delay ≤ 50.0	Unstable Operation/Significant Delays: Volumes at or near capacity. Vehicles may wait through several signal cycles. Long queues from upstream from intersection.
F	Delay > 80.0	Delay > 50.0	Forced flow/Excessive Delays: Represents jammed conditions. Intersection operates below capacity with low volumes. Queues may block upstream intersections.
Note: For a two-way stop controlled intersection, the level of service is based on the delay at the worst approach. Source: Transportation Research Board, Special Report 209, Highway Capacity Manual 2000, Chapters 16, Exhibit 16-2 and Chapter 17, Exhibit 17-2			

Roadway Segment Level of Service

Roadway segment analysis was conducted using Highway Capacity Software (HCS 2000). The analysis uses procedures from the 2000 Transportation Research Board *Highway Capacity Manual* (HCM) methods. Three types of roadway facilities and Measures of Effectiveness (MOE) were used to determine LOS, as described below (the type of MOE depends on the class of roadway being analyzed).

Two-lane highway: an undivided roadway with two lanes, one in each direction. Passing slower traffic requires use of the opposing lane. The MOE used to determine LOS is the percentage of percent time vehicles spent following the vehicle ahead and average travel speed (Table 4.11-8).

Table 4.11-8 Two-Lane Highway LOS Standard			
Two-Lane Highway Class		Class I	Class II
Level of Service	Percent Time-Spent -Following	Average Travel Speed (mph)	Percent Time-Spent -Following
A	≤ 35	> 55	≤ 40
B	< 35-50	> 50-55	> 40-55
C	< 50-65	> 45-50	> 55-70
D	< 65-80	> 40-45	> 70-85
E	> 80	≤ 40	> 85
F	The flow rate exceeds the segment capacity		
Source: Transportation Research Board, Highway Capacity Manual 2000, Chapter 20, Exhibit 20-2 and Exhibit 20-4			

Urban Street: a roadway serving as collector street and local arterial. Traffic flow on an urban street is occasionally interrupted by control at the intersections. The MOE used to determine LOS is the average through-vehicle travel speed for the segment (Table 4.11-9).

Table 4.11-9 Urban Street LOS Thresholds				
Urban Street Class	Class I	Class II	Class III	Class IV
Range of Free-Flow Speed	55 to 45 mph	45 to 35 mph	35 to 30 mph	35 to 25 mph
Typical	50 mph	40 mph	35 mph	30 mph
Level of Service	Average Travel Speed (mph)			
A	> 42	> 35	> 30	> 25
B	> 34-42	> 28-35	> 24-30	> 19-25
C	> 27-34	> 22-28	> 18-24	> 13-19
D	> 21-27	> 17-22	> 14-18	> 9-13
E	> 16-21	> 13-17	> 10-14	> 7-9
F	≤ 16	≤ 13	≤ 10	≤ 7
Source: Transportation Research Board, Highway Capacity Manual 2000, Chapter 15, Exhibit 15-2				

Freeway Segment: a divided highway with full control of access and without signalized or stop-controlled at-grade intersections. The MOE used to determine LOS is the density, in terms of passenger cars per mile per lane (Table 4.11-10).

Table 4.11-10 Basic Freeway LOS Standard	
Level of Service	Density Range (passenger car/mile/lane)
A	0–11
B	> 11–18
C	> 18–26
D	> 26–35
E	> 35–45
F	>45
Source: Transportation Research Board, Highway Capacity Manual 2000, Chapter 23	

IMPACT ANALYSIS

The following describes the traffic and transportation impacts of the proposed project. For additional detail, please refer to Appendix D.

Trip Generation

Trip generation for the proposed project was based on the number of the employees anticipated on-site, as well as anticipated heavy truck operations, described in Section 3.0 “Project Description”. According to the information provided by the project proponent, the proposed project would involve approximately 1,200 employees (Table 4.11-11) at full operations.

Table 4.11-11 Employees by Title and Division	
Title/Division	Number of Employees
Drivers in Transportation	150
Transportation Employees	64
Employees in Other Departments	986
Total Employees	1,200
Source: Wal-Mart Stores, Inc. 2007	

The trip generation estimate also takes into consideration the number of heavy vehicle (also referred to herein as tractor trailers or semi-trailers) trips that would be part of the project. For this purposes of traffic impact assessment, heavy vehicles were converted to passenger-car-equivalents (PCE’s) using a ratio of four vehicle trips per one truck trip. DKS’ research of materials published by the FHWA on vehicle characteristics of passenger cars and semi-trailers supports a conservative ratio of four vehicle trips per one truck trip. This reflects the fact that heavy vehicles contribute more to traffic congestion than do passenger vehicles. Table 4.11-12 summarizes the trip generation for the proposed project.

As shown, the project would generate 2,399 daily trips, with 143 occurring during the morning peak hour and 328 occurring during the afternoon peak-hour. Some of those trips include heavy truck trips. Converting heavy truck trips to the equivalent of four passenger vehicle trips, the project generates 4,328 daily trips, with 323 occurring during the morning peak hour and 460 occurring during the afternoon peak hour.

Table 4.11-12 Proposed Project trip Generation									
Direction	Daily Trips			A.M. Peak Hour			P.M. Peak Hour		
	Trucks	Auto	Total	Trucks	Auto	Total	Trucks	Auto	Total
Expressed as Vehicles									
Inbound	365	846	1,211	32	55	87	20	25	45
Outbound	278	910	1,188	28	28	56	24	259	283
Total	643	1756	2,399	60	83	143	44	284	328
Passenger Car Equivalent									
Inbound	1,460	846	2,306	128	55	183	80	25	105
Outbound	1,112	910	2,022	112	28	140	96	259	355
Total	2,572	1,756	4,328	240	83	323	176	284	460
Source: Data compiled by DKS Associates in 2007									

Trip Distribution

The direction of approach and departure for project trips of the proposed Wal-Mart Distribution Center were estimated based on regional distribution of residences in Merced County and around the study area. Based on prevailing traffic patterns, roadway capacity, and consultation with the City of Merced and Wal-Mart Stores, Inc., SR 99, SR 140 and SR 152 were designated as the major routes that would service the proposed project site.

The project truck trips having their origins or destinations on SR 99 and SR 152 (90% of the truck trips) would be assumed to access the project site via the Mission interchange and Campus Parkway. The other 10% of truck trips from and to SR 140 West would be assumed to continue on SR 140 and use Tower Road. Also the City has designated truck routes (per Chapter 10.40.010 of the City of Merced Municipal Code). Of the streets listed above, only Parsons Avenue between Yosemite Parkway and Childs Avenue is a designated truck route. Coffee Street, Childs Avenue and Gerard Avenue are not designated truck routes.

Table 4.11-13 Proposed Project Trip Distribution Origin/Destination Assumption		
Direction	Percentage of Total Traffic (%)	
	Autos	Trucks
North Via State Route 99	40.0	31.0
East via SR 140	10.0	-
West via SR 140	3.0	10.0
West via SR 152	-	27.0
South via SR 99	20.0	32.0
North via E 16th Street	5.0	-

Table 4.11-13 Proposed Project Trip Distribution Origin/Destination Assumption		
Direction	Percentage of Total Traffic (%)	
	Autos	Trucks
North on Santa Fe/E 21 st	5.0	-
North on Kibby Road	10.0	-
East on Childs Avenue	2.0	-
West on Childs Avenue	5.0	-
Total	100.0	100.0
Source: Data compiled by DKS Associates in 2007		

IMPACT 4.11-1 *Effects on Level of Service. Implementation of the project would not cause study intersections and roadway segments to exceed level of service standards. For intersections and roadway segments that already exceed level of service standards, the project would not contribute more than 5% of the total volume. This impact is considered less than significant.*

Level of Service (LOS) impacts are analyzed for both intersections and roadway segments, as presented below.

Intersections

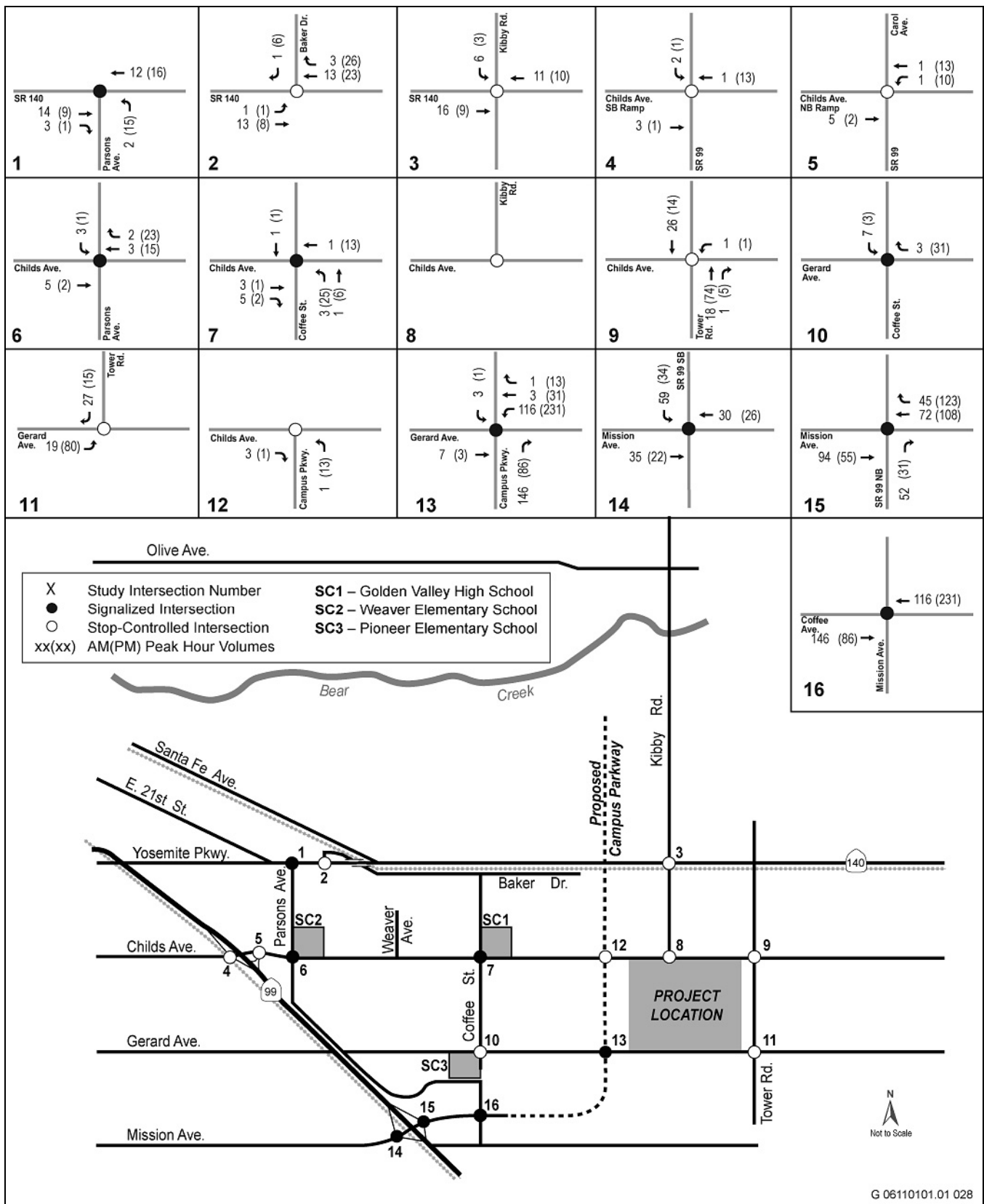
The study intersections that operate at an acceptable LOS (LOS D or better) under the 2010 Background Condition without the project would continue to operate at acceptable LOS under the 2010 Background with Project Condition. The addition of traffic generated by the proposed project would not result in any significant changes to intersection levels during either of the peak hours analyzed.

For the intersections that operate at unacceptable LOS (LOS E or F) under the 2010 Background Condition, the proposed project would not contribute more than 5% of the intersection total volume. Therefore, the proposed project would not result in any significant impact at the intersections. Intersection operational levels of service along with their associated delays are summarized in Table 4.11-14. Appendix D includes the detailed calculation level of service analysis sheets, including the weekday A.M. and P.M. peak hours.

Table 4.11-14 2010 Background with Project Condition Intersection Level of Service Analysis										
No	Intersection Location	Control	AM Peak Hour				PM Peak Hour			
			Delay ^a	LOS ^b	% Vol Incr ^c	Project Impact	Delay	LOS	% Vol Incr ^c	Project Impact
1	SR 140 / Parsons Avenue	Signalized	27.8	C		No	49.9	D		No
2	SR 140 / Baker Drive	Unsignalized	10.0		1.8	No	15.3		1.7	No
	SB Approach		43.2	E			>50.0	F		
	EB Left		9.2	A			9.2	A		
3	SR 140 / Kibby Road	Unsignalized	5.2			No	4.5			No
	NB Approach		12.5	B			13.9	B		
	SB Approach		15.2	C			17.4	C		
	EB Left		7.9	A			7.8	A		
	WB Left		7.6	A			7.9	A		

Table 4.11-14 2010 Background with Project Condition Intersection Level of Service Analysis										
No	Intersection Location	Control	AM Peak Hour				PM Peak Hour			
			Delay ^a	LOS ^b	% Vol Incr ^c	Project Impact	Delay	LOS	% Vol Incr ^c	Project Impact
4	Childs Avenue / SR 99 Southbound Off-Ramp	AWSC ^e	22.3	C		No	>50.0	F	1.0	No
5	Childs Avenue / SR 99 Northbound Off-Ramp	AWSC	>50.0 ^d	F	0.4	No	>50.0	F	1.2	No
6	Childs Avenue / Parsons Avenue	Signalized	46.6	D		No	43.3	D		No
7	Childs Avenue / Coffee Street	Signalized	37.1	D		No	34.2	C		No
8	Childs Avenue / Kibby Road	Unsignalized	4.2			No	4.2			No
	SB Approach		9.9	A			10.1	B		
	EB Left		7.8	A			7.6	A		
9	Childs Avenue / Tower Road	Unsignalized	2.5			No	3.1			No
	NB Approach		10.7	B			11.7	B		
	SB Approach		10.5	B			10.6	B		
	EB Left		7.5	A			7.5	A		
	WB Left		7.4	A			7.5	A		
10	Gerard Avenue / Coffee Street	AWSC	9.8	A		No	8.5	A		No
11	Gerard Avenue / Tower Road	Unsignalized	6.9			No	7.4			No
	SB Approach		6.5	A			6.7	A		
	EB Left		7.3	A			7.6	A		
12	Childs Avenue / Campus Parkway	AWSC	7.6	A		No	8.1	A		No
13	Gerard Avenue / Campus Parkway	Signalized	30.6	C		No	34.9	C		No
14	Mission Ave / SR 99 Southbound Off-Ramp	Signalized	19.2	B		No	15.3	B		No
15	Mission Ave / SR 99 Northbound Off-Ramp	Signalized	27.9	C		No	34.6	C		No
16	Mission Ave / Coffee Street	Signalized	28.8	C		No	33.4	C		No
Notes: ^a Delay is in seconds per vehicle. For signalized intersections, delay is based on average stopped delay. For unsignalized intersections, delay is based at the worst approach for two-way stop controlled intersection. ^b LOS = Level of Service ^c % Vol Incr = percent increase in the intersection traffic volumes due to the project trips. Percent increase is reported only at any of the intersections that would already operate at an unacceptable LOS without the project. ^d For unsignalized intersections, delays >50 are beyond the upper limits of LOS delay estimation equations under the HCM 2000 methodologies. ^e AWSC = All-way stop control Source: DKS Associates										

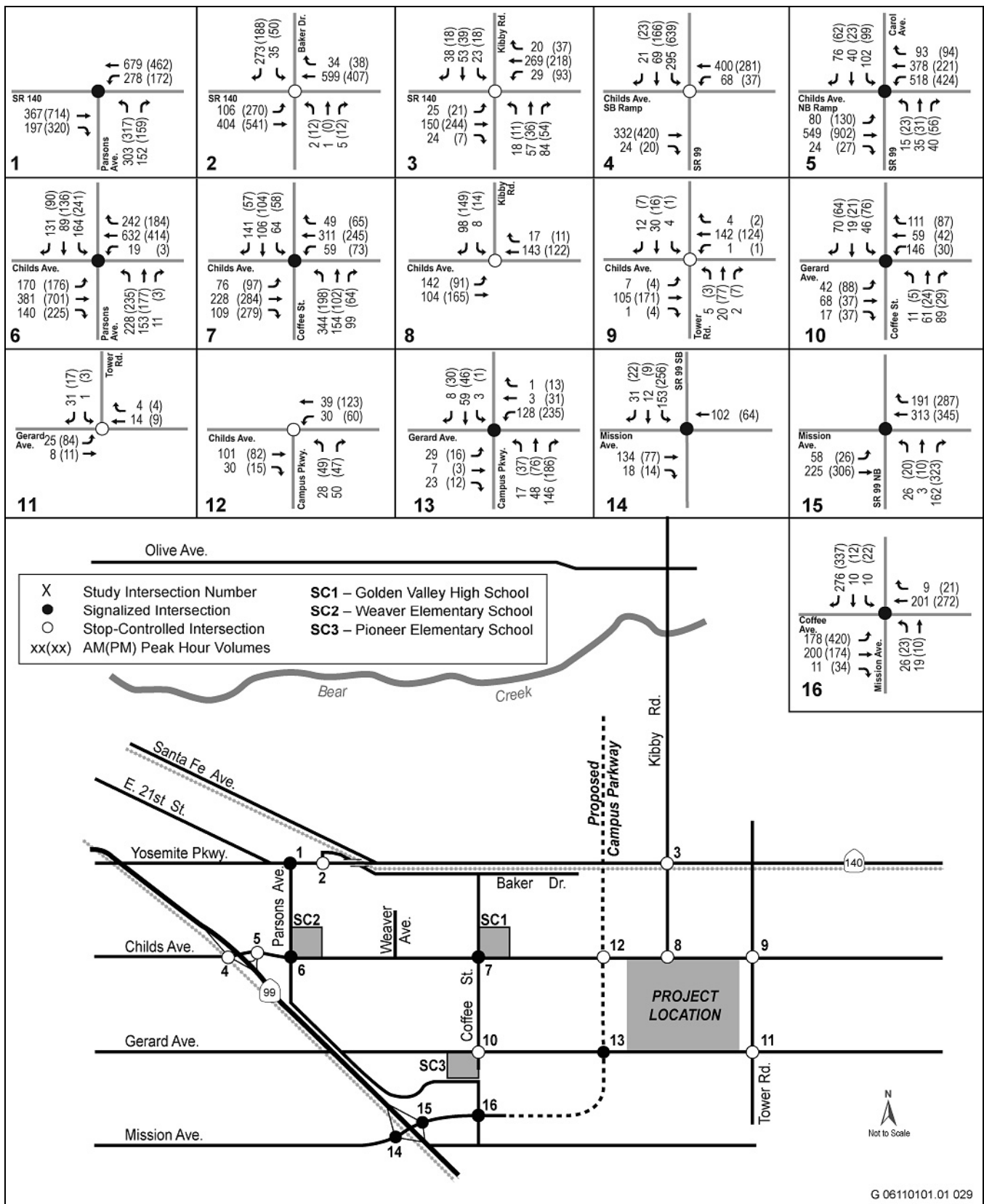
Exhibit 4.11-2 illustrates the morning and afternoon peak-hour project trips at each of the study intersections. Exhibit 4.11-3 illustrates the total 2010 background with project condition traffic volumes at each of the study intersections for the A.M. and P.M. peak hours.



Source: DKS Associates 2007

2010 Project Trips

Exhibit 4.11-2



Source: DKS Associates 2007

2010 Project Plus Background Trips

Exhibit 4.11-3

Roadway Segments

All study roadway segments would continue to operate at an acceptable LOS D or better under 2010 Background with Project Conditions during the A.M. and P.M. peak hours (Table 4.11-15). Please refer to Appendix E for more detail.

Mitigation Measure

No mitigation is required.

IMPACT 4.11-2	Design Feature Hazards, Vehicle Stacking, and Parking Capacity. <i>Implementation of the project would include truck traffic using roadways in the project vicinity, tractor trailer trucks that could potentially park in the project vicinity, and truck operations on streets where school buses operate. The impact is potentially significant.</i>

Based on the particular operational characteristics of the proposed project, the traffic analysis supporting this EIR included an analysis of turning radii, truck parking, and nearby school operations relative to the project. A description of that analysis follows.

A truck turning radii analysis was conducted to evaluate the potential affect of proposed project trucks at the intersection of Gerard Avenue and Campus Parkway and also at the new Mission Interchange at SR 99. As noted earlier, project trucks would access the project site via SR 99 at Campus Parkway and SR 140 at Tower Road. Intersection layouts were provided by the California Department of Transportation, District 10, the County of Merced, and also the City of Merced. Following the Surface Transportation Assistance Act (STAA) truck turning radii standard, turning paths of a standard semi-trailer truck were simulated at different approaches. Based on computer analysis of typical turns, the intersections in question provide adequate space for turning movements. Refer to Appendix D for more information.

Based on the designated truck routes to and from the proposed Wal-Mart Distribution Center and school bus routes, school buses and proposed project trucks would share SR 140 between SR 99 and Tower Road and a segment of Mission Avenue between SR 99/Mission Avenue Interchange and Coffee Street.

No tractor trailer traffic is expected to travel past any of the three schools located near the intersections of Childs/Coffee, Gerard/Coffee, and Parsons/Childs based on the trip distribution assumptions described above and the lack of City truck route designations. However, there is a potential for trucks to stray from their expected routes occasionally. This could result in trucks passing through residential areas and past schools. This is a **potentially significant** impact that requires mitigation.

The Golden Valley High School Bus Route 20 runs between the north end of the City of Merced and the school between 6:00 A.m. and 8:05 a.m., and again between 3:05 p.m. and 5:10 p.m. on school days. The bus travels along SR 140 between Parsons Avenue and Kibby Road for a short period between 6:15 a.m. and 6:25 a.m. and between 4:00 p.m. and 4:05 p.m.

The Pioneer Elementary School Bus Route 8 runs between the school and SR 140 at Arboleda Drive from 2:00 p.m. to 3:18 p.m. The bus travels on the SR 140 segment between Kibby Road and Tower Road for a short period between 3:18 p.m. and 4:00 p.m.

The Golden Valley High School Bus Route 24 runs between the south end of the City of Merced and the school between 5:50 a.m. and 8:05 a.m. and between 2:45 p.m. and 5:15 p.m. The bus travels on the Mission Avenue segment between SR 99/Mission Avenue Interchange and Coffee Street for a short period between 6:40 a.m. and 6:50 a.m.

Table 4.11-15 2010 Background With Project Condition Roadway Segment-Level of Service Analysis										
Roadway Segment	Type of Facilities	Location	Measure of Effectiveness (MOE)	AM Peak Hour			PM Peak Hour			
				Volume (veh/hr)	MOE ^a	LOS ^b	Volume (veh/hr)	MOE	LOS	
1 SR 99	Freeway	from Mission Avenue to SR 140	Density (pc/mi/ln)	1,758	18.6	C	1,905	20.1	C	
		from SR 140 to Mission Avenue	Density (pc/mi/ln)	1,632	17.2	B	2,723	28.7	D	
2 SR 140	Urban Class III	from SR 99 to Parsons Avenue	Travel Speed (mi/hr)	564	34.6	A	1,034	31.3	A	
		from Parsons Avenue to SR 99	Travel Speed (mi/hr)	982	32.0	A	779	33.7	A	
	Urban Class II	from Parsons Avenue to Santa Fe Avenue	Travel Speed (mi/hr)	957	39.5	A	634	39.9	A	
		from Santa Fe Avenue to Parsons Avenue	Travel Speed (mi/hr)	519	40.0	A	873	39.7	A	
	Two-lane Highway Class I	between Santa Fe Avenue and Kibby Road	Percent Time-Spent-Following	1,272	69.2	D	1,215	67.5	D	
3 Parson Avenue	Urban Class III	from Childs Avenue and SR 140	Travel Speed (mi/hr)	683	34.2	A	400	34.9	A	
		from SR 140 and Childs Avenue	Travel Speed (mi/hr)	565	34.6	A	537	34.7	A	
4 Coffee Street	Urban Class IV	from Baker Drive to Childs Avenue	Travel Speed (mi/hr)	475	34.8	A	492	34.8	A	
		from Childs Avenue to Baker Drive	Travel Speed (mi/hr)	279	29.9	A	264	29.9	A	
	Urban Class IV	from Childs Avenue to Gerard Avenue	Travel Speed (mi/hr)	311	29.9	A	219	30.0	A	
		from Gerard Avenue and Childs Avenue	Travel Speed (mi/hr)	597	28.7	A	364	29.8	A	
5 Gerard Avenue	Urban Class III	from Parson Avenue and Coffee Street	Travel Speed (mi/hr)	274	29.9	A	456	29.5	A	
		from Coffee Street to Parson Avenue	Travel Speed (mi/hr)	127	35.0	A	162	35.0	A	
	Urban Class II	from Coffee Street to Project Site	Travel Speed (mi/hr)	140	35.0	A	111	35.0	A	
		from Project Site to Coffee Street	Travel Speed (mi/hr)	203	40.0	A	142	40.0	A	

Table 4.11-15

Roadway Segment	Type of Facilities	Location	Measure of Effectiveness (MOE)	AM Peak Hour			PM Peak Hour		
				Volume (veh/hr)	MOE ^a	LOS ^b	Volume (veh/hr)	MOE	LOS
6 Kibby Road	Urban Class II	from SR 140 to Childs Avenue	Travel Speed (mi/hr)	159	45.0	A	101	45.0	A
		from Childs Avenue to SR 140	Travel Speed (mi/hr)	106	45.0	A	163	45.0	A
7 Childs Avenue	Urban Class III	from SR 99 to Parsons Avenue	Travel Speed (mi/hr)	691	34.2	A	1,102	30.4	A
		from Parsons Avenue to SR 99	Travel Speed (mi/hr)	991	31.9	A	739	34.0	A
	Urban Class III	from Parsons Avenue to Coffee Street	Travel Speed (mi/hr)	556	34.7	A	945	32.4	A
		from Coffee Street to Parsons Avenue	Travel Speed (mi/hr)	893	32.9	A	328	35.0	A
	Urban Class II	from Coffee Street to Kibby Road	Travel Speed (mi/hr)	391	40.0	A	406	40.0	A
		from Kibby Road to Coffee Street	Travel Speed (mi/hr)	419	40.0	A	383	40.0	A
	Urban Class II	from Kibby Road to Tower Road	Travel Speed (mi/hr)	112	40.0	A	179	40.0	A
		from Tower Road to Kibby Road	Travel Speed (mi/hr)	160	40.0	A	133	40.0	A
8 Campus Pkwy	Urban Class III	from Coffee Street to Gerard Avenue	Travel Speed (mi/hr)	211	35.0	A	196	35.0	A
		from Gerard Avenue to Coffee Street	Travel Speed (mi/hr)	210	35.0	A	293	35.0	A
	Urban Class III	from Gerard Avenue to Childs Avenue	Travel Speed (mi/hr)	78	35.0	A	105	35.0	A
		from Childs Avenue to Gerard Avenue	Travel Speed (mi/hr)	70	35.0	A	77	35.0	A
	Urban Class III	from Childs Avenue to SR 140	Travel Speed (mi/hr)	n/a	n/a	n/a	n/a	n/a	n/a
		from SR 140 to Childs Avenue	Travel Speed (mi/hr)	n/a	n/a	n/a	n/a	n/a	n/a
Notes: ^a MOE= Measures of Effectiveness. For freeway facilities, MOE is measured in density (passenger cars per mile per lane). For urban facilities, MOE is measured in travel speed (miles per hour). For two-lane highway facilities, MOE is measured in percent time-spent following (percent). ^b LOS = Level of Service is based on Transportation Research Board, Highway Capacity Manual 2000. Source: DKS Associates 2008									

The Weaver Elementary School Bus Route 8 runs between the school and Bear Creek Drive at Arboleda Drive from 3:40 p.m. to 4:28 p.m. The bus travels on the SR 140 segment between Kibby Road and Tower Road for a short period between 4:25 p.m. and 4:28 p.m.

The Traffic Report identifies the common roadway segments that would accommodate both school buses and Wal-Mart trucks. It is not unusual for trucks and cars and buses to share roadways that are designed to acceptable standards. There is no threshold for identifying when an impact would occur. Accordingly, it is not anticipated that the overlap or mixing of school buses and tractor trailer traffic would itself create any adverse physical environmental impact.

Employee parking would be accommodated on-site. Parking demand generated by the project was estimated based on the parking demand at an existing Wal-Mart Distribution Center in Apple Valley, San Bernardino County. The proposed project would employ the same number of employees as the Wal-Mart Distribution Center in Apple Valley. It is assumed, therefore, that the parking demand for both distribution centers would be similar. Table 4.11-16 compares parking demand from the Apple Valley Distribution Center for the largest shift to the parking supply proposed as a part of the project. As shown, the proposed parking supply would more than meet demand during the largest shift. As also shown, the proposed parking would more than satisfy the minimum off-street parking requirements from the City of Merced Municipal Code. The impact related to employee parking is ***less than significant***.

Merchandise trucks would arrive on-site for deliveries during the 24-hour operation of the distribution center. If the delivery trucks arrive prior to a scheduled pick-up or delivery time (or if the entry gate is closed), there may be a tendency for these truck drivers to either park along local streets in the vicinity or travel on local streets until access to the distribution center is available. Truck traffic on local streets that are not designated truck routes, and parking and idling in the project vicinity could create not only traffic problems, but could create also noise and air quality problems. The impact of tractor trailer trucks not being allowed to wait on site is a ***potentially-significant*** impact that requires mitigation.

Table 4.11-16 Parking Analysis the Wal-Mart Distribution Center				
Parking Area	Parking Demand ¹ (spaces)	Parking Supply ² (spaces)	The City of Merced Code Requirement ³	
			Rate	Requirement (Spaces)
Employee/Visitor	380	850	One for each two employees and one for each vehicle used to conduct business.	180 ^d
Truck/Trailer Parking	1,227	1,600		1,227 ^e
Non-Truck Parking	138	200		138 ^e
Loading Dock	189	300		189 ^e
Total	1,934	2,950	-	1,734
Note: ¹ Parking demand based on parking demand surveyed conducted at Wal-Mart Distribution Center in Apple Valley. ² Parking Supply is based on the information provided by Wal-Mart Stores, Inc. ³ City of Merced Municipal Code Title 20. Zoning, Industrial use-Warehouse (20.58.150). ⁴ The required spaces were estimated based on the largest shift of 359 employees at the proposed project. ⁵ Assumed the surveyed demand represents the number of vehicle activities. Source: Compiled by DKS Associates in August 2006				

Mitigation Measure 4.11-2a: Accommodate All Delivery Truck Parking On-Site. The project design shall incorporate a designated on-site waiting area within the site between Gerard Road and the truck gate that is located further within the site. This area shall be large enough to accommodate at least 20 inbound delivery trucks. It is recommended that the access roadway be designed to have a temporary parking area located between Gerard Avenue and the truck entrance gate. The parking area shall be paved and marked as a designated waiting area for

delivery trucks, and shall not impede access to the site. The holding area(s) shall be located in the interior of the project site and be more than 1,000 feet from all off-site residences, which is a distance threshold identified in the Noise Analysis of this EIR. If the waiting area(s) are located closer than 1,000 feet to off-site residences then sound barrier(s) shall be implemented into the design to ensure that on-site truck idling would not result in an exceedence of the nighttime standard of 45 A-weighted decibels energy-equivalent noise level established by the Merced General Plan (Table N-5).

Wal-Mart shall instruct all delivery truck drivers not to park, stand, wait, or stay overnight along local roadways. In order to minimize noise and vehicle emissions, idling in the waiting area shall be limited by Wal-Mart to 5 minutes, as required by 13 CCR Chapter 10, Section 2485.

Mitigation Measure 4.11-2b: Manage Truck Traffic on Local Streets. To reduce hazards on local roadways associated with truck traffic during *construction operations*, Wal-Mart Stores East LP shall ensure that its primary construction contractor implements the following measures:

- a. *Develop and implement a construction truck traffic safety plan in coordination with the City of Merced, County of Merced, and Caltrans.* The construction contractor shall develop a plan for traffic safety assurance for the County roadways in the project vicinity. The contractor shall submit the plan to the City Development Services Department for approval before the initiation of construction-related activity that could adversely affect traffic on City, County, and State roadways. The plan(s) may call for the following elements, based on the requirements of each agency:
 - ▶ posting warnings about the potential presence of slow-moving construction vehicles;
 - ▶ using traffic control personnel when appropriate;
 - ▶ scheduling truck trips outside of peak morning and evening traffic periods to the extent feasible;
 - ▶ placing and maintaining barriers and installing traffic control devices necessary for safety, as specified in Caltrans's *Manual of Traffic Controls for Construction and Maintenance Works Zones* and in accordance with City and County requirements; and
 - ▶ maintaining routes for passage of emergency response vehicles through roadways affected by construction activities.

The contractor shall train construction personnel in appropriate safety measures as described in the plan(s), and shall implement the adopted plan(s).

- b. *Minimize the accumulation of mud and dirt on local roadways.* All operations shall limit or expeditiously remove the accumulation of project-generated mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring. The construction contractor shall sweep the paved roadways (water sweeper with reclaimed water recommended) at the end of each day if substantial volumes of soil material have been carried onto adjacent paved, public roads from the project sites.

To reduce hazards on local roadways associated with truck traffic during *ongoing operations*, Wal-Mart Stores East LP shall ensure implement the following measures:

- c. *Develop and implement a truck route plan.* Tractor trailers approaching and departing from the distribution center shall be limited to the following roadways from SR 99 and SR 140: Campus Parkway, Mission Avenue west of Campus Parkway, Gerard Avenue east of Campus Parkway, and Tower Road. Wal-Mart shall regularly and routinely instruct its employees, contract truck drivers, and vendors of these roadway limitations.

Implementing Mitigation Measures 4.11-2a and 4.11-2b would reduce the potential impact related to truck traffic hazards to a **less-than-significant** level.

IMPACT 4.11-3 *Emergency Access Impacts. The project shows two access points to the site, both along Gerard Avenue. Emergency service providers may require additional access to a site this large with the operations as proposed. The impact is potentially significant.*

The proposed project site shows an entrance for employees and another entrance to the project site for delivery trucks. Both entrances are along Gerard Avenue. Blockage of Gerard Avenue at the Coffee Street intersection could impede access to the site, resulting in an emergency responder delay. Also, emergency responders may require a point of access to and from the project site that does not have the potential to be blocked by delivery trucks and employee vehicles. The impact is **potentially significant**.

Mitigation Measure 4.11-3: Provide Emergency Access Gate and Driveway. The project applicant shall modify the site plan to show a third point of ingress and egress on Childs Avenue that is gated and available only for emergency purposes. The emergency access driveway on-site shall be of a width and design acceptable to the City and shall provide unimpeded access to all structures on the site.

Implementation of this mitigation measure would ensure that emergency responders have adequate access to serve the project site in the event of a fire, medical emergency, an issue involving law enforcement, or other occurrence. Implementation of this mitigation measure reduces impacts to a **less-than-significant** level.

IMPACT 4.11-4 *Construction Traffic and Parking. Implementation of the project would involve use of roadways in the vicinity of the project by construction employees and for moving construction equipment on- and off-site. While roadways in the vicinity are capable of accommodating construction traffic and streets abutting the site are capable of accommodating construction worker vehicles, construction vehicles entering and leaving the site could create impacts on local roadways. The impact is a potentially-significant.*

Construction period trip generation estimates were based on the size of the building area to be constructed on the site. Using a factor of 0.42 trips per day per 1,000 square feet of industrial construction, the estimated number of vehicle trips would be 486 per day (based on 1,155,600 square feet of total building area to be constructed). It was assumed that all construction workers would work the same eight hour shift. This is a typical assumption based on construction trip behavior at large construction sites in the Central Valley, which have conditions limiting time periods of construction activity. It was also assumed that truck trips would be evenly spaced throughout the day such that ten percent of truck trips would arrive or depart during each hour of construction activity. The project description, however, does not identify a location for construction worker parking. While it is likely that a temporary construction worker parking lot would be constructed on the site, streets abutting the project site are capable of accommodating the vehicles of construction workers. Nonetheless, construction vehicles, such as tractor trailers carrying grading equipment, could create impacts on local streets and traffic. This is a **potentially-significant** impact that requires mitigation.

Mitigation Measure

Mitigation Measure 4.11-2b would ensure that impacts are reduced to a **less-than-significant** level.

IMPACT 4.11-5 *Transit, Pedestrian, and Bicycle Impacts. The project could increase demand for public transit in the project site vicinity and affect existing and future pedestrian and bicycle access in the project vicinity. The impact is potentially significant.*

Route 5, “East-West City Shuttle,” runs within the project study area on Parsons Avenue between Childs Avenue and SR 140 and on SR 140 between Parsons Avenue and Santa Fe Avenue. The Parsons Avenue segment would

serve as a potential route for the project auto trips, while the SR 140 segment would serve both the project auto and truck trips. The increase in the traffic volumes on these roadway segments, however, would be relatively low and, therefore, is not expected to cause in a significant impact to the transit service.

The substantial truck traffic in the project vicinity could have an impact on existing and future bicycle and pedestrian access in the vicinity. Currently, there is little pedestrian and bicycle travel in the vicinity of the project. However, due to the approved residential projects located west of the project site, an increase in pedestrian and bicycle activities is anticipated, especially on Gerard Avenue and the future Campus Parkway. The project site is east of such future residential activity, on the edge of the City. The project would be required to improve, or contribute to street improvements in accord with the mitigation measures identified in this EIR for cumulative impacts. The City would require that street improvements are in compliance with standards, codes, and policy, including pedestrian and bicycle facilities and planned travelways. However, children traveling to school on foot or on bicycle could be especially vulnerable to vehicular conflicts. This could be a ***potentially significant*** impact.

Mitigation Measure 4.11-4: Update Safe Routes to School Plan. The City shall ensure that the Safe Routes to School Plans are appropriately updated such that school bus and pedestrian routes in the vicinity of the Wal-Mart are revised as appropriate to avoid potential conflicts taking into account the project's potential increase in truck traffic and potential truck routes.

Updating the Safe Route to School Plans would help minimize potential conflicts between school and Wal-Mart traffic, as well as compliance with existing policy, regulations, and street standards, enforced through routine project entitlement by City staff and implementation of Mitigation Measure 4.11-2b, would ensure a ***less-than-significant*** impact.

4.12 UTILITIES AND PUBLIC SERVICES

This section provides an overview of existing utilities and public services for the City of Merced (City) and the proposed project area, including water supply, wastewater service, solid waste management, electrical service, natural gas service, telephone service, fire protection, police service, public schools, and parks. Impacts are evaluated in relation to increased demand for public services associated with the proposed project and actions needed to provide the services that could potentially lead to physical environmental effects. EDAW prepared a Water Supply Assessment (WSA) for the proposed project in 2006 (included as Appendix F). The DEIR's analysis of water supply is based primarily on the WSA.

Analysis provided in this section is based on review of agency documents and consultation with local public services providers. Impacts related to stormwater management and water quality are addressed in Section 4.6, "Hydrology and Water Quality."

4.12.1 ENVIRONMENTAL SETTING

WATER SUPPLY AND CONVEYANCE

The City of Merced is the only water purveyor for users within the City boundaries. The City uses groundwater exclusively, drawing water from 20 wells with a combined capacity of 49,500 gallons per minute (gpm). The active wells are fully operational and used on a regular basis for water supply within the City. An additional well is scheduled to come online in 2007, and several wells are planned for 2008 through 2011. (City of Merced 2005a.)

Well depths range from 161 to 800 feet, and individual capacities of the operating wells range from 1,000 gpm to 4,000 gpm. The depth of the City's wells suggests that the City is primarily drawing water from the deep aquifer associated with the Mehrten formation, a significant aquifer in terms of water supply. The wells are arrayed in approximately a mile grid system, with 16-inch mains on a mile grid and 12-inch mains on a one-half mile grid. This strategy for well siting is intended to minimize the potential for local drawdown of groundwater from pumping operations.

Instead of a centralized water treatment plant, water is treated at the wellhead with disinfection and fluoridation systems and distributed through a transmission system with the help of well pumps. The City has a storage capacity of approximately 1.4 million gallons in four elevated storage tanks. These facilities provide average daily demand, meet peak hour urban level conditions, and provide fire flows. (City of Merced 2005a.)

2005 Urban Water Management Plan

In December 2005, the City's 2005 Urban Water Management Plan (UWMP) was finalized. The UWMP encompasses the City's entire water service boundary which is bounded by the City limits, the Specific Urban Development Plan (SUDP) boundary, and the University of California (UC) Merced Campus. For purposes of the City's UWMP, the SUDP boundary was used to describe the future City water system service area.

The City's UWMP projects future potable water demands to ensure that the future needs of residents and businesses in the City's SUDP are planned for and adequately addressed. Unit water use factors, and total water demands are developed to estimate future water needs based on the population, housing, and employment projections within the SUDP. The total water production in 2005 was estimated to be 30,118 acre-feet per year (afy). Table 4.12-1 shows projected water use in the City during normal year conditions.

Table 4.12-1 Projected Normal Year Water Usage for the City of Merced	
Projection Year	Water Use (afy)
2005	30,118
2010	36,570
2015	41,919
2020	48,821
2025	55,677
Source: City of Merced 2005a	

As shown in Table 4.12-1, by 2025, water demands are expected to increase by approximately 85%, from 30,118 afy in 2005 to 55,677 afy in 2025.

The City's UWMP concludes that groundwater is a consistent source, so no replacement plan is needed. Although groundwater levels have declined at a greater rate during drought periods, the annual quantity of groundwater available does not vary significantly in relation to wet or dry years. The reliability of the City's water supply does not change due to seasonal or climatic shortages and there is no evidence that groundwater quality is affected by short-term drought conditions. As discussed below, the City and the Merced Irrigation District (MID) are cooperating on a long-range plan to stabilize groundwater levels and to investigate the potential of recharge with imported surface water from the Merced River. Table 4.12-2 presents the City's water supply reliability for 2025.

Table 4.12-2 City of Merced Water Supply Reliability for 2025					
Sustainable Water Supply	Normal Year (afy)	Single Dry-Year (afy)	Multiple Dry Years (afy)		
			Year 1	Year 2	Year 3
Surface water	200	200	200	200	200
Groundwater	56,000	56,000	56,000	56,000	56,000
Total supply	56,200	56,200	56,200	56,200	56,200
2025 Demand	55,677	55,677	55,677	55,677	55,677
Surplus	523	523	523	523	523
Source: City of Merced 2005a, EDAW 2006					

Merced Water Supply Plan

The *Merced Water Supply Plan* (CH2M Hill 1995, Updated 2001), prepared by the City of Merced in conjunction with MID and the University of California, Merced, presents a general plan for overall water system expansion. The plan, originally completed in 1995, was developed to ensure a reliable water supply through 2030, recognizing that the rate of population growth in eastern Merced County would continue to outpace statewide growth. The 1995 *Merced Water Supply Plan* identified five goals:

- ▶ manage groundwater resources;
- ▶ provide a high-quality, reliable supply of water for cities;
- ▶ protect and enhance the economic base;
- ▶ protect MID's Merced River water rights; and
- ▶ maintain consensus on a water supply plan.

The plan was updated in September 2001 because of new conditions that could influence the long-term projections made in the 1995 plan. These conditions included the decision to locate the new University of

California campus in the study area, the preparation of a groundwater management plan for the area, the preparation of an agricultural water management plan for the area, changing instream flow conditions on the Merced River, and better data and understanding of the study area's water resources.

Merced Basin Groundwater Management Plan

In 1997, as part of the implementation of the Merced Water Supply Plan, MID adopted a Groundwater Management Plan, including a Groundwater Management Program to conjunctively manage the region's surface and groundwater supplies to meet local and regional water needs reliably. The Groundwater Management Program involves a variety of measures, including monitoring, water quality protection, conjunctive use, and public involvement and information. Groundwater monitoring measures include: groundwater production, levels and storage, inflows and outflows, as well as water quality. The following Merced area public agencies have prepared and adopted or have formally agreed to adopt the MBGMP:

- ▶ County of Merced (County),
- ▶ MID,
- ▶ Le Grand-Athlone and Turner Island Water Districts,
- ▶ Winton Water & Sanitary District (WWSD),
- ▶ Merced County Water District,
- ▶ Planada and LeGrand Community Service Districts,
- ▶ Black Rascal and Meadowbrook Water Companies,
- ▶ Stevinson Water District, and
- ▶ East Merced Resources Conservation District.

Existing Water Supply and Conveyance on the Project Site

In the project area, a 16-inch water main is located on Childs Avenue, and a 16-inch water main on Kibby Road passes south through the project site to Gerard Avenue (Frank, pers. comm., 2006). The western one-third of the project site contains an almond orchard, and the eastern two-thirds consist of agricultural fields. There is an irrigation well on the project site. The amount of groundwater pumped annually from this well is unknown.

California Department of Water Resources (DWR) estimates that unit applied water demand for deciduous orchards (e.g. almonds) in the Merced region range from 2.1 acre-feet per acre (afa) to 3.0 afa and unit applied water demand for agricultural fields range from 1.7 afa to 2.4 afa (DWR 1975). The annual water demands for the almond orchard and agricultural fields are estimated to be approximately 160 afy to 228 afy and 262 afa to 370 afa respectively. Total existing water demands at the project site would be approximately 422 afy to 598 afy.

Table 4.12-3 Estimated Annual Water Demands for Existing land Use at Project Site		
Land Use	Acreage	Water Demand (afy)
Almond orchard	76	160–228
Fields	154	262–370
Total	230	422–598
Source: EDAW 2006		

For more information regarding the City's water supply, please refer to the WSA prepared specifically for the proposed project by EDAW (Appendix F).

WASTEWATER COLLECTION AND TREATMENT

The sewer system consists of up to 48-inch diameter gravity sewers, pumping stations, and force mains that convey wastewater to the Merced Wastewater Treatment Plant (WWTP). In the project area, a 12-inch sewer main is located on Childs Avenue, and a 36-inch sewer main is located on Gerard Avenue. A 30-inch trunk sewer main is located on Kibby Road and passes south through the project site to Gerard Avenue. (Frank, pers. comm., 2006).

The City owns and operates the Merced WWTP, which is located 2 miles south of the Merced Municipal Airport. The plant treats sewage generated by uses in the City and also serves limited unincorporated areas of the County in special circumstances. The existing facilities at the Merced WWTP include headworks, septage receiving, primary and secondary clarification, activated biosolid aeration basins, chlorination and dechlorination, anaerobic biosolid digesters, and biosolid drying beds. Dried biosolids are disposed of on a 600-acre site of City-owned farmland as a soil amendment (City of Merced 2005a.) The wastewater treatment plant is currently operating at an average dry weather flow of 7.8 million gallons per day (mgd), or 78% of the plant's permitted average dry-weather flow capacity of 10 mgd. The plant's current wet-weather flow is 8.15 mgd. The current design capacity of the treatment plant can support a population of approximately 100,000.

Approximately 75 to 80% of the Merced WWTP effluent flow is discharged to Hartley Slough, which enters Owens Creek, and subsequently enters a network of natural and artificial channels tributary to the San Joaquin River. The Merced Wildlife Management Area (MWMA), a 385-acre mitigation area created to offset habitat losses incurred through the development of a City industrial wastewater disposal site, receives another 20 to 25% of the treatment plant effluent. The remaining portion of the effluent is used to irrigate fodder crops grown during periods of low industrial flow. The fodder crops are grown and irrigated on a City-owned and operated 580-acre industrial wastewater disposal site south of the treatment plant. (City of Merced 2005a.)

The City evaluated the environmental impacts of increasing wastewater treatment capacity and improving treated effluent quality of the existing City of Merced WWTP facility in the *City of Merced Wastewater Treatment Plant Expansion Project, Final Environmental Impact Report* (City of Merced 2006a). The final EIR was certified by the City Council on December 18, 2006, and construction of improvements is scheduled to start in spring 2009. Improvements will increase capacity to 12 mgd and provide tertiary treatment (filtration and ultraviolet disinfection).

The overall goal of the WWTP expansion project is to upgrade and expand the capacity of its WWTP facilities to accommodate planned wastewater loads generated within its SUDP area and the adjacent University of California Merced Long Range Development Plan (LRDP) area, and to comply with current and anticipated effluent quality regulatory limits. The WWTP project would initially increase the capacity of the WWTP from the currently permitted 10 mgd to 11.5 mgd without any substantive improvements to the treatment facilities. This project is currently underway to provide redundancy for the existing 10 mgd capacity. The 11.5 mgd of secondary treatment capacity would be available immediately upon issuance of a new National Pollutant Discharge Elimination System (NPDES) permit from the Central Valley Regional Water Quality Control Board (RWQCB) and after certification of the EIR for the wastewater treatment plant. Following this initial upgrade a series of improvements would be made to the WWTP enabling the capacity of the treatment system to be rated at either 12 mgd or 16 mgd by adding a series of tertiary-treatment facility improvements. Ultimately, the WWTP would reach a capacity of 20 mgd with additional improvements as needed to meet future wastewater loads.

SOLID WASTE DISPOSAL

Solid waste disposal for the City of Merced and the project site is managed by the Merced County Solid Waste Regional Agency. The Merced County (County) and its six incorporated cities jointly own and operate two active solid waste landfill facilities: the Highway 59 Landfill, serving the eastern end of the County, and the Billy

Wright Landfill, serving the western end of the County. Both of these facilities are permitted to accept municipal solid waste.

The City provides all waste collection and transport services within the City limits processing approximately 60,000 tons per year. Commercial and industrial solid waste collection services are provided up to six times per week. It is anticipated that the Highway 59 Landfill, approximately 6 miles north of the City, would serve the project area. Permitted waste types at the Highway 59 Landfill are Class III, nonhazardous solid waste, inert wastes, and nonfriable asbestos.

At present, the Highway 59 Landfill is permitted to accept a maximum of 1,500 tons per day (tpd) of solid waste, and the average daily rate of solid waste tonnage accepted at the facility is approximately 488 tpd. In January 2001, the site received approval for an additional permitted area of 140 acres. The site currently has a permitted capacity of approximately 46.2 million tons. Closure dates of landfills are based on projected population growth rates. The closure date of the Highway 59 Landfill is anticipated to be approximately 2030. (CIWMB 2004a.)

RECYCLING FACILITIES

Assembly Bill (AB) 939 requires local agencies to implement source reduction, recycling, and composting (see discussion under “Regulatory Setting” below). The countywide Integrated Waste Management Plan (IWMP) requires recycling programs, which are expected to result in a 50% diversion from landfills, thereby extending the life of landfills.

Individual landfills in Merced County have resource recovery areas, and the Highway 59 Landfill has a permitted composting facility, which provides for the collection of wood and green wastes (which are composted) and concrete/asphalt wastes (which are processed and used for the pads and haul roads within the landfill sites).

The Highway 59 Landfill inspects all self-haul loads and some commercial haul loads. If it appears that the load has a high percentage of recyclable materials, the load is sent to a sorting pad.

ELECTRICAL SERVICES

Two potential public utility providers could provide electrical service for the project site: the Merced Irrigation District (MID) and Pacific Gas and Electric Company (PG&E). MID, under the authority of the California Water Code, has the authority to operate as an electric utility. During the past 70 years, MID has provided wholesale power to PG&E. As a result of AB 1890, MID is able to sell power at the retail level. MID distributes electricity through the Atwater/Merced transmission loop. Historically, MID has served the area generally from the City of Livingston to the City of Atwater. MID has expanded its power delivery area in recent years, and in 2000 it completed the extension of its network to the City of Merced with a series of overhead and underground lines. Currently, the MID delivers approximately 80 megawatts of electricity to its 3,500 residential customers.

PG&E delivers approximately 81,923 million kilowatt-hours (kWh) of electricity to its 13 million customers throughout the 70,000-square-mile service area in northern and central California. The Wilson Substation, which is located immediately south of State Route 140 and west of Tower Road, is one of PG&E’s substations serving the City. Two parallel transmission lines originate from this substation and extend to the northwest: a 115-kilovolt (kV) line, called the Wilson-Atwater, and a 230-kV line called the Belotta-Harndon. These transmission lines generally run north to south through the central area of the site and terminate northeast of the project site at the Wilson Substation.

NATURAL GAS SERVICES

Natural gas service would be provided to the project site by PG&E. Gas is delivered to Merced and the proposed project area through portions of PG&E’s 46,000 miles of natural gas pipelines. An existing 8-inch gas

transmission line runs parallel to State Route 99 through the City, and several 6-inch and 4-inch distribution lines tap off of the main line. In the proposed project area, one 6-inch gas transmission line parallels Yosemite Parkway north of the project site and one 6-inch gas transmission line parallels Childs Avenue east of the project site.

TELECOMMUNICATIONS SERVICE

The proposed project site is located in the service area of AT&T (formerly SBC), which would provide telephone communications service to the proposed project. AT&T provides telecommunications services, including local, long distance, and DSL, to the City.

Cable television services are provided by Comcast who is in the process of renovating local facilities to offer high speed internet access through the cable system and other products.

FIRE PROTECTION

The project site is in the service area of the Merced Fire Department. The following information on the department was obtained from the department's Web site (City of Merced 2006b) and from City staff (Espinosa 2008). As of 2008, the City of Merced Fire Department's fire control equipment consisted of five first-line engine companies (carry and pump water) at five stations throughout the City, one ladder company (85 feet), two reserve engines, one reserve truck, and several miscellaneous vehicles. The Fire Department personnel totals 81 employees, all of whom are paid professionals, which provides the City coverage 24 hours a day, 7 days a week.

The City of Merced Fire Department has a mutual aid agreement with the Atwater and County Fire Departments. This agreement enables the different jurisdictions to request aid from another when necessary. At present, the Merced Fire Department holds a Class II ISO rating. This rating schedule is used by the Insurance Service Office (ISO) to establish insurance rates for commercial and residential properties.

The department responds to fires, medical emergencies, traffic accidents, creek rescues, and a variety of other emergency situations. The department currently employs 54 line personnel (15 captains, 18 engineers, and 21 firefighters), three battalion chiefs, two division chiefs, and one chief. Department personnel are typically assigned on a three-platoon work schedule, which provides the City with coverage 24 hours a day, 7 days a week. The department maintains five fire stations:

- ▶ Station 51 at 99 East 16th Street,
- ▶ Station 52 at Merced Municipal Airport,
- ▶ Station 53 at 800 Loughborough Drive,
- ▶ Station 54 at 1425 East 21st Street, and
- ▶ Station 55 at the intersection of Parsons Avenue and Silverado.

The project site is located in Fire District 4, and Station 54 at 1425 East 21st Street currently provides first-response service to the project area (City of Merced 2005b). Personnel at Station 54 are responsible for emergency out-of-town assignments and maintenance of all wildland equipment. Fires Station 54 is approximately 3.9 miles northwest of the project site.

An important requirement in fire suppression is adequate fire flow, which is the amount of water, expressed in gpm, available to control a given fire and the duration of time this flow is available. The total fire flow needed to extinguish a structural fire is determined by a variety of factors, including building design, internal square footage, construction materials, dominant use, height, number of floors, and distance to adjacent buildings. Minimum requirements for available fire flow at a given building are dependent on standards set in the California Fire Code. Generally, fire flow requirements for the type of development associated with the proposed project is 3,500 gpm for industrial development (measured at 20 pounds per square inch [psi]) with a minimum 2-hour duration.

POLICE PROTECTION

The Merced Police Department provides law enforcement services including dispatching to the City of Merced and the project site. The following information on the department was obtained from the City's Web site (City of Merced 2006c). As of February 2005, the department had a total of 81 sworn officers, including four administrative staff. The department maintains three stations:

- ▶ Central Station at 611 West 22nd Street,
- ▶ North Station at 1109 Loughborough Drive, and
- ▶ South Station at 470 West 11th Street.

The department has a total 95 vehicles, including patrol, SWAT, bomb, investigatory, traffic, canine, parking enforcement, and administrative vehicles. The average response time for in-progress calls is between 2 and 4 minutes, while the average response time for not-in-progress calls can range from 2 minutes to over an hour, depending on the type of call. The department responded to 5,600 calls in 2005.

The Central District at 611 W. 22nd Street currently provides first-response service to the project area (City of Merced 2005b). This district includes an investigations division, traffic division, animal control, dispatch, records, gang violence suppression unit, evidence, and administration. The Central District Station is 5.2 miles northwest of the project site.

SCHOOLS

Schools in the City of Merced are administered by three districts: the Merced City Elementary School District, which consists of 13 elementary schools and four middle schools; the Weaver Union Elementary School District, which consists of two elementary schools; and the Merced Union High School District, which consists of seven high schools. For the 2005-2006 school year, there were 11,289 students, 2,086 students, 10,466 students enrolled in the Merced City Elementary School District, Weaver Union Elementary School District, Merced Union High School District, respectively. (Education Data Partnership 2006.) Because the project is anticipated to hire primarily from the local community, resulting in little in-migration, the project would not increase substantially increase population (See Section 4.9 "Population and Housing" for a more detailed discussion). Therefore, the project is not expected to increase long-term demand for schools necessitating the expansion of existing facilities or construction of new facilities. In addition, new industrial uses are required to pay school impact fees; therefore, impacts associated with student generation of in-migrating employees would be off-set by this fee payment.

PARKS AND RECREATIONAL FACILITIES

As of 2008, the City of Merced owns and maintains 60 park areas with a total area of 395 acres (Espinosa 2008). These park areas include mini-parks, urban plazas, neighborhood parks, school parks, community parks, large urban parks, athletic parks, special use areas, linear parks, and undeveloped parkland. The City's policy requires 5 acres of parkland for every 1,000 residents. As of 2003, the City's population was 67,610 for a ratio of 5.04 acres per 1,000 residents. The City also owns and maintains seven ball fields, four soccer fields, two tennis courts, one gymnasium, 5,450 square feet of pool space, and 13.11 miles of recreational pathways/trails. The park located nearest the project site is the Joe Herb Park, which is a 26.7-acre community park located at 2200 Yosemite Parkway approximately 3.3 miles northwest of the site. (City of Merced 2006d.) Because the project is anticipated to hire primarily from the local community, resulting in little in-migration, the project would not increase substantially increase population (See Section 4.9 "Population and Housing" for a more detailed discussion). Therefore, the project is not expected to increase long-term demand for parks and recreation facilities such that new facilities or expansion of existing facilities would be necessary.

LIBRARY FACILITIES

Library services in the City of Merced are provided by the Merced County Library which has 16 branches located throughout the County. The main branch of the library and one additional branch are located in the City of Merced on O Street and Leshner Drive, respectively. The main branch has over 100,000 books and 150 magazine and newspaper subscriptions. Because the project is anticipated to hire primarily from the local community, resulting in little in-migration, the project would not substantially increase population (See Section 4.9 “Population and Housing” for a more detailed discussion). Therefore, the project is not expected to increase long-term demand for library facilities such that new facilities or expansion of existing facilities would be necessary.

4.12.2 REGULATORY SETTING

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

Americans with Disabilities Act

The Americans with Disabilities Act (ADA) of 1990 (42 United States Code [USC] 12181) prohibits discrimination on the basis of disability in public accommodation and state and local government services. Under the ADA, the Architectural and Transportation Barriers Compliance Board issues guidelines to ensure that facilities, public sidewalks, and street crossings are accessible to individuals with disabilities. Typical ADA improvements include creating handicap parking spaces, restroom modifications, door hardware requirements, and lighting upgrades. Play areas, meeting rooms, park restrooms, and other buildings and park structures are required to meet ADA compliance requirements.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

Senate Bill 610

Senate Bill (SB) 610 (Section 21151.9 of the Public Resources Code and Section 10910 et seq. of the Water Code) requires the preparation of “water supply assessments” (WSA) for large developments (e.g., for projects of 500 or more residential units, 500,000 square feet of retail commercial space, or 250,000 square feet of office commercial space). These assessments, prepared by “public water systems” responsible for service, address whether there are adequate existing or projected water supplies available to serve proposed projects, in addition to urban and agricultural demands and other anticipated development in the service area in which the project is located. Where a WSA concludes that insufficient supplies are available, the WSA must lay out steps that would be required to obtain the necessary supply. The content requirements for the assessment include, but are not limited to, identification of the existing and future water suppliers and quantification of water demand and supply by source in 5-year increments over a 20-year projection. This information must be provided for average normal, single-dry, and multiple-dry years. The absence of an adequate current water supply does not preclude project approval, but does require a lead agency to address a water supply shortfall in its project approval findings.

A WSA has been prepared for the project and is included as Appendix F. The conclusions of the WSA are summarized in the “Environmental Impacts” portion of this section, under Impact 4.12-1.

California Integrated Waste Management Act

To minimize the amount of solid waste that must be disposed of by transformation and land disposal, the State Legislature passed the California Integrated Waste Management Act (CIWMA) of 1989 (AB 939), effective January 1990. According to the CIWMA, all cities and counties were required to divert 25% of all solid waste from landfill facilities by January 1, 1995, and 50% by January 1, 2000. Each city is required to develop solid waste plans demonstrating integration of the CIWMA plan with the County plan. The plans must promote

(in order of priority) source reduction, recycling and composting, and environmentally safe transformation and land disposal.

Building Energy Efficiency Standards

The project would be required to comply with recently adopted changes to Title 24 of the California Code of Regulations regarding energy efficiency, which became effective on October 1, 2005. These new energy efficiency standards were developed in response to the state's energy crisis as well as AB 970 in regards to improving residential and nonresidential building energy efficiency, minimizing impacts to peak energy usage periods, and reducing impacts on overall state energy needs.

LOCAL PLANS, POLICIES, REGULATIONS, AND LAWS

Merced Vision 2015 General Plan

The Public Services and Facilities Element, the Open Space Element, the Sustainable Development Element, and the Safety Element of the *Merced Vision 2015 General Plan* (City General Plan) contain various goals and policies that apply to the services and facilities provided by the City, and regulate the ways in which new developments are required to offset impacts associated with these services. The following specific local policies apply to development of the uses proposed in this project.

Public Services and Facilities Element

GOAL AREA P-1: Public Facilities and Services

- ▶ **Policy P-1.1:** Provide adequate public infrastructure and services to meet the needs of future development.
 - 1.1.a: Through development review, ensure that utilities are adequately sized to accommodate the proposed development and, if applicable, allow for extensions for future developments, consistent with master plans.
 - 1.1.c: Include in Specific Plans and master plans, a phasing plan for providing access, sewer, water, drainage, flood control, schools, parks and other appropriate governmental facilities and services.
- ▶ **Policy P-1.3:** Require new development to provide or pay for its fair share of public facility and infrastructure improvements.
 - 1.3.c: All new development shall contribute its fair share of the cost of on-site and off-site public infrastructure and services as appropriate.
 - 1.3.d: The City may require developments to install off-site facilities which also benefit other properties.

GOAL AREA P-2: Police and Fire Protection Services

- ▶ **Policy P-2.1:** Maintain sufficient public protection facilities, equipment, and personnel to serve the City's needs.
 - 2.1.b: Determine that new development is adequately served by fire and police protection services.
 - 2.1.e: Maintain an adequate and reliable water system to serve fire protection needs.
 - 2.1.g: Utilize existing community resources, to the maximum extent feasible, in the provision of public protection services.

- 2.1.h: Assure that new development utilizes modern public protection concepts in their design and development.

GOAL AREA P-3: Water

- **Policy P-3.1:** Ensure that adequate water supply can be provided within the City's service area, concurrent with service expansion and population growth.

- 3.1.e: Continue to work with Merced Irrigation District and the County of Merced to ensure that adequate water supply and distribution facilities can be developed to meet the growth of the Merced metropolitan area.

GOAL AREA P-4: Wastewater

- **Policy P-4.1:** Provide adequate wastewater collection, treatment and disposal capacity for projected future needs.

- 4.1.a: Maintain the existing wastewater system to increase the lifetime of the system.

- 4.1.b: Develop wastewater master plans to serve future Merced urban expansion.

GOAL AREA P-6: Solid Waste

- **Policy P-6.1:** Establish programs to recover recyclable materials and energy from solid wastes generated within the City.

- 6.1.a: Implement source reduction and recycling programs to minimize waste at the point of manufacture or use.

- **Policy P-6.2:** Minimize the potential impacts of waste collection, transportation and disposal facilities upon the residents of Merced.

- 6.2.b: Cooperate with Merced County to implement recommendations for source reduction programs which have the least environmental and economic impacts on the City and its residents.

- 6.2.c: Continue implementation of programs in cooperation with the County of Merced to meet solid waste diversion goals.

Open Space Element

GOAL AREA OS-5: Conservation of Resources

- **Policy OS-5.1:** Promote water conservation throughout the planning area.

- 5.1.a: Continue implementation and enforcement of the City's Water Shortage Regulations (MMC 15.42.010-100).

- 5.1.b: Continue implementation of the Water Efficient Landscaping and Irrigation Ordinance (MMC 17.60.010-070).

Sustainable Development Element

GOAL AREA SD-3: Energy Resources

- ▶ **Policy SD-3.1:** Promote the use of solar energy technology.
 - 3.1.a: Encourage the use of solar energy in design and management of all new construction in the City.
 - 3.1.c: Encourage developers and builders to properly design all structures on each building lot in the City to take fullest advantage of solar use in heating and cooling.
 - 3.1.d: Encourage developers and builders to maximize “passive” solar design, such as large south-facing windows for winter heat gains and overhangs for shading for summer heat protection.
- ▶ **Policy SD-3.2:** Encourage the use of energy conservation features and low-emission equipment for all new residential and commercial development.
 - 3.2.b: Cooperate with the local building industry, utilities, and SJVUAPCD to promote enhanced energy conservation standards for new construction.
 - 3.2.c: Encourage new residential, commercial, and industrial development to reduce air quality impacts from area sources and from energy consumption.

Safety Element

GOAL AREA S-4: Fire Protection

- ▶ **Policy S-4.1:** Promote the concept of fire protection master planning with fire safety goals, missions, and supporting objective for the community.
 - 4.1.b: Work with the Fire Department and the Environmental Health Division to identify fire districts that will require specialized manpower and equipment, such as businesses that use hazardous materials, and request that land uses or structures with similar needs be confined to these districts.
- ▶ **Policy S-4.2:** Maintain a reasonable level of accessibility and infrastructure support for fire suppression, disaster, and other emergency services.
 - 4.2.b: Maintain current standards defined in the California Building and Fire Codes and City Standards for the spacing of fire hydrants. In general, these standards call for 500-foot spacing in residential areas and 300-foot spacing in commercial and industrial areas.

GOAL AREA S-6: Crime

- ▶ **Policy S-6.2:** Provide services and personnel necessary to maintain community order and public safety.
 - 6.2.a: Maintain a police force sufficiently staffed and deployed to ensure quick response times to emergency calls.
 - 6.2.b: Encourage approaches to crime prevention to be designed into new buildings and subdivisions.

Merced Municipal Code, Title 15, Public Services

Chapter 15.42, Water Shortage Regulations, of the Merced Municipal Code states, “a water shortage and emergency exists within the water source and service area of the water department of the City of Merced, and that it is necessary to prohibit and regulate water uses.” The City of Merced Water Conservation Ordinance is in effect year-round. This ordinance allows watering of lawns and landscaping according to street addresses, and prohibits:

- ▶ washing of sidewalks, driveways, porches or other outdoor surfaces, except when necessary to protect public health and safety; however, buildings may be washed down once a year;
- ▶ operation of any ornamental fountain unless it uses a re-circulating water system;
- ▶ washing of boats, motor homes, or automobiles and trucks with a hose that is not fitted with an automatic shut-off device;
- ▶ indiscriminate running or wasting of water, such as excessive irrigation causing runoff and flooding; and
- ▶ allowing broken or defective plumbing or irrigation systems which permit the escape or leakage of water.

Merced Municipal Code, Title 17, Buildings and Construction

Chapter 17.60, Water Efficient Landscaping and Irrigation Ordinance

Chapter 17.60, Water Efficient Landscaping and Irrigation Ordinance, is intended to:

- ▶ enhance the environmental value and physical appearance of development in the City;
- ▶ improve the environmental performance of development by: reducing heat, glare and noise; promoting the percolation of storm water, aid in improving air quality; and buffering potentially incompatible land uses from one another; and
- ▶ promote the conservation of water and preservation of water quality by requiring drought tolerant plant material in landscaping and the retention of existing natural vegetation, thereby reducing the need for irrigation, pesticides, herbicides, and fertilizers.

Chapter 17.62, Public Facilities Impact Fees Ordinance

To implement the goals and objectives of the City of Merced’s General Plan and to mitigate the impacts caused by future development in Merced, certain public facilities must be or have been required to be constructed, and/or compensation measures must be or have been required to be taken to offset resources lost due to the future development. The City Council has determined that public facilities impact fees are needed to finance these public facilities, and/or compensation measures, and to pay for each development’s fair share of the construction costs of these improvements, and/or the costs of the compensation measures. In establishing the fees, the City Council has found the fees to be consistent with its General Plan.

A public facilities impact fee is established on issuance of building permits for development in the City of Merced to pay for municipally owned public facilities, including, but not limited to, fire stations, police stations, community recreation facilities, traffic-related improvements, and bikeways facilities.

Merced Community Fire Protection Master Plan

The City of Merced Community Fire Protection Master Plan (2003) provides the following ongoing service goals and objectives that are applicable to the proposed project:

1. Implement City policies and provide levels as directed by the City Council and administrative staff.
2. Provide continued community assessment to identify the needs relative to service levels, in line with the departments “Standards of Cover” and operational policies/procedures.

4.12.3 ENVIRONMENTAL IMPACTS

METHOD OF ANALYSIS

Impacts on utilities and public services that would result from the project were identified by comparing existing service capacity and facilities, staffing, and equipment against future demand associated with project implementation. When possible, a quantitative comparison was used to determine the effect of the proposed project on future demands and whether physical impacts associated with the need to expand existing facilities or construct new facilities would likely result. Evaluations of potential utilities and public services impacts are based on a review of documents pertaining to the proposed project area, including the City General Plan, the WSA, and the City of Merced Community Fire Protection Master Plan. Additional information was obtained through consultation with appropriate agencies and field review of the project site and surroundings.

THRESHOLDS OF SIGNIFICANCE

For the purpose of this analysis, the following thresholds of significance have been used to determine whether implementation of the proposed project would result in significant utilities and public services impacts. Based on questions included Appendix G of the State CEQA Guidelines (the CEQA checklist), a utilities impact is considered significant if implementation of the proposed project under consideration would do any of the following:

- ▶ create a need for the development of new service facilities (e.g., fire, police, schools), the construction of which could result in significant environmental impacts;
- ▶ create circumstances where existing services and facilities could not meet established performance standards (i.e., response times, provider per resident ratios);
- ▶ substantially impede existing services;
- ▶ generate solid waste beyond the capacity of existing landfills;
- ▶ violate federal, state, or local statutes and regulations related to solid waste; or
- ▶ result in inefficient, wasteful, and unnecessary consumption of energy (based on Appendix F of the State CEQA Guidelines).

A public services impact is considered significant if implementation of the proposed project under consideration would do any of the following:

- ▶ create demand beyond available service or permit capacity;
- ▶ create demand for electrical or natural gas service that is substantial in relation to the existing demands;
- ▶ exceed wastewater treatment requirements of the Central Valley RWQCB;
- ▶ 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; or

- ▶ have insufficient water supplies available to serve the project from existing or permitted entitlements and resources, or require new or expanded entitlements.

The proposed project is not expected to result in substantial, direct population growth, and indirect impacts related to population growth are addressed in Chapter 6, “Cumulative and Growth-Inducing Impacts.” It is anticipated that the majority of employees would be hired from the local population base. For further information on the project’s impact on population, employment and housing, please see Section 4.9, “Population and Housing”. Currently, the parks and recreational facilities, school facilities and services, and other public services in the City are adequate to serve the existing City residents. The project would be subject to development impact fees would provide the legally maximum required level of funding under State law. The California Legislature has declared that the school impact fee is deemed to be full and adequate mitigation under CEQA. (Government Code Section 65996) Therefore, the project would not increase long-term demand for these services and are not discussed further in this section.

IMPACT ANALYSIS

IMPACT 4.12-1 Increased Demand for Water Supply and Distribution. *Implementation of the proposed project would increase demand on the existing water supply and water distribution systems. Existing water supply and distribution facilities would be adequate to serve the project. Therefore, this impact is considered less than significant.*

Water requirements for the project are broken into two categories: domestic and fire protection. Domestic water usage is distributed into two categories: domestic plumbing and truck wash. Domestic usage is approximately 20,000 gpd and includes restrooms, sinks, water fountains and the kitchen. The truck wash usage is approximately 35,000 gpd and is for washing company tractors and trailers. In addition to the domestic water requirements, the project facility would have two 300,000-gallon (0.9 afy) ground-level water storage tanks. The tanks would be dedicated to service the facility fire protection system and would not be connected to the domestic water system. The total amount of water needed for the tanks would be 600,000 gallons (1.8 afy). Because it is not possible to predict when, if ever, these water tanks would be needed for fire protection, it is assumed that the amount of water necessary to fill the tanks is an annual water demand.

Table 4.12-4 Wal-Mart Regional Distribution Center Annual Water Demands			
Category		Unit Water Demand	
		gallons per day (gpd)	acre-feet per year (afy)
Domestic Water	Plumbing	20,000	22.4
	Truck wash	35,000	39.2
	Total	55,000	61.6
Fire Protection	Two 300,000-gallon storage tanks	600,000	1.8
Total Water Demands			63.4
Source: City of Merced 2006f			

Currently, the project site contains an almond orchard and agricultural fields. Total existing water demands for these uses at the project site would be approximately 422 afy to 598 afy. As shown in Table 4.12-4, total annual water demands for the project would be 61.6 afy for domestic water and 1.8 afy for fire protection, a total of 63.4 afy. With implementation of the proposed project, the existing water demand associated with the almond orchard and agricultural uses would no longer be required. Therefore, the project would result in a net reduction in total groundwater basin pumping. However, for purposes of this DEIR, the most conservative analysis approach was

taken and the net increases in water supply demand for the proposed project were considered as separate from existing uses.

The City uses groundwater exclusively, and development of the project would require 63.4 afy to be pumped from the groundwater basin annually. A WSA has been prepared for the proposed project consistent with Water Code Section 10912 (Appendix F). This assessment includes a determination as to whether the projected water supplies available would meet the water demand associated with the proposed project, in addition to the existing and planned future uses. The projected water demand associated with industrial land use for the project site was accounted for in the most recently adopted UWMP.

The City's total projected water supplies available during normal, single dry, and multiple dry water years during a 20-year projection will meet the projected water demand associated with the project in addition to existing and planned future uses. As shown in Table 4.12-2 above, buildout of the City, which includes the proposed project, would result in a water supply demand of 55,677 afy. The City's UWMP concludes that groundwater is a consistent source, so no replacement plan is needed. Although groundwater levels have declined at a greater rate during drought periods, the annual quantity of groundwater available does not vary significantly in relation to wet or dry years. The reliability of the City's water supply does not change due to seasonal or climatic shortages and there is no evidence that groundwater quality is affected by short-term drought conditions. In addition, the City and MID are cooperating on a long-range plan to stabilize groundwater levels and to investigate the potential of recharge with imported surface water from the Merced River. Based upon the analysis undertaken by the City in its UWMP, and the groundwater management and planning efforts being undertaken by the City and MID, the City has concluded that it can continue to provide potable water to future development included in the SUDP, including the project.

In the project area, a 16-inch water main is located on Childs Avenue, and a 16-inch water main on Kibby Road passes south through the project site to Gerard Avenue. This water main would be rerouted from Kibby Road south to Childs Avenue within the site boundaries. From Childs Avenue the main would travel east to Tower Road, loop to cover the west side of property adjacent to Campus Parkway, and then travel south to Gerard Avenue. These mains would be located in easements within the site boundaries (Frank, pers. comm., 2006).

The project's internal water distribution system would be constructed, as needed, and would be adequately sized to accommodate project-related water demands and fire flow demands. As described in the City General Plan and the City's Municipal Code, the project applicant would be responsible for paying water connection charges when the proposed project connects to the City's water system.

The applicant has not submitted a landscaping plan that would help identify potential water demand associated with irrigation. Nonetheless, the City requires new development to implement water efficient landscaping in project designs. These designs could potentially include, but are not limited to:

- ▶ both evergreen and deciduous trees, shrubs and attractive dust and erosion-preventing ground cover;
- ▶ 90% of the plants in non-turf areas are well-suited to the climate of the region, drought tolerant, and require minimal water once established in the landscape;
- ▶ turf area limited to 30% of the total landscaped area; and
- ▶ automated irrigation systems with multiple cycle capabilities and rain sensing override switches.

Based on the estimated water demand for the project, available water supply, the WSA, the City's water distribution system facilities, the project's water supply and water distribution facilities impacts would be ***less than significant***.

Mitigation Measure

No mitigation is required.

IMPACT 4.12-2 Demand for Wastewater Treatment and Conveyance Facilities. *Implementation of the proposed project would increase demand for wastewater treatment and conveyance facilities. Existing wastewater treatment facilities and the City's wastewater conveyance facilities would be adequate to serve the project. This impact would be less than significant.*

Domestic water demand would be 55,000 gpd (Table 4.12-4). The project facility would have two 300,000-gallon ground-level water storage tanks dedicated to serving the facility fire protection system and are not connected to the domestic water system. Therefore, only domestic water demands were used to calculate the amount of wastewater generated by the proposed project. Using a standard rate of 90% of the total water volume used (55,000 gpd) to estimate wastewater production, the project would generate approximately 49,500 gpd (0.05 mgd) of wastewater. The wastewater generated by the project, in combination with the average 7.8 mgd wastewater flows currently being treated at the Merced WWTP, would not exceed the plant's permitted capacity.

As described above under "Affected Environment," the City evaluated the environmental impacts of increasing wastewater treatment capacity and improving treated effluent quality of the existing City of Merced WWTP facility in the certified *City of Merced Wastewater Treatment Plant Expansion Project, Final Environmental Impact Report* (City of Merced 2006a). A summary of their environmental impacts have been incorporated by reference and are summarized in this section below.

The WWTP was recently expanded and has capacity for secondary treatment to 11.5 mgd (although the WWTP is only permitted for 10 mgd by the Regional Board). If the City continues to experience high growth rates, it will expand treatment capacity from 11.5 mgd to 12 mgd by 2012, followed by a subsequent phase from 12 mgd to 16 mgd treatment capacity between 2017 and 2025.

Currently, the existing WWTP capacity would be adequate to serve wastewater flows generated by the proposed project; however, the proposed project, considered along with other future development in the City, contributes to the need for the WWTP expansion. Therefore, there is a relationship between the project and the need for WWTP expansion, and the environmental impacts of increasing wastewater treatment capacity are associated with development of the project. Approval of the project may hasten the occurrence of the related impacts; however, these impacts would also occur without development of the project. Because the WWTP expansion is required to serve regional City development, it would be required whether or not the project is developed.

As described in the WWTP expansion project EIR, expansion of the WWTP would result in several environmental impacts, most of which would be reduced to a less-than-significant level through implementation of mitigation. The only significant and unavoidable impact related to the treatment plant that was identified would be permanent conversion of Unique Farmland or Farmland of Statewide Importance to non-agricultural use. Mitigation identified in the EIR would require the City to pay into a recognized trust fund that would acquire agricultural conservation easements. Implementation of this mitigation would reduce impacts on the permanent conversion of important farmlands but not to a less-than-significant level. Therefore, the proposed project would contribute to a significant and unavoidable impact associated with conversion of farmland identified in the WWTP expansion project EIR.

Additional on-site wastewater conveyance facilities would be required to connect the proposed project into existing City sewer mains, and no extensions of off-site infrastructure would be required to serve the project. In the project area, a 12-inch sewer main is located on Childs Avenue, and a 36-inch sewer main is located on Gerard Avenue. A 30-inch trunk sewer main is located on Kibby Road and passes south through the project site to Gerard Avenue. The portion of this main on the project site would be relocated to an easement on the west side of the site within the property boundaries. (Frank, pers. comm., 2006.) The gravity sewer west of Kibby currently

slopes toward Kibby. This would need to be replaced by a sewer sloping to the west, toward the replacement for the Kibby sewer scheduled to be installed along the western boundary of the property. The project's internal wastewater conveyance system would be constructed, as needed, and would be adequately sized to accommodate project-related wastewater flows. The City's wastewater system has been master planned for future development such as the proposed project. The Gerard trunk sewer is going to require major rehabilitation in the near future. This is a bituminous-lined, corrugated metal sewer installed in the 1950s and is badly deteriorated. It could be slip lined for an estimated \$6 million. As described in the City General Plan and the Merced Municipal Code, the project proponent would be responsible for paying sewer connection charges when the proposed project connects to the City's sewer system. Payment of these fees would ensure the project proponent pays for its fair share of the cost of sewer infrastructure and WWTP services. (Frank, pers. comm., 2006.)

The existing WWTP capacity would be adequate to serve wastewater flows generated by the proposed project. In addition, the wastewater generated by the project, in combination with the average 7.8 mgd wastewater flows currently being treated at the Merced WWTP, would not exceed the plant's permitted capacity. Furthermore, the WWTP would be expanded in the near term to 12 mgd and then to 16 mgd and eventually 20 mgd. The proposed project would consequently not result in the need for additional expansion of the WWTP, and the project impact is *less than significant*.

Mitigation Measure

No mitigation is required.

IMPACT 4.12-3 *Increased Generation of Solid Waste. The proposed project would incrementally increase the amount of solid waste generated in the City. Because the Highway 59 Landfill has sufficient permitted capacity to accommodate the project's solid waste disposal needs and because the project would also comply with all federal, state, and local statutes and regulations and the Merced Municipal Code related to solid waste reduction and recycling, this impact would be a less than significant.*

CIWMB provides an average per-capita solid waste disposal rate for warehousing as 1.9 tons per employee per year (CIWMB 2004b). Approximately 1,200 workers are anticipated to be employed on the project site. Therefore, the solid waste generation for the proposed project is approximately 2,280 tons per year or 6.3 tpd. It should be noted that, although not assumed in this analysis, Wal-Mart representatives have stated that zero waste is one of its sustainability goals and that the proposed project would include a recycling program, which would reduce the solid waste generation factor assumed in this analysis (see Section 3.7.6, "Proposed Sustainability and Energy Conservation Measures" for details).

The project site is currently serviced by the Highway 59 Landfill disposal site. The Highway 59 Landfill is permitted to accept a maximum of 1,500 tpd of solid waste, and the average daily rate of solid waste tonnage accepted at the facility is approximately 488 tpd. On a daily basis, the estimated 6.3 tpd of solid waste generated by the proposed project would represent approximately 0.4% of the maximum daily disposal and approximately 1.4% of the average daily disposal. The landfill has approximately 46.2 million tons of permitted capacity, which is estimated by CIWMB to last for approximately three decades (CIWMB 2004a). The Highway 59 Landfill has sufficient permitted capacity to accommodate the project's solid waste disposal needs.

Operation of the proposed project would generate large amounts of recyclable materials, such as paper, plastic, and cardboard packaging. The City of Merced implements a recycling program to ensure compliance with AB 939 and requires new development to comply with the Merced Municipal Code Title 8, Chapter 8.06, Recycling, which requires new project development to provide adequate, accessible, and convenient areas for collecting and loading recyclable materials. General standards include, but are not limited to:

- ▶ providing areas for recycling with adequate in capacity, number, and distribution to serve the development where the project occurs;

- ▶ providing adequate number of bins or containers in recycling areas;
- ▶ providing security to prevent theft of recyclable materials;
- ▶ including driveways with unobstructed access for collection vehicles and personnel; and
- ▶ including signs to clearly identifying all recycling and solid waste collection and loading areas and the materials accepted.

Because the Highway 59 Landfill has sufficient permitted capacity to accommodate the project's solid waste disposal needs and because the project would also comply with all federal, state, and local statutes and regulations and the Merced Municipal Code related to solid waste reduction and recycling, this impact would be a ***less than significant***.

Mitigation Measure

No mitigation is required.

IMPACT 4.12-4 **Increased Demand for Electricity and Required Extension of Electrical Infrastructure.** *Implementation of the proposed project would increase demand for electricity and electrical infrastructure. PG&E or MID would be able to provide electricity to the project site, and the increase in demand for electricity would not be substantial in relation to the existing electricity consumption in PG&E's or MID's service area. The City of Merced has identified the need to reduce energy demands in new development, and the proposed project would be required to include energy efficiency measures in project designs; therefore, this impact would be potentially significant.*

The proposed project would increase electrical demand in Merced. Electrical consumption for the proposed project was estimated based on the Wal-Mart distribution center in Porterville, California, which is similar in size to the proposed project. Using this data, the proposed project could increase electrical demands by approximately 13.3 million kilowatt-hours per year (Gordon, per. comm., 2007).

PG&E and MID facilities are located in the project area, and either utility provider could provide electrical service to the project site. PG&E facilities within the project area consist of two parallel transmission lines, a 115-kV line and a 230-kV. These transmission lines generally run north to south through the central area of the site and terminate northeast of the project site at the Wilson Substation. MID has a 12kV overhead line running through the site serving the City's Water Well 10R2. This line would need to be placed underground and routed out of the way of the Wal-Mart facilities. The applicant would have the option of making an agreement with either MID or PG&E for the provision of electrical services.

Project development would connect to extensions of the existing service lines, with the ultimate configuration to be approved by PG&E or MID. Both utility providers are required to comply with California Public Utilities Commission (CPUC) Decision 95-08-038 for the installation or upgrading of electric facilities and Building Energy Efficiency Standards (Title 24 of the California Code of Regulations) regarding energy efficiency. No new off-site electrical lines would be required for development of the proposed project. The on-site service lines would be sized to meet the demands of the project, and public utility easements would be dedicated for all underground facilities. The location of this infrastructure would be identified in the final project design. As part of the project approval process, the project applicant would coordinate with and meet the requirements of PG&E or MID regarding the extension and locations of on-site infrastructure.

The proposed electrical utility improvements would be required to comply with all existing City, PG&E or MID, and CPUC requirements, and applicable Uniform Building Code and Building Energy Efficiency Standards (Title 24 of the California Code of Regulations) requirements. The City of Merced has identified the need to reduce

energy demands in new development. To meet this goal, the proposed project would be required to implement additional energy efficiency measures; therefore, this impact would be ***potentially significant***.

Mitigation Measure 4.12-4: Incorporated Energy Efficiency Features into Project Designs

The project applicant shall prepare and submit to the City a sustainability plan, which shall incorporate the following energy efficiency features in project designs:

- ▶ providing electric maintenance equipment;
- ▶ using solar, low-emissions, or central water heaters;
- ▶ increasing building insulation beyond Title 24 requirements;
- ▶ orienting buildings to take advantage of solar heating and natural cooling;
- ▶ limiting the amount of glass on the south and west facades and providing solar protection for south-facing walls through landscaping or earth sheltering;
- ▶ installing thermal insulation, double-paned windows, high-tech window glazing, vapor barriers, and controlled air filtration to reduce energy consumption;
- ▶ installing skylights, light pipes, light shelves, exterior shade panels, and reflectors to transfer light to the interior of the building; and
- ▶ using clean alternative energy features, such as photovoltaic cells, solar panels, small wind turbines, and/or fuel cells, to generate power and reduce power consumption.

Implementation of Mitigation Measure 4.13-4 would reduce potentially significant impacts associated with increased demands for energy to a ***less-than-significant*** level ensuring the proposed project includes energy efficiency measures in project designs.

IMPACT 4.12-5	Increased Demand for Natural Gas and Required Extension of Natural Gas Infrastructure. <i>Implementation of the proposed project would increase demand for natural gas. PG&E would provide natural gas to the project site, and the increase in demand for natural gas would not be substantial in relation to the existing natural gas consumption in PG&E's service area. The City of Merced has identified the need to reduce energy demands in new development, and the proposed project would be required to include energy efficiency measures in project designs; therefore, this impact would be <i>potentially significant</i>.</i>

The proposed project would increase natural gas demand in Merced. Natural gas consumption for the proposed project was estimated based on the Wal-Mart distribution center in Porterville, California, which is similar in size to the proposed project. Using this data, the proposed project would increase natural gas demands by approximately 56,580 therms per year (Gordon, per. comm., 2007).

PG&E would provide natural gas to the project site. Natural gas lines are in the vicinity of the project site along Yosemite Parkway and Childs Avenue, and these lines parallel existing road rights-of-way (Frank, pers comm., 2006). Project development would connect to extensions of these existing off-site service lines, with the ultimate configuration to be approved by PG&E. Additional on-site service lines would be sized to meet the demands of the project, and public utility easements would be dedicated for all underground facilities. The location of infrastructure would be identified in the final project design. As part of the project approval process, the project applicant would coordinate with and meet the requirements of PG&E regarding the extension and locations of on-site infrastructure and comply with all existing City requirements.

The City of Merced has identified the need to reduce energy demands in new development. To meet this goal, the proposed project would be required to include energy efficiency measures in project designs; therefore, this impact would be ***potentially significant***.

Mitigation Measure 4.12-5: Implement Mitigation Measures 4.12-4. The applicant shall implement Mitigation Measure 4.12-4 above to reduce potentially significant impacts associated with increased demands for energy to a less-than-significant level by ensuring the proposed project includes energy efficiency measures in project designs.

IMPACT 4.12-6 **Required Extension of Telecommunications Services.** *Implementation of the proposed project would require extension of existing telecommunication services. AT&T would provide service to the project site and upgrade existing facilities, as necessary, to serve the project. This impact would be less than significant.*

Telecommunications infrastructure is currently located throughout the City and in the vicinity of the project site, and no off-site improvements would be necessary. AT&T would provide telephone communications service to the proposed project. AT&T would augment its existing facilities, as necessary, in the project vicinity and extend service into the project site. As part of the project approval process, the project applicant would coordinate with and meet the requirements of AT&T regarding the extension and locations of on-site infrastructure. All new on-site infrastructure would be installed in conformance with City and AT&T standards. This impact is would be ***less than significant***.

Mitigation Measure

No mitigation is required.

IMPACT 4.12-7 **Increased Demand for Fire Protection Facilities, Systems, Equipment, and Services.** *Development of the proposed project would result in increased demand for fire protection facilities and services. The City of Merced Fire Department has indicated it would be capable of serving the proposed project, project designs would incorporate all California Fire Code requirements, and project applicant would be required to pay its fair share of costs through payment of the Public Facilities Impact Fees and Permit Inspection Fees; therefore, this impact would be less than significant.*

Development of the proposed project would result in increased demand for fire protection facilities and services. The project site is in the service area of the City of Merced Fire Department. The project site is located in Fire District 4, and Station 54, approximately 3.9 miles northwest of the project site, currently provides first-response service to the project area (City of Merced 2005b). The average response time to emergency calls is between 4 and 6 minutes. The City of Merced Fire Department has indicated it would be capable of responding to fires and emergencies within the desired response time (Franco, pers. comm.).

Project designs include a 1,600-square-foot fire pump house that would include the primary and stand-by fire pumps serving the building fire sprinkler systems and site fire hydrants. Adjacent to the fire pump house would be two 300,000-gallon steel aboveground water storage tanks. The tanks would serve the fire protection system and would not be connected to the domestic water system. The tanks would each provide 625 gpm at 45 psi for a duration of 8 hours. These facilities would provide adequate water flow for fire suppression to meet California Fire Code requirements. The project applicant would be required to incorporate California Fire Code and City Fire Code requirements into project designs, which include adequate on-site circulation, equipment access during emergency conditions, adequate firefighting water flow, hydrant spacing, and other fire safety standards. During annual facility inspections, the City of Merced Fire Department would approve receptacles, vehicles, building devices, premises, storage spaces, or areas to be used to ensure facility operations meet California Fire Code requirements.

The City requires new development to pay its fair share of the costs associated with increase demand for fire protection facilities and services, as appropriate, through the City's Public Facilities Impact Fees Ordinance. Once operational, the facility would require annual inspections and permits. Fees associated with inspections and permits would be offset with the collection of Permit Inspection Fees (Franco, pers. comm. 2006).

The City of Merced Fire Department has indicated it would be capable of serving the proposed project, project designs would incorporate all California Fire Code and City Fire Code requirements, and project applicant would be required to pay its fair share of costs through payment of the Public Facilities Impact Fees and Permit Inspection Fees (Franco, pers. Comm., 2006). Therefore, this impact would be ***less than significant***.

Mitigation Measure

No mitigation is required.

IMPACT 4.12-8 **Increased Demand for Police Protection Facilities, Systems, Equipment, and Services.** *Development of the proposed project would result in increased demand for police protection facilities and services. Project designs would incorporate on-site security measures, and the project applicant would be required to pay its fair share of costs through payment of the Public Facilities Impact Fees; therefore, this impact would be less than significant.*

Development of the proposed project would result in increased demand for police protection facilities and services. Police services would be provided to the proposed project site by the City of Merced Police Department, Central District Station, approximately 5.2 miles northwest of the project (City of Merced 2005c). The average response time for in-progress calls is between 2 and 4 minutes, while the average response time for not-in-progress calls can range from 2 minutes to over an hour, depending on the type of call.

Employment of facility staff would not be expected to substantially increase the number of residents in the City of Merced because the large majority of employees would be hired from the local population base. Therefore, no construction or expansion of police facilities would be necessary to maintain the existing levels of service and response times. In addition, the City requires new development to pay its fair share of the costs associated with increased demand for police protection facilities and services, as appropriate, through the City's Public Facilities Impact Fees Ordinance.

Project designs would include on-site security measures. A truck gate would be located on the truck driveway serving the site and would contain workspace for two security officers. The project site would be surrounded by security fencing, and the tractor/trailer driveway and parking area would be secured by the truck gate and by a 6-foot-high chain-link fence with three strands of barbwire.

Because project designs would incorporate on-site security measures, and the project applicant would be required to pay Public Facilities Impact Fees, adequate police protection services would be provided to serve the demands of the proposed project. This impact would be ***less than significant***.

Mitigation Measure

No mitigation is required.

4.13 VISUAL RESOURCES

This section provides an analysis of the potential impacts of the project on aesthetic and visual resources within the community and is based primarily on review of local ordinances and policies related to visual resources. Visual simulations are presented in this section to demonstrate the likely affect of the project on the visual setting from key vantage points.

4.13.1 ENVIRONMENTAL SETTING

SITE SETTING

Topography within and around the project site is relatively flat. The site gently slopes to the west and ranges from 185 to 190 feet above mean sea level (msl). The site is currently undeveloped except for an irrigation water well and high-voltage power line structure. The western one-third of the site consists of an almond orchard, and the eastern two-thirds consist of agricultural fields. The northern, southern, and part of the northeastern boundary of the fields contain irrigation ditches. Overhead power lines run north to south through the eastern portion of the site, continuing to the north and south off-site. The site is bordered by roads on three sides: Childs Avenue on the north, Gerard Avenue on the south, and Tower Road on the east. Kibby Road extends north from Childs Avenue at the point where the site transitions from fields in the east to orchard in the west.

Another orchard lies west of the site, as does a Merced Irrigation District canal. The future Campus Parkway will be located approximately 925 feet to the west of the project site, at the west edge of this orchard. A new residential development is located on the northwest corner of the future Campus Parkway and Gerard Avenue. Sweeping vistas exist that provide views across and beyond the open fields that compose the eastern two-thirds of the site, from any point on this section of the site and from any nearby point to the east, north, or south. Residences on large lots to the south and east have views of the site. Agricultural lands also exist to the south and east. To the north lie undeveloped lands and industrial lands, including warehousing operations directly across Childs Avenue from the project site. Nearby industrial uses include Central Valley Processing, McClain Pacific (a grocery distribution operation), and an electric substation.

VIEWS OF PROJECT SITE AND SURROUNDING LAND USES

Exhibits 4.13-1 through 4.13-6 show varying views of the site as it currently exists.



View West from Childs/Tower

Exhibit 4.13-1

Exhibit 4.13-1 shows a view westward into the site from the area near the corner of Childs Avenue and Tower Road. In the foreground are the overhead power lines that run north-south through the site. On the right in the background is the Central Valley Processing facility, which lies across Childs Avenue to the north. In the left background is the orchard that composes the western one-third of the site.



View of Site from Tower/Gerard

Exhibit 4.13-2

Exhibit 4.13-2 shows a view of the site looking northwest from the corner of Tower Road and Gerard Avenue. The open fields of the site are in the foreground. In the left background is the orchard that composes the western one-third of the site, and in the right background are some of the industrial facilities north of the site.



View of Orchard on Site

Exhibit 4.13-3

Exhibit 4.13-3 shows a view of the orchard in the western portion of the site as it looks from both Childs Avenue to the north and from Gerard Avenue to the south.



View North through the Site

Exhibit 4.13-4

Exhibit 4.13-4 looks north through the site from Gerard Avenue. This view follows one of the ditches on site. The industrial facilities north of the site are in the background.



View Southwest from Childs/Tower

Exhibit 4.13-5

Exhibit 4.13-5 shows a view looking southwest through the site from the corner of Childs Road and Tower Road. In the foreground are the open fields of the eastern portions of the site. In the right background is the orchard that composes the western portion of the site. In the left background are trees on the residential and agricultural parcels south of the site.



View West along Gerard

Exhibit 4.13-6

Exhibit 4.13-6 looks west along the south edge of the site. This view follows Gerard Avenue, from a point west of the overhead power lines. The open fields of the eastern portions of the site are to the right. The orchards of the western portion of the site are in the right background. The existing well structure lies at the leftward end of the orchard in the background. On the left in both the background and foreground are the agricultural parcels to the south.

4.13.2 REGULATORY SETTING

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

There are no federal plans, policies, regulations, or laws related to land uses that are applicable to the proposed project.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

There are no state plans, policies, regulations, or laws related to land uses that are applicable to the proposed project.

LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

Merced Vision 2015 General Plan

The City of Merced's (City's) *Merced Vision 2015 General Plan* (City General Plan) (City of Merced 1997) includes the following goals and policies for industrial development and/or development in general that are relevant to the visual resources issues covered in this environmental impact report (EIR). The following provide design guidance for the appearance and layout of sites and structures within the City.

GOALS

► GOAL AREA UD-2: Overall Community Appearance

- A Unique Community Image

- Attractive Neighborhoods and Districts

► **GOAL AREA OS-1:** Open Space for the Preservation of Natural Resources

- Preservation of Scenic Corridors and Resources

POLICIES

L-2.5. Maintain attractive industrial areas.

- 2.5.a Continue to require Site Plan Review of new industrial development and the application of standards regarding landscaping, appearance, circulation, access, and parking.
- 2.5.b Consider requiring the planting of parking lot trees in industrial areas, perhaps at reduced standard instead of the one tree for each six parking spaces required in other areas, to provide shade, reduce glare, and reduce reflective heat.
- 2.5.c Require the removal or screening of all rubbish, abandoned buildings, processing wastes, old equipment, or other forms of blight in industrial areas.
- 2.5.d Investigate the possibility of regulating industrial development on the basis of or in combination with performance standards instead of strictly by definition of specific uses as in the Zoning Ordinance.

UD-2.2 Maintain and enhance the unique community appearance of Merced.

- 2.2.b Encourage the design of buildings that are in scale with adjacent development and harmonize with the character of the area or neighborhood.
- 2.2.c Discourage the visual monotony along major streets created by designs which use uninterrupted walls or fences with little or no landscaping.
- 2.2.d Encourage the development of methods to require acceptable levels of landscaping for new development and for effective maintenance in highly visible areas of the community.
- 2.2.f Expand the city's policies which require architecturally suitable means of screening utility equipment and garbage containers.

OS-1.3 Promote the protection and enhancement of designated scenic routes.

- 1.3.a Identify, and where appropriate, designate scenic routes within the city's expanded SUDP.
- 1.3.b Preserve the nine currently-designated Scenic Corridors.
- 1.3.c Utilize established guidelines for the review of projects proposed within a designated Scenic Corridor.
- 1.3.d Explore the feasibility of creating some scenic corridors in South Merced through the use of special landscaping standards. *(As part of the specific planning process proposed for South Merced, potential scenic corridors can be identified and preliminary policies proposed for adoption.)*

4.13.3 ENVIRONMENTAL IMPACTS

METHOD OF ANALYSIS

Assessment of impacts to aesthetics and visual resources is based on an objective evaluation of the proposed project’s effects on the visual environment of the site and its surroundings. This includes consistency with local ordinances and policies adopted for visual integrity of the community, impact on viewsheds and scenic areas identified as important or valuable to the community, and change in visual character of the site as compared to existing conditions.

Consideration and evaluation of visual resources, as addressed in this report, is defined narrowly to include only analysis of objective, quantifiable characteristics of visual form, including physical site characteristics, lighting, height, and form of proposed structures, viewsheds, and the like. The analysis does not include subjective evaluation of characteristics such as colors, architectural styles, or other matters of personal preference. Only those visual factors which may be shown to objectively impact the environment or surrounding area are considered.

THRESHOLDS OF SIGNIFICANCE

Based on Appendix G of the State CEQA Guidelines, a visual impact is considered significant if implementation of the proposed project would do any of the following:

- ▶ have a substantial adverse effect on a scenic vista;
- ▶ substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- ▶ substantially degrade the existing visual character or quality of the site and its surroundings;
- ▶ create a new source of substantial light or glare that would adversely affect day or nighttime views in the area; or
- ▶ substantially conflict with goals or policies in the City General Plan related to visual resources and/or aesthetics.

IMPACT ANALYSIS

IMPACT 4.13-1 *Effects on a Scenic Vista, or Damage to a Scenic Resource. The project site would be located in an area planned for industrial development and with existing industrial uses in the vicinity. The site is not a scenic vista or in a notable viewshed, and does not contain scenic resources. Therefore, implementation of the project would result in a less-than-significant impact.*

The City has nine areas throughout its planning area designated as Scenic Corridors. None of these corridors includes the project site. The project site is not visible from State Route 99, located approximately 2 miles west of the site, nor is this highway considered scenic. Therefore, the project site is not readily visible from a designated State Scenic Highway and the project would not have an adverse visual impact on a scenic vista or substantially degrade a scenic resource. The project site is similar to other agricultural land in the Merced area and does not contain any notable visual resources. Moreover, proposed development would not block any scenic vista. The project would result in a **less-than-significant** impact.

Mitigation Measure

No mitigation is required.

IMPACT **Substantial Degradation of the Visual Character or Quality of the Site and Surroundings.** *The project*
4.13-2 *would alter the visual character of the proposed site itself and significantly impact the visual character of the*
surrounding area, resulting in a potentially significant impact.

The site contains agricultural fields, fallow agricultural lands, and orchard trees that cover much of the 230 acres of the project site. Various aspects of project development, discussed below, have the potential to alter views of the project site. Grading activities and construction of buildings and appurtenant structures have the greatest potential for creating such impacts. While the existing project vicinity is predominately agricultural uses, two existing manufacturing warehouses are located directly north of the project site, and continuing progressively northward is the urbanized area of Merced. Extending southward from the project site are existing, primarily agricultural uses and scattered agricultural and residential units. The project site is not readily visible from State Route 99, which is approximately 2 miles west of the site.

Buildings and Operations

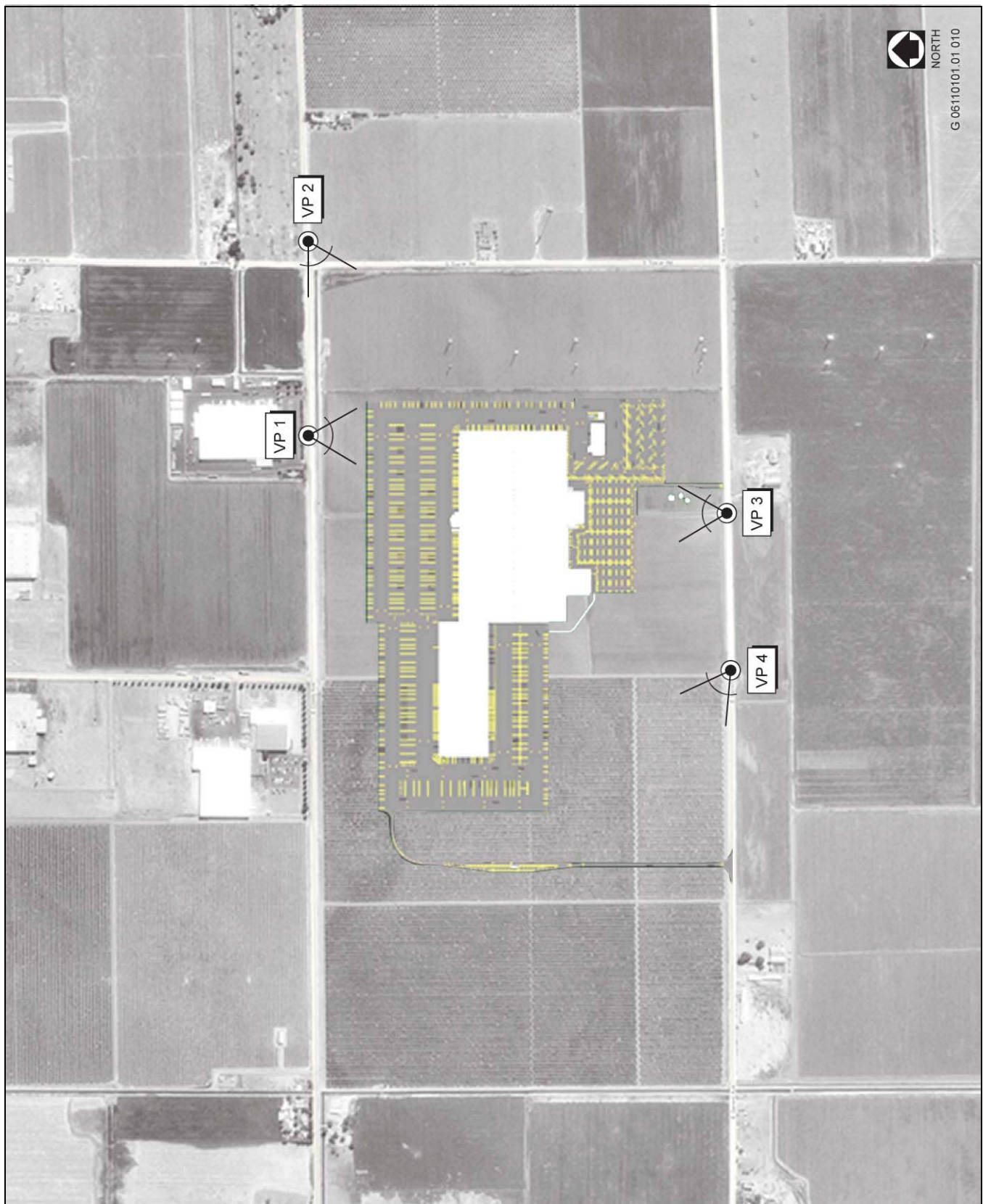
The proposed project includes the construction of a warehouse building with related administrative and support functions, truck maintenance, fueling, fire pump house, truck gate and aerosol storage, and parking areas, all of which would be built on sections of the site west of the existing overhead power lines. The power lines would remain on site, protected by an easement. All buildings would be single story and constructed of pre-engineered steel components with metal panels. Maximum building height would be 40 feet above finish floor.

The largest structure to be built as part of the project would be an approximately 1.1-million-square-foot warehouse and distribution building, which would be centrally located on the site. This building's footprint would consist of a large rectangular main section with a narrower rectangular section jutting out to the west at the main section's northwest corner. Semitractor and trailer parking would surround this building to the west, north, east, southeast, and to the south of the smaller section of the building. The employee parking area would be located adjacent to the south side of the larger main section of the building; this parking area would be connected to Gerard Avenue via a driveway. Security fencing encircles the entire complex except for the employee entrance, fire pump house and storage tanks, employee parking lot, and the front of the main section of the warehouse and distribution building.

The employee entrance would be located at the front area of the main warehouse section. Near the southeast corner of the main warehouse section would be the 17,000-square-foot truck maintenance building and adjacent fuel island. A fire pump house and two storage tanks would be located along the employee parking lot driveway, and west of the entire complex would be a long driveway used for the truck entrance. A truck gate and security fencing would be located on both sides. The truck gate would include approximately 500 square feet of building space. The security fencing would consist of 6-foot high chain-link fencing with three strands of barbed wire on top.

The most prominent visual aspects of the project, when operational, would be the main warehouse and distribution building, the security fencing, and the parking areas with their accompanying cars and semitrucks.

Exhibit 4.13-7 is an aerial photo that indicates the key observation points, or vantage points, for each computer-generated photosimulation shown on the following pages in Exhibits 4.13-8 through 4.12-11. In Exhibits 4.13-8 through 4.12-11 both existing and post-development views are shown on a single page to facilitate comparison. The photosimulations were created by digitally superimposing a computer-generated rendering of the proposed project provided by the project applicant's architect onto photos taken by EDAW staff of the undeveloped site from the identified vantage points on roads abutting the site. The vantage points selected are all located on roadways abutting the project site and are considered representative of views of and through the site. The photosimulations are, therefore, composites that provide an appropriate, scaled visual representation of what the proposed project would look like from each identified vantage point. Any landscaping that may be planted is not depicted.



Source: Adapted by EDAW 2007

Site Plan Diagram with Key Observation Points (KOPs)

Exhibit 4.13-7



View Point 3 - North View from Gerard Avenue - Existing



View Point 3 - North View from Gerard Avenue - Simulation

Representative Photographs

Exhibit 4.13-8



View Point 4 - Southwest View from Childs/Tower - Existing



View Point 4 - Southwest View from Childs/Tower - Simulation

Representative Photographs

Exhibit 4.13-9



View Point 2 - Northwest View from Gerard Avenue - Existing



View Point 2 - Northwest View from Gerard Avenue - Simulation

Representative Photographs

Exhibit 4.13-10



View Point 1 - View from Tower Road - Existing



View Point 1 - View from Tower Road - Simulation

Representative Photographs

Exhibit 4.13-11

Landscaping and Lighting

Site lighting would consist of pole-mounted metal halide lamps located approximately 45 feet above the ground surface. The lighting is designed so that light does not cross the property boundaries, except possibly at roadway intersections. The lighting is designed for an average lighting level of 0.5 foot-candle and has not been designed based on a uniformity ratio. To design based on a uniformity ratio would require more lamps than would be provided for the site. Landscaping would be provided for the public road improvements, as required by local ordinance, and the City would require to be submitted as a condition of approval that would include tree planting in parking lot areas and along the site perimeter. (Note that this landscaping is not included in the photosimulations above as no landscaping plan is currently available.) There would also be security fencing surrounding the buildings, parking areas, and driveways.

Because the project site is flat and is covered by low crops vegetation and orchard trees, views through and across it are unrestricted.

Project development would result in a noticeable alteration of the appearance of the site. The proposed project would involve grading of most of the site, thus removing the existing crops and orchard trees. Buildings up to 40 feet in height with wide horizontal surfaces would be constructed, along with storage tanks. Numerous vehicles, including large tractor trailers, would be visible on the site at any given time, and large portions of the site would be paved to accommodate vehicle and pedestrian movement. However, as a condition of approval landscaping would be required, which would soften and obscure buildings. Therefore, although implementation of the proposed project would alter the existing character of the project site, replacing undeveloped orchards and agricultural fields with industrial development, resulting in a ***potentially significant*** impact, the following mitigation, which may be echoed by a condition of approval to be recommended by City staff, is recommended herein to reduce this impact.

Mitigation Measure 4.13-2. Prepare and Submit a Landscaping Plan. The applicant shall prepare and submit a landscaping plan to the satisfaction of the City that includes the following features and accomplishes the following objectives on the site

- ▶ The developer shall plant trees (minimum 15 gallon) no further than 30 feet apart, on site along the perimeter roads surrounding the project site, including Childs Avenue, Gerard Avenue, and Tower Road. These trees are in addition to the street trees required every 40 feet per City Standards. Shrubs and turf shall be combined with the trees in a minimum 15-foot wide landscape strip along the entire project perimeter which abut public streets. Irrigation shall be provided to all landscape areas. A detailed landscape and irrigation plan per MMC 17.60 shall be approved by City staff at the building permit stage.
- ▶ Parking lot trees at a minimum of one for each six spaces (per MMC 20.58.385) shall be required in all employee and visitor parking areas on site. Parking lot trees, however, shall not be required in truck or trailer parking areas.
- ▶ Existing almond trees shall be preserved in any areas of the site that are to be left undeveloped by buildings, parking areas, driveways, drainage basins, etc. The developer shall submit a plan showing the location of existing trees and the proposed development and the City shall approve a plan at the building permit stage for preserving as many trees as feasible.
- ▶ All vegetation shall be maintained by an automatic irrigation system. The landscaping and irrigation plans and details shall be subject to review and approval by the City. The City shall create and adopt a mechanism that will ensure that Wal-Mart Stores East, LP maintains the landscaping in accordance with the adopted plan.

With implementation of Mitigation Measure 4.13-2, the potentially significant impact would be ***less than significant***.

IMPACT Create Substantial Light or Glare That Would Affect Nighttime Views. *The illumination level upon*
4.13-3 *and from the site would change noticeably as a result of the proposed project, resulting in a potentially*
 significant impact on light or glare.

The site presently contains no sources of illumination, and sources of illumination in the immediate surrounding area are limited in number and intensity. The proposed project would result in a very noticeable increase in illumination on and from the site that would be readily visible from all of the public streets abutting the site and form vantage points beyond.

As indicated in Chapter 3, “Project Description,” the proposed distribution center would operate 24 hours per day. In order to provide for safe pedestrian and vehicle movement it would be necessary for much of site to be continuously illuminated. The proposed project would include security lighting in the parking areas, along pedestrian pathways, and on building walls, which has the potential to create light spillage and glare impacts in the vicinity of the project site. The flatness of the topography and lack of intervening vegetation and structures would contribute to this effect.

According to the project description, site lighting would consist of metal halide lamps atop 45-foot high poles. The lighting would be designed so that light would not shine beyond the property line, except at road intersections. The primary target of illumination would be horizontal ground surfaces, including pathways, driveways, and parking lots. However, vertical wall surfaces could also be illuminated. An average illumination level of 0.5 footcandle is anticipated. (One footcandle is the amount of light caused by a single candle a distance of 1 foot from a flat surface). The lighting plan has not been designed based on a uniformity ratio. That is, the level of illumination is not proposed to be consistent throughout the project site. Accordingly, areas with high activity would likely be more highly illuminated than low activity areas.

A detailed lighting plan that would show the locations and design of light fixtures has not been provided by the applicant; therefore, it is difficult to anticipate what visual impact could result from the proposed nighttime lighting. Accordingly, there is a potential for light spillage impacts on vehicles traveling on adjacent roads and on adjoining properties. Light spillage is illumination that travels beyond the surface it is intended to illuminate. In addition to direct illumination of unintended targets, light spillage could result in glare impacts on persons at vantage points beyond the site boundary.

Light shields, lighting design, lighting fixture orientation, and landscaping are commonly used to reduce light spillage by blocking the conveyance of light upwards and horizontally. However, except as noted above, the project applicant has not provided any specific information that addresses potential lighting issues. Therefore, proposed outdoor lighting would result in a **potentially significant** impact.

The City of Merced zoning ordinance (Section 24.58.450 includes the following language relative to outdoor lighting: “Any lights provided to illuminate any public parking area, semipublic parking area or vehicle sale area permitted by this chapter shall be arranged so as to reflect the light away from any premises upon which a dwelling unit is located.” Given the amount of lighting proposed and the fact that it would be used on a continuous basis, the following mitigation measure is recommended to further reduce potential lighting impacts, beyond what would be accomplished through the zoning ordinance.

Mitigation Measure 4.13-3. Prepare and Submit a Lighting Plan. The applicant shall prepare a lighting plan for review and approval by the City of Merced. The lighting plan shall identify the design and placement, orientation, and illumination level (in watts) of all light fixtures. The lighting plan shall be designed so that illumination is focused downward upon targeted horizontal surfaces. Illumination of vertical surfaces shall be minimized. The lighting plan shall specify that no illumination source (including light bulb and reflector) shall be visible beyond the property line. The exception to this performance standard is at driveway intersections with public streets.

With implementation of Mitigation Measure 4.13-3, the potentially significant impact would be ***less than significant***.

IMPACT 4.13-4 Substantially Conflict with Goals and Policies in the Merced Vision 2015 General Plan. *The project would be located in an area planned for industrial development. The project is consistent with the City's General Plan goals, policies, and land use designation and would result in a less-than-significant impact.*

The City General Plan includes multiple goals and policies adopted to protect visual resources within the City of Merced and in the area of the project. Applicable City General Plan policies are listed previously under Section 4.13.2 “Regulatory Setting”.

The proposed project location is within industrial zoned and designated property, which is a planned future buildout area for Merced. Furthermore, the site is adjacent to existing manufacturing- and industrial-type development, and is visually compatible to these existing and future uses. The City General Plan states that due to the historical location of the Valley’s urban centers, any growth or population expansion can be expected to impact productive agricultural land. The project would minimize future impacts on scenic resources in planned open space areas and corridors by locating in a planned development area. Therefore, the proposed project would have a ***less-than-significant*** impact.

Mitigation Measure

No mitigation is required.

5 ALTERNATIVES TO THE PROPOSED PROJECT

5.1 INTRODUCTION

In accordance with Section 15126.6(a) of the State California Environmental Quality Act (CEQA) Guidelines, an environmental impact report (EIR) must discuss a range of reasonable alternatives to the project “which would feasibly attain most of the basic objectives of the project...and evaluate the comparative merits of the alternatives.” The factors that can determine feasibility include site suitability, other plan or regulatory limitations, and jurisdictional boundaries, as well as technical and economic considerations. (State CEQA Guidelines Section 15364.) An EIR need not consider an alternative whose effects cannot be reasonably ascertained and whose implementation is remote and speculative. The alternatives analysis must also include a comparative evaluation of the No Project alternative (State CEQA Guidelines Section 15126.6[e]). Through comparison of the alternatives, the advantages and disadvantages of each alternative compared with the proposed project can be weighed.

CEQA and the State CEQA Guidelines (Section 15126.6[d]) require that alternatives be discussed at a comparative level of detail sufficient to allow meaningful evaluation and comparison with the proposed project. This EIR goes beyond the requirements of State law and the Guidelines, providing, among other information, conceptual illustrations of alternatives, and a detailed analysis of the relative impacts in each of the environmental topic areas covered in the project-specific analysis.

5.2 PROJECT OBJECTIVES

As addressed in Chapter 3, “Project Description,” of this EIR, the project objectives consist of both those of the City of Merced (City) and those of the project applicant. Project objectives guide the selection of alternatives. This section includes a general evaluation of the alternatives in light of the project objectives. The City’s objectives for this type of project include the following:

- ▶ To develop the industrially zoned area in the City with permitted industrial uses.
- ▶ To locate industrial projects in areas with good access to major highway transportation links, and provide opportunities for buffers between industrial and nonindustrial uses.
- ▶ To encourage development of industrial projects that will create jobs, including full-time, nonseasonal employment opportunities for local residents.
- ▶ To encourage development of projects that will contribute toward improving roadways adjacent to the proposed development site.
- ▶ To ensure that industrial areas are developed in an attractive manner.

The project applicant has developed objectives consisting of the following:

- ▶ To develop a project consistent with the City of Merced General Plan (City General Plan) and zoning ordinance.
- ▶ To develop a distribution/warehouse facility near other industrial uses.
- ▶ To construct and operate a distribution/warehouse facility in Merced County to take advantage of the strategic location between large urban centers and smaller urban and rural markets throughout the Central Valley in California.

- ▶ To construct a distribution/warehouse facility on a site sufficiently large (a minimum of 230 acres) to allow necessary building space and parking for trucks and employees.
- ▶ To construct a distribution/warehouse facility with sufficient space (approximately 1.2 million square feet) to allow operational efficiency and adequate distribution of goods to stores in a broad geographic area in California.
- ▶ To locate a distribution/warehouse facility with access to a regional roadway network including interstate, state, and regional roads.
- ▶ To locate a distribution/warehouse facility in an area well served by major local thoroughfares to minimize truck traffic traveling through residential neighborhoods.
- ▶ To provide sufficient parking for trucks and employees in order to minimize impacts to the surrounding area.
- ▶ To take advantage of an existing labor pool living in the Merced area.

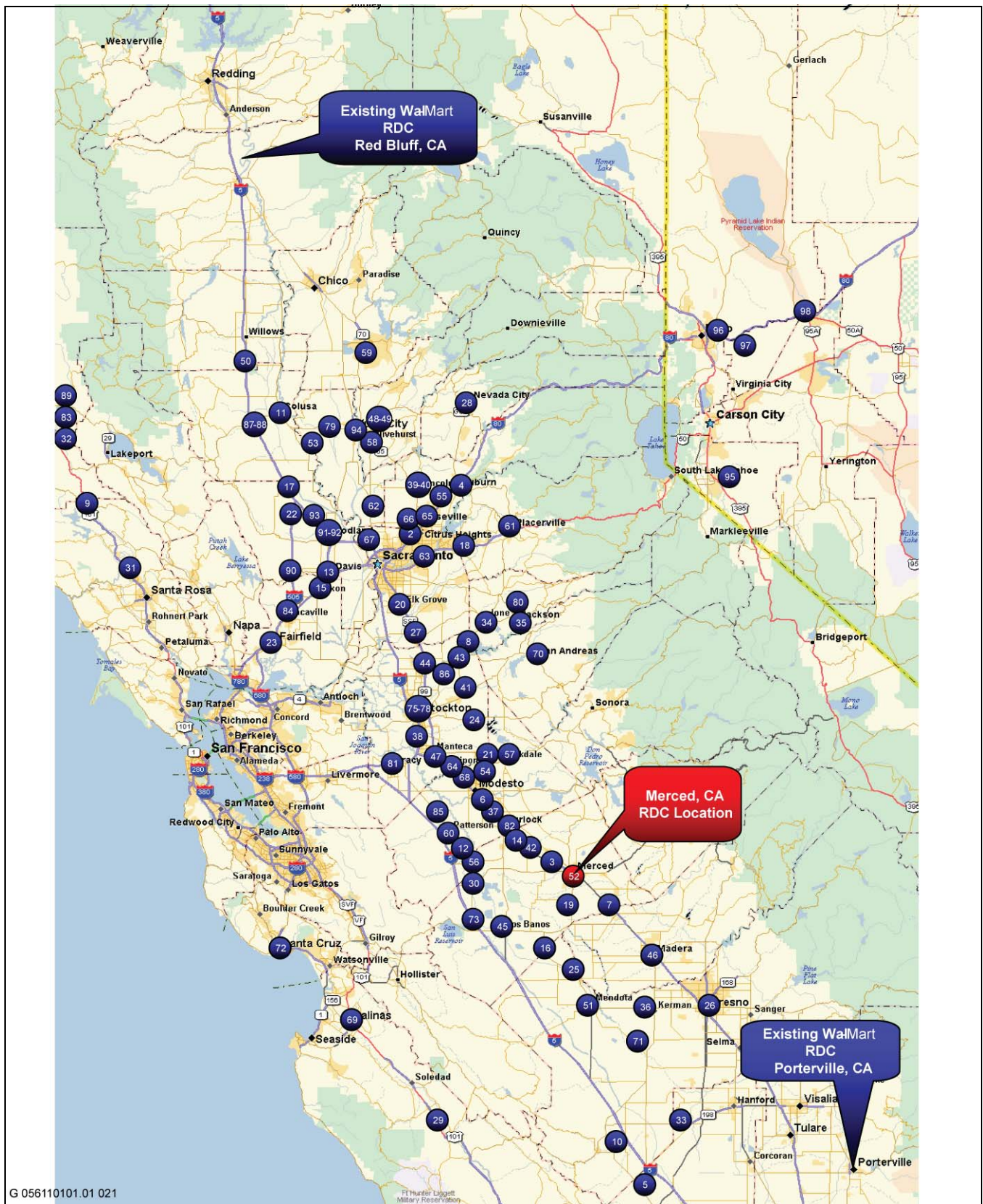
5.3 ALTERNATIVES EVALUATED IN THIS EIR

Project alternatives are intended to reduce or eliminate the potentially significant adverse environmental effects of the project while attempting to meet most of the project objectives. An EIR is required to contain a discussion of a reasonable range of alternatives to the project, or to the location of the project, that could feasibly attain the basic objectives of the project (State CEQA Guidelines Section 15126.6[a]). The comparative merits of the alternatives should also be presented. The State CEQA Guidelines provide the following guidance on the selection of alternatives:

- ▶ The “no project” alternative shall be evaluated. If the environmentally superior alternative is the no project alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives (State CEQA Guidelines Section 15126.6[e]).
- ▶ The discussion of alternatives shall focus on alternatives to the project or its location which are capable of eliminating significant adverse environmental effects or reducing them to a level of insignificance, even if these alternatives would partially impede the attainment of the proposed objectives, or would be more costly (State CEQA Guidelines Section 15126.6[b]).
- ▶ If an alternative would cause one or more significant environmental effects in addition to those that would be caused by the project, the significant effects of the alternatives shall be discussed, but in less detail than the significant effects of the project (State CEQA Guideline Section 15126.6[d]).
- ▶ The range of alternatives required by an EIR is governed by the “rule of reason” that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The key issue is whether the selection and discussion of alternatives fosters informed decision-making and informed public participation. An EIR need not consider an alternative whose effect cannot be ascertained and whose implementation is remote and speculative (State CEQA Guidelines Section 15126.6[f]).

5.3.1 ALTERNATIVES CONSIDERED AND REJECTED

Prior to the City’s initiation of this EIR, the project proponent conducted a search of possible sites for the proposed distribution center. The project proponent’s physical criteria for selection of potential sites were primarily limited to size of the parcel, absence of development, compatibility with surrounding land uses, and proximity to major roadways. Exhibit 5-1 identifies the California locations of the two nearest existing Wal-Mart



Source: Adapted by EDAW 2007

Proposed Merced Regional Distribution Center – Entire Search

Exhibit 5-1

distribution centers, in Porterville and Red Bluff. The numbered blue dots show the locations of possible distribution center sites that were rejected.

In addition to the range of alternative sites initially considered by the project proponent, several other alternative sites were identified and rejected by the applicant prior to the start of this EIR. The following sites were initially identified by the project proponent, but were deemed unable to meet their project objectives and were ultimately rejected (Table 5-1). Table 5.1 includes explanations for rejection of these sites, as provided by the project proponent. In some instances, rejection was due to physical issues, such as lack of infrastructure, particularly proximity to a major roadway. In several instances, however, Wal-Mart indicated that political or socioeconomic issues made a particular site unacceptable. No detailed explanation of what constituted a political or socioeconomic issue was provided by the project proponent. These alternative sites are not analyzed in the EIR.

Table 5-1 Alternative Sites Considered and Rejected by Wal-Mart		
City, State	Site Name/Address	Explanation
Livingston, CA	Livingston Site—Address Unknown	Political issues made process of obtaining development approval uncertain
Delhi, CA	Delhi Site—Address Unknown	Political issues made process of obtaining development approval uncertain
Crows Landing, CA	Crows Landing Industrial Park—Address Unknown	Site is partially in a floodplain and not served by utilities.
Patterson, CA	Patterson Site—Address Unknown	Site adjacent to residential; truck traffic would access same road as residential traffic which would result in noise and traffic safety concerns
Firebaugh, CA	Firebaugh, CA Industrial Site—Address Unknown	Socioeconomic issues
Escalon, CA	Escalon Industrial Site—Address Unknown	Political issues
Oakdale, CA	Oakdale Site—Address Unknown	Political issues
Fresno, CA	Fresno Site—Address Unknown	High transportation cost and proximity to existing Wal-Mart Distribution Center in Porterville and Apple Valley, CA
Tracy, CA	Tracy Site—Address Unknown	Political issues
Source: Data compiled by EDAW in 2007.		

5.3.2 IDENTIFICATION OF ALTERNATIVES

This section describes and presents environmental analysis of six different alternatives to the proposed project, which are described in detail in this section of the EIR including:

- ▶ No Project;
- ▶ Redesigned Site Plan;
- ▶ Reduced Site Plan and Operations;
- ▶ Alternative Site #1 – Between Gerard and Mission avenues (immediately south of the proposed project site);
- ▶ Alternative Site #2 – West of SR 99, between Gerard and Mission avenues; and
- ▶ Alternative Site #3 – South of the airport, at the Thornton Road/West Dickenson Ferry Road intersection.

Following is a detailed description of the alternatives considered in this EIR and the environmental impacts associated with the alternatives compared to the proposed project. Where impacts are presented as “the same,” “similar,” or “greater,” this is a comparison with the impacts in the same topic area for the proposed project.

5.4 NO PROJECT ALTERNATIVE

This alternative assumes that the site would not be developed with the proposed project. However, given the following factors, it is assumed that some type of industrial or warehouse development would occur at the project site in the near term:

- ▶ the project site is within Merced’s city limits;
- ▶ the project site is designated for industrial use in the City General Plan and zoning ordinance;
- ▶ the project site is sufficiently large to accommodate industrial or warehouse projects;
- ▶ the project site is relatively close, and has convenient access, to major arterial roadways and State Route (SR) 99; and
- ▶ the project site is relatively close to, and could readily connect to, major public infrastructure, such as water, wastewater, and storm drainage systems.

In other words, if the Wal-Mart Distribution Center application were to be withdrawn or denied, it is unlikely that the project site would remain indefinitely vacant, given the factors listed above. Therefore, it is appropriate for the No Project alternative to assume some level of development, instead of assuming that the site would remain undeveloped. (If the site were to remain vacant, then the existing environmental setting would remain the same. The existing setting is described in Chapter 4 of this EIR, as part of the discussion of each resource area.)

In accordance with the City’s existing land use regulations, the No Project alternative assumes that the site would be developed with a project that includes approximately 1.1 million square feet of warehouse or industrial use, similar to the proposed project. It is conceivable that another company would view the site as ideally suited for a regional distribution center similar to what is proposed by Wal-Mart. While the floor area ratio of 0.17 square foot per gross acre that is allowed in this zoning district would allow a 1.7-million-square-foot building, 1.1 million square feet, like that proposed, was the assumed size for the purposes of this alternatives analysis.

5.4.1 AGRICULTURE

This alternative would result in the same impact on agricultural resources as the proposed project because the same agricultural characteristics would be developed with approximately the same basic footprint. For a 1.1-million-square-foot building, it is assumed that nearly all of the site would be graded to accommodate buildings, driveways, parking lots, and landscaping, and that all of the crops and potential for future crop production would be eliminated. Therefore, agricultural impacts would be similar to those resulting from the proposed project.

Impact to agricultural resources (Loss of Prime Farmland) has been identified as significant and unavoidable and cumulatively considerable for the proposed project. The No Project alternative would not change that conclusion. [Similar]

5.4.2 AIR QUALITY

The construction and operation of a similar industrial use would also generate emissions of criteria air pollutants and precursors, greenhouse gases (GHGs), and toxic air contaminants (TACs). This facility would also generate vehicle trips that could increase carbon monoxide (CO) concentrations at nearby intersections. If mass emissions

of ROG and NOx would exceed applicable SJCAPCD thresholds, it is assumed that an emissions reduction agreement would be established with SJVAPCD to off-set these emissions. Thus, air quality impacts under this alternative would be similar to those that would result from the proposed project.

Regarding the project resulting in a considerable net increase in greenhouse gases, it is unknown at this time whether an alternative warehouse use of the proposed project site would generate more or less emissions of GHGs than the proposed project.

Because Wal-Mart has indicated that another distribution center is required to more efficiently support their retail centers, it is possible that Wal-Mart would find another location in the Central Valley to develop a distribution center that could serve the same retail stores as the proposed project if development does not occur at the proposed project site. The amount of GHGs produced by the operation of a Wal-Mart distribution center at another Central Valley location would likely be very similar to the proposed project. If Wal-Mart does not add an additional distribution center in the Central Valley to its state-wide distribution network, many existing Wal-Mart retail stores would continue to be served by distribution centers located further away (e.g., Porterville or Red Bluff). The emissions levels of GHGs from tractor trailers are positively correlated with vehicle miles traveled and fuel consumption. Because the trip length by trucks could be longer, the associated net increase in emissions of GHGs could be higher than the proposed project. In addition, if Wal-Mart were to find another location in the Central Valley it is unknown whether the respective local lead agency would require Wal-Mart to establish an emissions reduction agreement with the local air district as mitigation. The project's contribution of CAP emissions to the local air basin would be substantially greater without the implementation of some type of off-site emissions reduction agreement.

Impact to air quality, related to emissions of greenhouse gases, has been identified as significant and unavoidable and cumulatively considerable for the proposed project. The No Project alternative would not change that conclusion.

[Similar for air quality, greater for greenhouse gases]

5.4.3 BIOLOGICAL RESOURCES

Because, under the No Project alternative, the site would be developed with a project that would involve virtually identical site development impacts as the proposed project, impacts to biological resources under this alternative would be similar to those that would result from implementation of the proposed project. Biological resource impacts relate most closely to the area being proposed for development and the overall level of development. Because both of these factors are the same for the proposed project as with this alternative, the biological resource impacts are anticipated to be similar.

Biological resources impacts have been identified as cumulatively considerable for the proposed project. The No Project alternative would not change that conclusion. [Similar]

5.4.4 CULTURAL RESOURCES

Because the No Project alternative assumes the site would be developed with a similar industrial use, impacts to cultural resources under this alternative would be similar to those that would result from the proposed project. Cultural resource impacts relate most closely to the area being proposed for development and whether or not excavation is proposed. Because both of these factors are the same for the proposed project as with this alternative, the cultural resource impacts are anticipated to be similar. [Similar]

5.4.5 GEOLOGY/SOILS/PALEONTOLOGY

Impacts related to geology, soils and paleontological resources would be the same as those identified under the proposed project because the site would still be developed. [Similar]

5.4.6 HAZARDS AND HAZARDOUS MATERIALS

Because the No Project alternative assumes the site would be developed with a similar industrial use, impacts related to hazards and hazardous materials under this alternative would be similar to those that would result from implementation of the proposed project. Hazards and hazardous materials impacts relate most closely to the increased storage, use, and transport of hazardous materials during construction and operation of project facilities. Because these factors are the same for the proposed project as with this alternative, the hazards and hazardous materials impacts are anticipated to be similar. [Similar]

5.4.7 HYDROLOGY AND WATER QUALITY

Because the site would be developed with a similar industrial use under the No Project alternative, impacts related to hydrology and water quality under the No Project alternative would be similar to those that would result from implementation of the proposed project. These impacts would include the potential for degradation or depletion of ground or surface water quality; depletion of ground water resources; reduction of water quantity through groundwater recharge interference or demand in excess of available supplies; and creation of flooding or other water related hazards. Because these factors are the same for the proposed project as with this alternative, the hydrology and water quality impacts are anticipated to be similar. [Similar]

5.4.8 LAND USE

Buildout of the site according to the City General Plan land use designation, Industrial, would have similar impacts as the proposed project. Therefore, impacts would be similar to the proposed project. [Similar]

5.4.9 NOISE

The No Project alternative assumes the site would be developed with a similar industrial use. On-site area- and stationary-noise sources associated with this facility would likely be similar to the proposed project. In addition, this facility would generate vehicle trips that could increase traffic noise levels along area roads. Thus, noise impacts under this alternative would be similar to those that would result from the proposed project.

Noise impact related to traffic and sensitive receptors along roadways has been identified as significant and unavoidable and cumulatively considerable for the proposed project. The No Project alternative would not change that conclusion. [Similar]

5.4.10 POPULATION AND HOUSING

Similar to the proposed project, this alternative would avoid any impacts associated with potential displacement of existing housing or people. The project site would build out in accordance with the existing land use designation, Industrial, which would have similar impacts to the City's population and housing, and potential for future availability of jobs. [Similar]

5.4.11 UTILITIES AND PUBLIC SERVICES

Because the No Project alternative assumes the site would be developed with a similar industrial use, impacts on public services under this alternative would be similar to those that would result from implementation of the

proposed project. Public services impacts relate most closely to the incremental increase in service demands. Because these factors are the same for the proposed project as with this alternative, the public services impacts are anticipated to be similar. Similarly, because the No Project alternative assumes the site would be developed with a similar industrial use, impacts on utilities and service systems under this alternative would be similar to those that would result from implementation of the proposed project. Utilities and service systems impacts relate most closely to the incremental increase in service demands. Because these factors are the same for the proposed project as with this alternative, the utilities and service systems impacts are anticipated to be similar.

The proposed project would have cumulatively considerable impacts on wastewater treatment and disposal. The No Project alternative would not change that conclusion. [Similar]

5.4.12 TRANSPORTATION/TRAFFIC

If the site were to be developed with a regional distribution center for a different company, it is likely that it would have transportation impacts similar to the proposed project. Accordingly, this alternative would function similarly to the proposed project in terms of the number of employees, trucks trips, and auto traffic. However, if the site were developed with a different type of industrial use (i.e., not a distribution center), transportation characteristics and the resulting traffic impacts could be very different. Such a scenario was not assumed in this alternative because the site is particularly well suited for use as a distribution center due to its proximity to the freeway system and the regional demand for such uses.

The proposed project would have cumulatively considerable impacts on a number of intersections and roadway segments. The No Project alternative would not change that conclusion. [Similar]

5.4.13 VISUAL RESOURCES

The aesthetic impacts would be similar to those of the proposed project. Both the No Project alternative and the proposed project would convert open spaces at the fringe of the City to urban development. This would involve the placement of lighting, structures, access roads, fencing, and other improvements in an area visible from nearby roadways. Also, like the proposed project, other industrial development permitted under the City zoning ordinance would allow large-footprint buildings approximately 40 feet above finished grade. Impacts would be similar to the project.

The proposed project would have cumulatively considerable visual impacts. The No Project alternative would not change that conclusion. [Similar]

5.4.14 ATTAINMENT OF PROJECT OBJECTIVES

Table 5-2 below assesses this alternative relative to the project objectives. As shown, this alternative could fulfill all of the 16 project objectives. Obviously, if the site is not developed for use by Wal-Mart, none of the objectives identified by the project proponent would be met. However, as shown below, a different project with an essentially identical use, could meet all identified objectives identified by both the applicant and the City.

**Table 5-2
No Project Alternative and Project Objectives**

Project Objective	Discussion	Fulfill Objective?
To develop the industrially zoned area in the City with permitted industrial uses.	This site is zoned Heavy Industrial District.	Yes
To locate industrial projects in areas with good access to major highway transportation links, and provide opportunities for buffers between industrial and nonindustrial uses.	The site is adjacent to existing and planned major roadway corridors and two State highways.	Yes
To encourage development of industrial projects that will create jobs, including full-time, nonseasonal employment opportunities for local residents.	It is assumed full-time, year-round employment will be provided.	Yes
To encourage development of projects that will contribute toward improving roadways adjacent to the proposed development site.	Like the proposed project, this alternative would be evaluated relative to traffic impacts and mitigation measures to improve roadways would be required, as necessary.	Yes
To ensure that industrial areas are developed in an attractive manner.	All projects are subject to City review and approval.	Yes
To develop a project consistent with the City General Plan and zoning ordinance.	It is assumed this alternative would be consistent with the City's General Plan and zoning ordinance although, as with the project, a City General Plan amendment may be required as a result of revised roadway designations.	Yes
To develop a distribution/warehouse facility near other industrial uses.	Areas in the vicinity are also designated for industrial use.	Yes
To construct and operate a distribution/warehouse facility in Merced County to take advantage of the strategic location between large urban centers and smaller urban and rural markets throughout the Central Valley in California.	This alternative would involve warehouse uses on the same site in Merced County.	Yes
To construct a distribution/warehouse facility on a site sufficiently large (a minimum of 230 acres) to allow necessary building space and parking for trucks and employees.	This alternative would involve a warehouse facility on a site of at least 230 acres.	Yes
To construct a distribution/warehouse facility with sufficient space (approximately 1.2 million square feet) to allow operational efficiency and adequate distribution of goods to stores in a broad geographic area in California.	This alternative is assumed to develop at a similar density as with the proposed project, which would involve roughly 1.2 million square feet of warehouse or industrial use.	Yes
To locate a distribution/warehouse facility with access to a regional roadway network including interstate, state, and regional roads.	This alternative would involve warehouse uses on the same site, with access to State Route (SR) 99, SR 140, and other nearby transportation corridors.	Yes
To locate a distribution/warehouse facility in an area well served by major local thoroughfares to minimize truck traffic traveling through residential neighborhoods.	This alternative would involve warehouse uses on the same site, adjacent to SR 99, and therefore allowing transportation to occur largely along the highway corridor and avoid residential streets.	Yes

**Table 5-2
No Project Alternative and Project Objectives**

Project Objective	Discussion	Fulfill Objective?
To provide sufficient parking for trucks and employees in order to minimize impacts to the surrounding area.	This alternative assumes that a similarly configured warehouse facility would be developed on-site, given the existing land use designations and other factors, as described previously. It is also assumed that a similar parking configuration could be designed, given the size of the project site.	Yes
To take advantage of an existing labor pool living in the Merced area.	This alternative would involve warehouse uses on the same site in Merced County.	Yes
Source: Data compiled by EDAW in 2007.		

5.5 REDESIGNED SITE PLAN

This alternative assumes that the site would be developed with a revised version of the proposed project. The size and extent of development, the number of employees, and the number of vehicle trips would be the same as the proposed project. As with the proposed project, a majority of the site would be cleared of vegetation and graded to accommodate approximately 1.1 million square feet of building, parking and driveways, and landscaping. Buildings and other proposed features on-site have been shifted to the east under this alternative to provide an increased buffer to residential development to the west. This alternative has been identified as a means of reducing certain potential environmental impacts that cannot be sufficiently reduced in the proposed project solely through mitigation measures. This alternative is intended to reduce the following potential impacts on the closest residential communities in Merced: air quality, traffic, and noise. Areas west of the project site are designated for residential development.

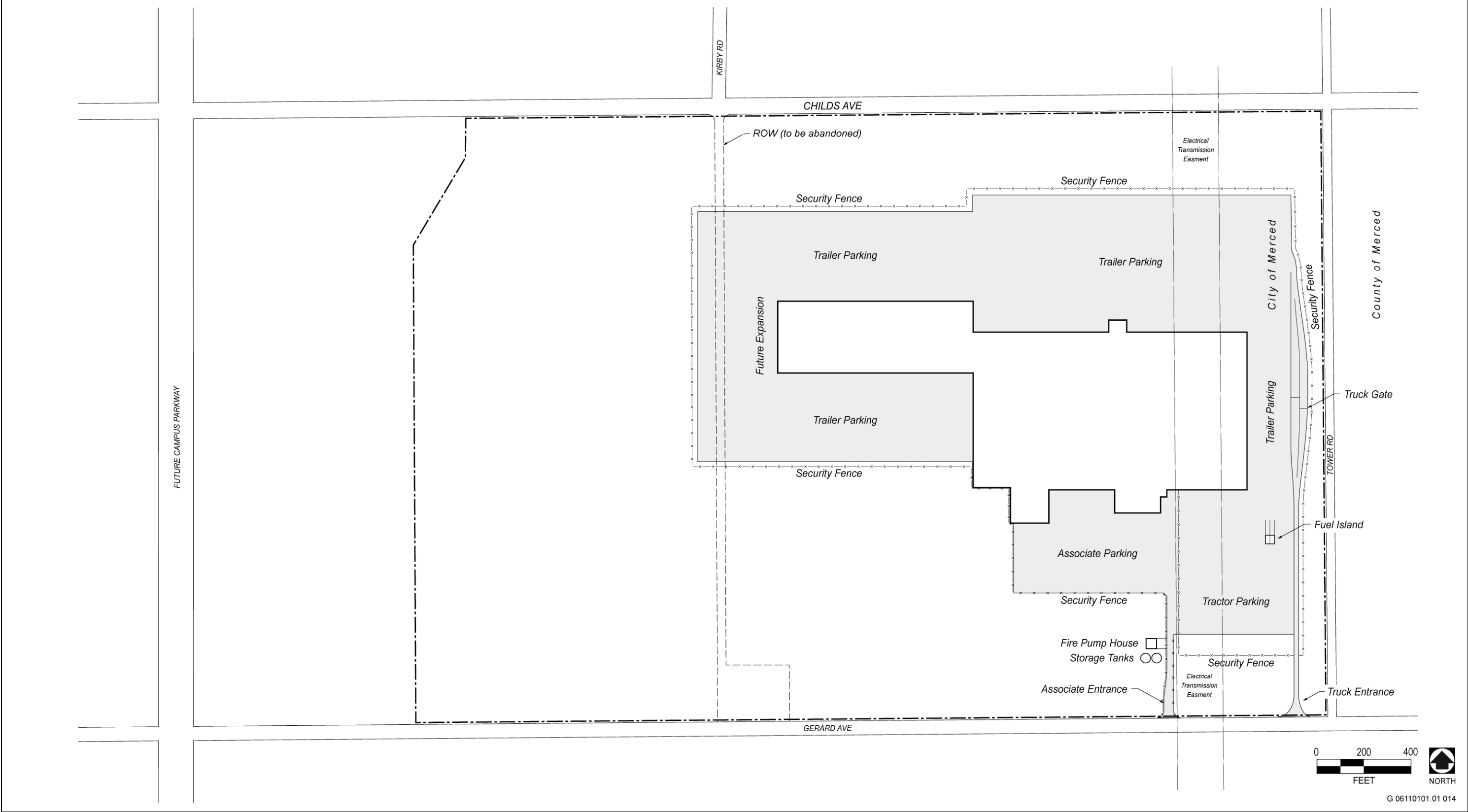
To reduce potential impacts in the environmental topics listed above, the following revisions have been made to the proposed project, as depicted in Exhibit 5-2:

- ▶ All buildings have been shifted to the eastern edge of the site.
- ▶ All truck loading and unloading areas have been shifted to the eastern edge of the site.
- ▶ Driveway access to the project site for both tractor trailers and employee vehicles has been shifted to a point near the eastern edge of the project site.

5.5.1 AGRICULTURE

This alternative would eliminate agricultural resources on the project site, because, as noted above, the same amount of site development would occur. The site would continue to be built out with a warehouse or other industrial use, which would convert all agricultural resources of notable value. Although buildings are shifted to the east, use of the site for agricultural purposes would cease. Therefore, impacts would be similar to the project.

Impact to agricultural resources (Loss of Prime Farmland) has been identified as significant and unavoidable and cumulatively considerable for the proposed project. The Redesigned Site Plan alternative would not change that conclusion. [Similar]



Source: Adapted by EDAW 2007

Redesigned Site Plan

Exhibit 5-2

5.5.2 AIR QUALITY

This alternative would be similar to the proposed project with respect to size and capacity, except the facility and outdoor activity areas would be located further to the east and closer to Tower Road. Because the same level of activity would occur, mass emissions of criteria air pollutants and precursors, TACs, and GHGs would be the same as the proposed project. Because the same number and type of vehicle trips would be generated by this alternative, and these vehicles would use the same local roads and intersections, CO concentrations at congested intersections would be the same as under the proposed project. Impacts to air quality, related to construction and long-term emissions, have been identified as less than significant with mitigation for the proposed project. The Redesigned Site Plan alternative would not change that conclusion. However, although the health risk associated with emissions of TACs would also be similar to the proposed project (because the same level of emissions would occur during construction and operation), the proximity to nearby sensitive receptors would be reduced. Although health risk associated with TACs is identified as a less-than-significant project impact, further reduction in exposure to TACs due to the alternative's increased distance to sensitive receptors would further reduce the impact. Impacts to air quality related to construction and long-term emissions of greenhouse gases have been identified as a significant and unavoidable and a cumulatively considerable contribution to global climate change. The Redesigned Site Plan alternative would not change that conclusion.

[Less]

5.5.3 BIOLOGICAL RESOURCES

Because the Redesigned Site Plan alternative would result in the same size and extent of development as proposed, impacts to biological resources under this alternative would be similar to those that would result from the proposed project.

Biological resources impacts have been identified as cumulatively considerable for the proposed project. The Redesigned Site Plan alternative would not change that conclusion. [Similar]

5.5.4 CULTURAL RESOURCES

While the redesigned site plan alternative assumes that project-related construction would be shifted within the project area, impacts to cultural resources under this alternative would be the same as those that would result from the proposed project because undiscovered resources are as likely to be discovered on the eastern side or the site as anywhere else. Cultural resource impacts relate most closely to the area being proposed for development and whether or not excavation is proposed. Because both of these factors are generally the same for the proposed project as with this alternative, the cultural resource impacts are anticipated to be similar. [Similar]

5.5.5 GEOLOGY/SOILS/PALEONTOLOGY

Impacts related to geology, soils and paleontological resources would be the same as those identified under the proposed project because the site would still be developed. [Similar]

5.5.6 HAZARDS AND HAZARDOUS MATERIALS

The redesigned site plan alternative would result in the same size and extent of development as proposed and would result in similar land uses that would occur under the proposed project. For hazardous materials impacts associated with the project, it does not particularly matter whether the uses on-site are shifted to the east. Hazards and hazardous materials impacts would be similar to the proposed project. [Similar]

5.5.7 HYDROLOGY AND WATER QUALITY

Although the site would be developed further to the east under this alternative, impacts related to hydrology and water quality would be similar to those that would result from implementation of the proposed project. Because the size, type, and extent of development would remain the same, the potential for degradation or depletion of ground or surface water quality, depletion of ground water resources, reduction of water quantity through groundwater recharge interference or demand in excess of available supplies, and creation of flooding or other water related hazards would be similar. Therefore the hydrology and water quality impacts are anticipated to be similar under this alternative. [Similar]

5.5.8 LAND USE

This alternative would contain the same use as the proposed project, with a building of the same size and capability of service. This alternative would be developed on the same site as the proposed project, and therefore, as with the project, would not divide any existing community. However, the proposed structure would be located at a further distance from the existing residential development located to the west of the project site, which would provide a larger buffer area between the residential development and the proposed project. Similar to the proposed project, the Redesigned Site Plan alternative would continue to conform to the existing land use designation, although the changes proposed would provide an increased buffer from noise emanating from the site. [Less]

5.5.9 NOISE

This alternative would be similar to the proposed project with respect to size and capacity, except the facility and outdoor activity areas would be located further to the east and closer to Tower Road. With regard to noise generated by construction of the facility and area- and stationary-noise sources associated with operations, all of these noise sources would be located further from the noise-sensitive residential neighborhood located west of project site, even though it would move noise closer to a residence on Tower Road between Childs Avenue and Gerard Avenue. This would particularly be the case with respect to the truck gate, which is a focal point for much of the noise-generating activity during project operations. Thus noise generated by on-site operations would be less for a greater number of sensitive receptors (e.g., the residential neighborhood to the west) under this alternative.

With regard to traffic noise, this alternative would generate the same number of vehicle trips that would increase traffic noise levels along the same area roads as would be used in the proposed project. Thus, the traffic noise impacts under this alternative would be similar to those that would result from the proposed project.

Noise impact related to traffic and sensitive receptors along roadways has been identified as significant and unavoidable and cumulatively considerable for the proposed project. The Redesigned Site Plan alternative would not change that conclusion. [Less]

5.5.10 POPULATION AND HOUSING

This alternative would have the same number of jobs created and people served by the proposed project, and both projects would avoid any impact associated with displacement of existing housing or people. Therefore, the proposed alternative would have similar impacts to the City's population and housing, and potential for future availability of jobs. [Similar]

5.5.11 UTILITIES AND PUBLIC SERVICES

Although the alternative would require re-routing of utilities including electrical transmission lines, because the redesigned site plan alternative would result in the same size and extent of development as the proposed project, utilities and public service demands would be similar to the proposed project.

The proposed project would have cumulatively considerable impacts on wastewater treatment and disposal. The Redesigned Site Plan alternative would not change that conclusion. [Similar]

5.5.12 TRANSPORTATION/TRAFFIC

By shifting buildings to the east compared to the proposed project, there would be some moderate shift in travel patterns for vehicles accessing the site. Study intersections that would potentially be affected are along Childs, Gerard, Tower and Campus Parkway in the immediate site vicinity. However, based on the analysis of the proposed project, these intersections would continue to operate at the same levels of service regardless of where the access points, buildings and parking lots are located on the site. There would be some differences in traffic volumes at the nearby intersections, based on whether the vehicles access the site from one street compared to another, but not enough to result in a change in service level compared to the proposed project analysis. Further away from the project site, intersection operating conditions would not change, compared to the proposed project. On site, truck queuing issues would still need to be addressed, as with the proposed project.

The proposed project would have cumulatively considerable impacts on a number of intersections and roadway segments. The Redesigned Site Plan alternative would not change that conclusion. [Similar]

5.5.13 VISUAL RESOURCES

The aesthetic impacts would be similar to those of the proposed project. Both the redesigned site plan and the proposed project would convert the currently open space lot into a built environment that includes an approximately 1-million-square-foot building on the project site, with similar amounts of parking spaces, and lighting to be provided. Therefore, impacts would be similar to the project.

The proposed project would have cumulatively considerable visual impacts. The Redesigned Site Plan alternative would not change that conclusion. [Similar]

5.5.14 ATTAINMENT OF PROJECT OBJECTIVES

Table 5-3 below assesses this alternative relative to the project objectives. As shown, this alternative could fulfill all of the 16 project objectives.

Table 5-3 Redesigned Site Plan and Project Objectives		
Project Objective	Discussion	Fulfill Objective?
To develop the industrially zoned area in the City with permitted industrial uses.	This site is zoned Heavy Industrial District.	Yes
To locate industrial projects in areas with good access to major highway transportation links, and provide opportunities for buffers between industrial and nonindustrial uses.	The site is adjacent to existing and planned major roadway corridors and two State highways.	Yes
To encourage development of industrial projects that will create jobs, including full-time, nonseasonal employment opportunities for local residents.	It is assumed full-time, year-round employment will be provided.	Yes

**Table 5-3
Redesigned Site Plan and Project Objectives**

Project Objective	Discussion	Fulfill Objective?
To encourage development of projects that will contribute toward improving roadways adjacent to the proposed development site.	Like the proposed project, this alternative would be evaluated relative to traffic impacts and mitigation measures to improve roadways would be required, as necessary.	Yes
To ensure that industrial areas are developed in an attractive manner.	All projects are subject to City review and approval.	Yes
To develop a project consistent with the City General Plan and zoning ordinance.	It is assumed this alternative would be consistent with the City's General Plan and zoning ordinance although, as with the project, there may a City General Plan amendment required as a result of revised roadway designations.	Yes
To develop a distribution/warehouse facility near other industrial uses.	Areas in the vicinity are also designated for industrial use.	Yes
To construct and operate a distribution/warehouse facility in Merced County to take advantage of the strategic location between large urban centers and smaller urban and rural markets throughout the Central Valley in California.	This alternative would involve a distribution/warehouse facility on the same site in Merced County.	Yes
To construct a distribution/warehouse facility on a site sufficiently large (a minimum of 230 acres) to allow necessary building space and parking for trucks and employees.	This alternative would involve a warehouse/distribution facility on a site of approximately 230 acres.	Yes
To construct a distribution/warehouse facility with sufficient space (approximately 1.2 million square feet) to allow operational efficiency and adequate distribution of goods to stores in a broad geographic area in California.	This alternative is assumed to develop with a warehouse/distribution facility using the same building space as the proposed project, which would involve roughly 1.2 million square feet of warehouse or industrial use.	Yes
To locate a distribution/warehouse facility with access to a regional roadway network including interstate, state, and regional roads.	This alternative would involve development of a warehouse/distribution facility on the same site as with the proposed project, with access to State Route (SR) 99, Highway 140, and other nearby transportation corridors.	Yes
To locate a distribution/warehouse facility in an area well served by major local thoroughfares to minimize truck traffic traveling through residential neighborhoods.	This alternative would involve development of a warehouse/distribution facility on the same site as with the proposed project, which is adjacent to SR 99, and therefore allowing transportation to occur largely along the highway corridor and avoid residential streets.	Yes
To provide sufficient parking for trucks and employees in order to minimize impacts to the surrounding area.	This alternative assumes same level of development, including parking, would be developed on-site. Although buildings would be shifted eastward, this alternative nonetheless anticipates sufficient parking for trucks and employees.	Yes
To take advantage of an existing labor pool living in the Merced area.	This alternative would involve development of a warehouse/distribution facility on the same site in Merced County.	Yes
Source: Data compiled by EDAW in 2007.		

5.6 REDUCED SITE PLAN AND OPERATIONS

This alternative assumes that the site would be developed with a reduced version of the proposed project. This alternative has been identified as a means of reducing several of the potential impacts of the proposed project to a greater level than could be achieved solely through mitigation measures. Twenty-five percent is an arbitrary reduction level, selected solely for the purpose of this analysis; a range of percentage reductions – applicable to the size of the facility and/or the operations (i.e., employees and truck trips) – could have been selected. This alternative is intended to reduce the potential impacts on the closest residential communities in Merced.

To reduce potential environmental impacts, the following revisions have been made to the proposed project, as partially depicted in Exhibit 5-3:

- ▶ Project site disturbance area has been reduced by 25% to approximately 173 acres.
- ▶ Building size has been reduced by 25% to 825,000 square feet.
- ▶ Total impervious surface area has been reduced by 25% to approximately 52.5 acres.
- ▶ Number of employees has been reduced by 25% to approximately 900 employees.
- ▶ Number of tractor trailer daily trips to and from the site has been reduced by 25% to approximately 482 daily trips.

5.6.1 AGRICULTURE

This alternative would result in a slightly reduced impact on agricultural resources on the project site. The site would continue to be built out with warehouse use, thus reducing Prime Agricultural land; however, 25% less land would be developed, therefore reducing the impact to agricultural resources. Therefore, although the alternative would not avoid the project's significant impact associated with loss of Prime Farmland, the level of impact would be somewhat reduced under the alternative. [Less]

5.6.2 AIR QUALITY

This alternative would contain the same use as the proposed project, with a 25% reduction in size. During the site preparation phase of construction, a reduced level of criteria air pollutants and precursors would be generated because the level of ground disturbance would be less. The building of structures on the site would result in approximately 25% less emissions of criteria air pollutants and precursors because approximately 25% less building space would be built. Operation-related emissions of criteria air pollutants and precursors, TACs, and GHGs would also be approximately 25% less than the proposed project and, because

approximately 25% fewer vehicle trips would be generated by this alternative, the associated increase in CO concentrations at nearby congested intersections would also be lower than for the proposed alternative. However a 25% reduction in these emissions would not reduce impacts below the SJVAPCD thresholds of significance with out mitigation, including the implementation of an emissions reduction agreement with SJVAPCD.

Impacts to air quality, related to construction and long-term emissions of criteria air pollutants have been identified as less than significant with mitigation for the proposed project. The Reduced Site Plan and Operations alternative would not change that conclusion for construction-generated and operational emissions of criteria air pollutants. [Less]

Impacts to air quality related to construction and long-term emissions of greenhouse gases have been identified as a significant and unavoidable and a cumulatively considerable contribution to global climate change. The

Reduced Site Plan and Operations alternative would not change that conclusion for greenhouse gas emissions. [Less]

5.6.3 BIOLOGICAL RESOURCES

This alternative could result in a reduced amount of habitat conversion and resulting potential impacts on sensitive biological resources. Under the proposed project, impacts to Swainson's hawk and burrowing owl would be reduced to a less-than-significant level with implementation of mitigation measures. The Reduced Site Plan and Operations Alternative would require the same mitigation to reduce impacts; however, under the alternative, up to 25% of the conversion of habitat would be avoided, which is preferred over mitigation. Therefore, although the project and the alternative would generally require similar mitigation, because the alternative would avoid up to 25% of the habitat conversion, the impact is considered to be less. However, it should be noted that biological resources impacts have been identified as cumulatively considerable for the proposed project. The Reduced Site Plan and Operations alternative would not change that conclusion. [Less]

5.6.4 CULTURAL RESOURCES

Because a smaller portion of the proposed project site would be disturbed by this proposal, impacts to cultural resources under this alternative would be less than those that would result from the proposed project. Because no cultural resources have been identified within the project area, it is only those potential impacts to undocumented resources that would be affected; there would be less of a chance of encountering unrecorded sites, features, artifacts or human remains. [Less]

5.6.5 GEOLOGY/SOILS/PALEONTOLOGY

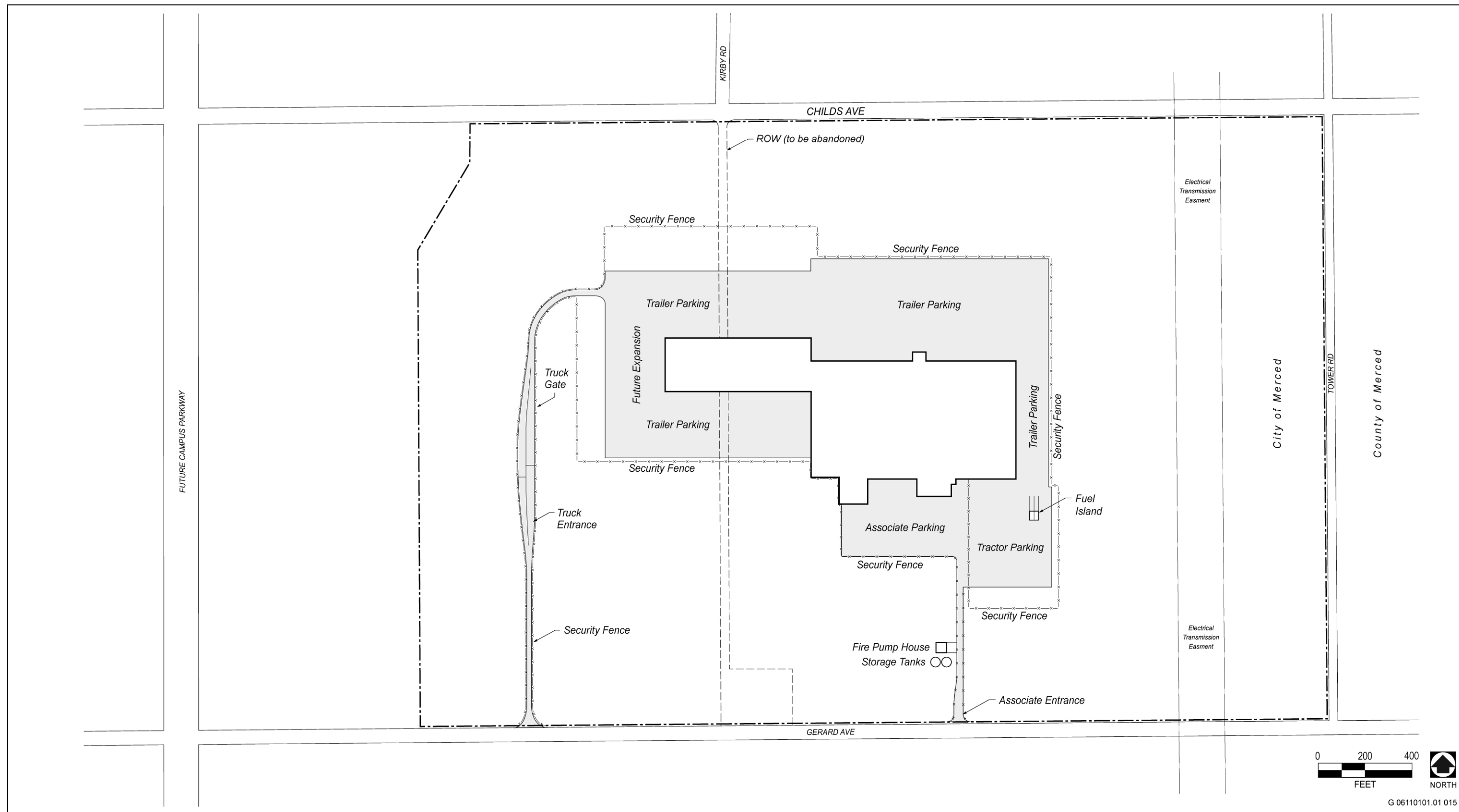
Impacts related to geology, soils and paleontological resources would be the same as those identified under the proposed project because the site would still be developed. [Similar]

5.6.6 HAZARDS AND HAZARDOUS MATERIALS

The Reduced Site Plan and Operations alternative would result in similar land uses that would occur under the proposed project; therefore, hazards and hazardous materials impacts would be the same as the project. [Similar]

5.6.7 HYDROLOGY AND WATER QUALITY

Under this alternative the types of impacts related to hydrology and water quality would be less to those that would result from implementation of the proposed project, because, while the types of uses would be the same as the proposed project, there would be a 25% reduction in size. The overall impacts would be reduced for both site development and long-term runoff and water quality impact. Therefore the hydrology and water quality impacts are anticipated to be less under this alternative. [Less]



Source:

Reduced Site Plan and Operations

Exhibit 5-3

5.6.8 LAND USE

This alternative would contain the same use as the proposed project, with a 25% reduction in size. Similar to the project, the proposed alternative would continue to conform to the existing land use designation. Although the changes in this alternative would provide some reduction in physical impacts to the environment, because the project and alternative would include an identical land use type (albeit with somewhat different intensities), the impacts related to land use would be similar. [Similar]

5.6.9 NOISE

This alternative would contain the same use as the proposed project, with a 25% reduction in size. The type of on-site stationary- and area-noise sources used during construction and operation would be the same, as well as their respective individual noise levels. The number of these sources, or the frequency at which they are operated would be less given the reduced project size. In addition, because the facility would be smaller, some of these noise sources would be set back a greater distance inside the property line and thus also from off-site sensitive receptors. Thus, the impact of on-site noise levels generated by project construction and operation would be less than or equal to that of the proposed project and therefore would also be less than significant with mitigation.

It is presumed that this alternative would also generated 25% less vehicle trips that would use the same area roads, but during the same times of day (i.e., during nighttime as well as daytime hours). Because traffic noise levels along area roads would be less than the proposed project due to reduced traffic volume, traffic noise impacts under this alternative would be less than that which would result from the proposed project. However, traffic generated by the Reduced Site Plan and Operations alternative would still result in noticeable increases in traffic noise increases (i.e., greater than 3 dBA, according to Caltrans 1998) at off-site sensitive receptors in both the years 2010 and 2030 with the project.

Noise impact related to traffic and sensitive receptors along roadways has been identified as significant and unavoidable and cumulatively considerable for the proposed project. The Reduced Site Plan and Operations alternative would not change that conclusion. [Less]

5.6.10 POPULATION AND HOUSING

Both this alternative and the proposed project would avoid any impacts associated with potential displacement of existing housing or people. However, this alternative would slightly reduce the number of jobs created and people served by the proposed project. Therefore, there may be a slight reduction in any growth that may be induced if future employees of the project were to locate to the Merced area as a result of development of the project. The differential impact in this case relative to the project is minimal. Impact conclusions would be the same. [Similar]

5.6.11 UTILITIES AND PUBLIC SERVICES

This alternative would contain the same use as the proposed project, with a 25% reduction in size. Because the changes proposed would provide some reduction in overall potential impacts, the significance of impacts on utilities and public services would be less than the proposed project.

The proposed project would have cumulatively considerable impacts on wastewater treatment and disposal. The Reduced Site Plan and Operations alternative would not likely change that conclusion. [Less]

5.6.12 TRANSPORTATION/TRAFFIC

A reduced site plan and operations alternative would result in proportionately less traffic. The number of employee trips and truck trips would be reduced by 25% as noted above. However, although the trip generation

would be reduced, the reduced site plan would not result in different transportation impact conclusions, when compared to the proposed project. Traffic signal warrants would still be met at the same unsignalized locations, as they would be satisfied regardless of the proposed project or its alternatives.

The proposed project would have cumulatively considerable impacts on a number of intersections and roadway segments. The project's cumulative impact to the roadway segment of SR 140 between Kibby Road and Santa Fe Avenue would not likely be avoided by a 25% reduction in trips, since under the "No Project" 2030 condition the LOS for this segment of SR 140 is barely within the acceptable range, and it would take relatively little trip generation to push the LOS over the threshold. The Reduced Site Plan and Operations alternative would not be expected to change these conclusions. Although the impact conclusions would not change under the alternative, there would be some reduction in trips, which would result in slightly less traffic congestion. [Less]

5.6.13 VISUAL RESOURCES

The reduced site plan alternative would reduce the size of the building footprint by 25% to 825,000 square feet. The site is in proximity to existing warehousing and electric utilities, and the area is designated for industrial development, as are other vacant adjacent parcels. The reduction in size would not change the overall aesthetic characteristics of the site and surrounding area, which would continue to appear aesthetically as primarily industrial and scattered agriculture. Furthermore, the site is at the fringe of existing development, and contains the same land use as the proposed project. Therefore, the proposed alternative would have a similar impact on the project.

The proposed project would have cumulatively considerable visual impacts. The Reduced Site Plan and Operations alternative would not change that conclusion. [Less]

5.6.14 ATTAINMENT OF PROJECT OBJECTIVES

Table 5-4 below assesses this alternative relative to the project objectives. As shown, this alternative could fulfill 15 of the 16 project objectives.

Table 5-4 Reduced Site Plan and Operations and Project Objectives		
Project Objective	Discussion	Fulfill Objective?
To develop the industrially zoned area in the City with permitted industrial uses.	This site is zoned Heavy Industrial District.	Yes
To locate industrial projects in areas with good access to major highway transportation links, and provide opportunities for buffers between industrial and nonindustrial uses.	The site is adjacent to existing and planned major roadway corridors and two State highways.	Yes
To encourage development of industrial projects that will create jobs, including full-time, nonseasonal employment opportunities for local residents.	It is assumed full-time, year-round employment will be provided.	Yes
To encourage development of projects that will contribute toward improving roadways adjacent to the proposed development site.	Like the proposed project, this alternative would be evaluated relative to traffic impacts and mitigation measures to improve roadways would be required, as necessary.	Yes
To ensure that industrial areas are developed in an attractive manner.	All projects are subject to City review and approval.	Yes
To develop a project consistent with the City General Plan and zoning ordinance.	It is assumed this alternative would be consistent with the City's General Plan and zoning ordinance although, as with the project, there may a City General	Yes

**Table 5-4
Reduced Site Plan and Operations and Project Objectives**

Project Objective	Discussion	Fulfill Objective?
	Plan amendment required as a result of revised roadway designations.	
To develop a distribution/warehouse facility near other industrial uses.	Areas in the vicinity are also designated for industrial use.	Yes
To construct and operate a distribution/warehouse facility in Merced County to take advantage of the strategic location between large urban centers and smaller urban and rural markets throughout the Central Valley in California.	This alternative would involve a distribution/warehouse facility on the same site in Merced County.	Yes
To construct a distribution/warehouse facility on a site sufficiently large (a minimum of 230 acres) to allow necessary building space and parking for trucks and employees.	This alternative would involve a warehouse/distribution facility on a site of approximately 230 acres.	Yes
To construct a distribution/warehouse facility with sufficient space (approximately 1.2 million square feet) to allow operational efficiency and adequate distribution of goods to stores in a broad geographic area in California.	This alternative is assumed to develop with a warehouse/distribution facility. The building space dedicated to this alternative, however, would be reduced compared to the specific figure noted by the project applicant for this project objective. The extent to which this reduction in building space would affect the extent to which distribution of goods to California stores is unknown. This document assumes a 25% reduction would be inconsistent with this project objective.	No
To locate a distribution/warehouse facility with access to a regional roadway network including interstate, state, and regional roads.	This alternative would involve development of a warehouse/distribution facility on the same site as with the proposed project, with access to State Route (SR) 99, Highway 140, and other nearby transportation corridors.	Yes
To locate a distribution/warehouse facility in an area well served by major local thoroughfares to minimize truck traffic traveling through residential neighborhoods.	This alternative would involve development of a warehouse/distribution facility on the same site as with the proposed project, which is adjacent to SR 99, and therefore allowing transportation to occur largely along the highway corridor and avoid residential streets.	Yes
To provide sufficient parking for trucks and employees in order to minimize impacts to the surrounding area.	This alternative assumes a reduction in on-site development intensity, including parking, would be developed on-site. It is assumed the reduced building space and parking area would occur in tandem. The smaller number of employees and parking demand would correspond with a smaller area dedicated to parking. Therefore, impacts to adjacent residential areas would be avoided under this alternative.	Yes
To take advantage of an existing labor pool living in the Merced area.	This alternative would involve development of a warehouse/distribution facility on the same site in Merced County.	Yes
Source: Data compiled by EDAW in 2007.		

5.7 ALTERNATIVE SITE #1

The remainder of the alternatives analysis will address the potential environmental impacts of development of the Wal-Mart distribution center on other vacant sites within the City or unincorporated County. These sites were identified by City staff as having sufficient land area and zoning designations to accommodate a warehouse distribution center with approximately 1.1 million square feet of floor area and similar site development requirements to that of the proposed project. Each of the sites is in the southern portion of the City (or unincorporated County), in areas designated for, or near, industrial development and relatively close to major transportation routes. The City directed that alternative sites be identified and analyzed in terms of environmental impact, in addition to alternative versions of the proposed project on the site selected by Wal-Mart. Alternative sites are analyzed to see if development with the use currently proposed by Wal-Mart would result in different potential impacts.

Alternative Site #1 is approximately 200-250 acres in size and is located immediately south of the proposed project site. It is roughly bordered by the following streets: Gerard Avenue, Mission Avenue, the future extension of Campus Parkway, and Tower Road. This site is within the Merced city limits and is directly south of the proposed project site. For alternative sites, refer to Exhibit 5-4.

5.7.1 AGRICULTURE

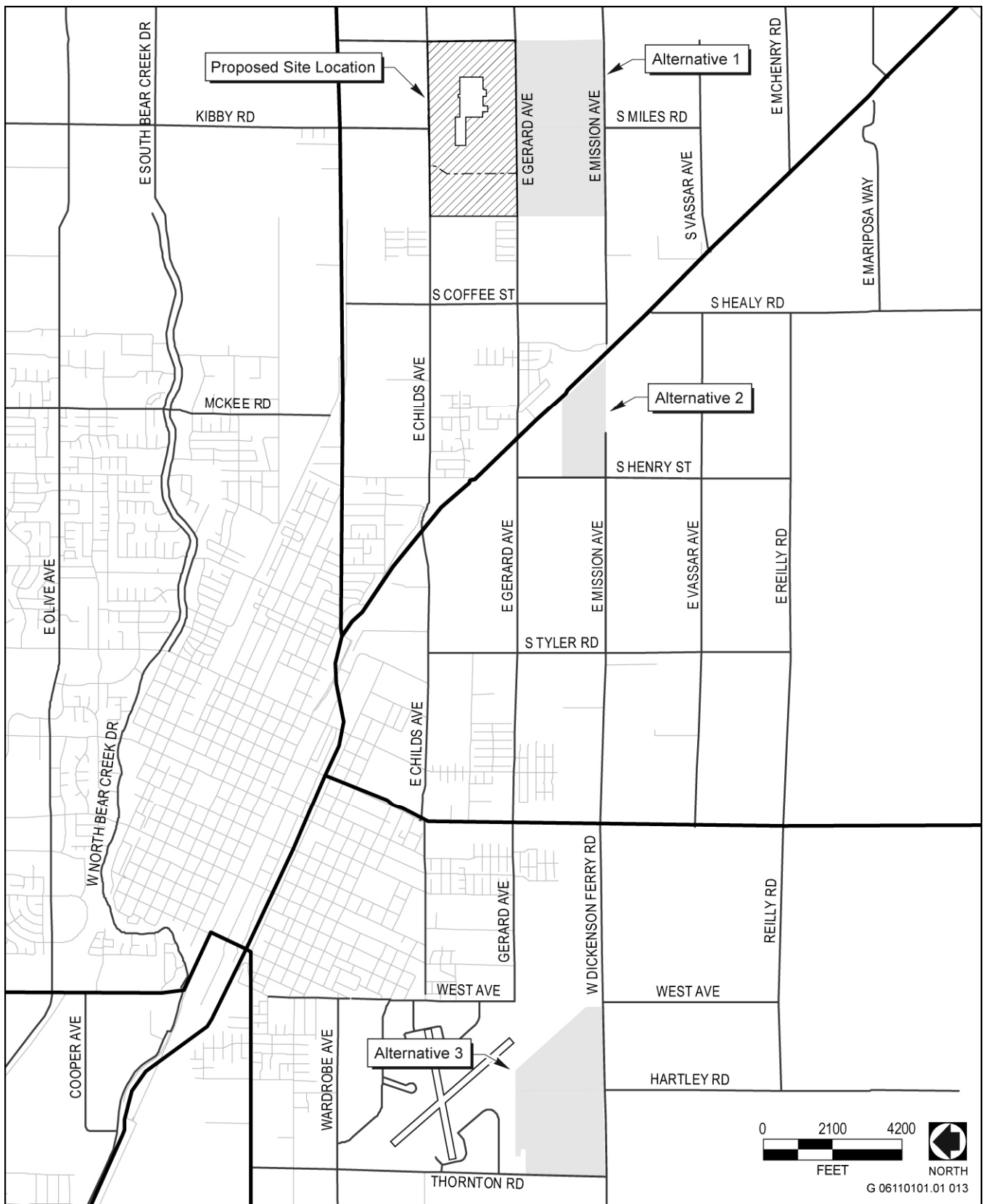
Alternative Site #1 is currently devoted to dry-farmed field crops. Development of the Wal-Mart regional distribution center on this site would eliminate the agricultural productivity of the site, similar to the proposed project.

Impact to agricultural resources (Loss of Prime Farmland) has been identified as significant and unavoidable and cumulatively considerable for the proposed project. The Alternative Site #1 alternative would not change that conclusion. [Similar]

5.7.2 AIR QUALITY

Under this alternative, construction-related emissions would be the same as the proposed project. Operation-related emissions would also be the same because the same number of vehicle trips would be generated and the same level of on-site operations would occur. Because the location of the development would not be the same, different intersections may experience increased traffic congestion and associated increases in CO concentrations than those affected by the proposed project. Impacts related to increased health risk from TAC emissions would also be comparable because of the similar proximity of this location to existing nearby sensitive receptors.

Impact to air quality, related to construction and long-term emissions have been identified as less than significant for the proposed project. The Alternative Site #1 alternative would not change that conclusion. Impacts to air quality related to construction and long-term emissions of greenhouse gases have been identified as significant and unavoidable and a cumulatively considerable contribution to global climate change. The Alternative Site #1 alternative would not change that conclusion. [Similar]



Source: CaSIL 1998, Merced County 2005

Alternative Site Locations

Exhibit 5-4

5.7.3 BIOLOGICAL RESOURCES

Existing habitat conditions on Alternative Site #1 are similar to the dry-farmed field crop habitat in the eastern portion of the proposed site. This alternative site is not expected to support sensitive habitats, special-status plants, or special-status wildlife that are also unlikely to occur on the proposed site. The agricultural fields on this alternative site likely provide suitable foraging habitat for Swainson's hawk and nesting burrowing owls, and a larger amount of suitable habitat for these species would be lost than under the proposed project. Impacts to Swainson's hawk and burrowing owl that could result from use of Alternative Site #1 could be reduced to a less-than-significant level with mitigation. Biological resources impacts have been identified as cumulatively considerable for the proposed project. The Alternative Site #1 would not change that conclusion. [Greater]

5.7.4 CULTURAL RESOURCES

The Central California Information Center (CCIC) record search did not note the presence of any previously documented cultural resources within Alternative Site #1. Further, because of heavy crop cover at the time of the cultural resources inventory, this alternative could not be adequately surveyed. Because it cannot be determined whether or not there are undocumented significant (per CEQA) cultural resources present at Alternative Site #1, an intensive survey would need to be completed before construction activities to reduce impacts to documented sites to less-than-significant levels. [Similar]

5.7.5 GEOLOGY/SOILS/PALEONTOLOGY

Impacts related to geology and soils would be similar to those identified under the proposed project, because this site has similar seismic and soils conditions to the proposed project site. Because Alternative Site #1 is located in the same geologic formation as the proposed project site, impacts related to paleontological resources would be the same. The potential for this site to contain valuable deposits of mineral resources is expected to be similar to the proposed project site. [Similar]

5.7.6 HAZARDS AND HAZARDOUS MATERIALS

Development of the project at Alternative Site #1 would result in similar land uses that would occur under the proposed project. Land uses surrounding Alternative Site #1 are similar to those surrounding the proposed project site and include agricultural uses and a few rural residences. Therefore, hazards and hazardous materials impacts would be the same as the project. [Similar]

5.7.7 HYDROLOGY AND WATER QUALITY

Although the site would be developed immediately to the south of the proposed project under this alternative, impacts related to hydrology and water quality would be similar to those that would result from implementation of the proposed project. The size, type, and extent of development would remain the same, therefore the hydrology and water quality impacts are anticipated to be similar under this alternative. [Similar]

5.7.8 LAND USE

This alternative site contains the same land use designation as the proposed project, Industrial, and would construct a building of the same size and capability of service. Both the proposed project and this alternative would continue to conform to the existing land use designation. Neither this alternative, nor the proposed project can be characterized as dividing an existing community. This alternative, like the project, has a site located at the southeastern edge of the Merced Planning Area. This alternative site is adjacent to and east of lands designated "Regional Commercial" and "Business Park" by the Merced General Plan. The project site is south and east of lands designated for low-density residential development. Overall, the level of impact is similar. [Similar]

5.7.9 NOISE

This alternative would consist of the same size facility on a footprint of similar size, shape, and orientation, but located directly south of the proposed project site location.

Because the proximity of existing nearby sensitive receptors (e.g., the residential community to the west, the farm houses along Tower Road and Gerard Avenue, and potentially other farm houses located close to the Alternative Site #1) would be similar to the proposed project, impacts from on-site noise sources associated with construction and operation of this alternative would be similar to the proposed project. Furthermore, because this alternative would generate the same number of vehicle trips, traffic noise impacts under this alternative would be similar to those that would result from the proposed project. However, the relative degree to which varying receptors would be impacted may differ according to their respective distance to the location of Alternative Site #1 and the street segments where project generated traffic would travel.

Noise impact related to traffic and sensitive receptors along roadways has been identified as significant and unavoidable and cumulatively considerable for the proposed project. The Alternative Site #1 alternative would not change that conclusion. [Similar]

5.7.10 POPULATION AND HOUSING

This alternative would have no difference on the number of jobs created and people served by the proposed project, and both projects would avoid any impacts associated with potential displacement of existing housing or people. Therefore, the proposed alternative would have similar impacts to the City's population and housing, and potential for future availability of jobs. [Similar]

5.7.11 UTILITIES AND PUBLIC SERVICES

Under this alternative, the size and extent of development would be the same as the proposed project, and utilities and public service demands would be similar to the proposed project. This alternative site is directly adjacent and south of the proposed project site, and utility infrastructure, including water and wastewater conveyance facilities, natural gas pipelines, and electrical and telecommunications transmission lines, is located within existing utility rights-of-way adjacent to the site. Similar to the proposed project, this alternative would connect to extensions of existing off-site utility infrastructure. Under this alternative, the size and extent of development would be the same as the proposed project, and utilities and service system demands would be similar to the proposed project.

The proposed project would have cumulatively considerable impacts on wastewater treatment and disposal. The Alternative Site #1 alternative would not change that conclusion. [Similar]

5.7.12 TRANSPORTATION/TRAFFIC

Under this alternative, it assumed that both auto and truck trips would use the same routes to travel to or from the site as they would under the proposed project location. However, auto trips from SR 99 north would now be assumed to access the site vicinity through the SR 99/Mission interchange instead of the SR 99/Childs Avenue interchange. While this may result in slightly better intersection operations at the Childs/Parsons and Childs/Coffee intersections, the impact characterizations under this alternative are anticipated to be the same as for the proposed project.

The proposed project would have cumulatively considerable impacts on a number of intersections and roadway segments. The Alternative Site #1 alternative would not change that conclusion. [Similar]

5.7.13 VISUAL RESOURCES

The aesthetic impacts would be similar to those of the proposed project. The alternative site is located directly adjacent to the south of the proposed project site, and would be visible from many of the same viewpoints. Both the alternative site and the proposed site would convert an open space lot into a built environment that includes an approximately 1-million-square-foot building, and would include similar amounts of parking spaces, and lighting. Furthermore, both the alternative site and the proposed project site are zoned for industrial or manufacturing uses. Therefore, the aesthetic environment would be impacted at a similar level.

The proposed project would have cumulatively considerable visual impacts. The Alternative Site #1 alternative would not change that conclusion. [Similar]

5.7.14 ATTAINMENT OF PROJECT OBJECTIVES

Table 5-5 below assesses this alternative relative to the project objectives. As shown, this alternative would fulfill all of the 16 project objectives.

Table 5-5 Alternative Site #1 and Project Objectives		
Project Objective	Discussion	Fulfill Objective?
To develop the industrially zoned area in the City with permitted industrial uses.	This site is zoned Heavy Industrial District.	Yes
To locate industrial projects in areas with good access to major highway transportation links, and provide opportunities for buffers between industrial and nonindustrial uses.	The site is adjacent to existing and planned major roadway corridors and two State highways.	Yes
To encourage development of industrial projects that will create jobs, including full-time, nonseasonal employment opportunities for local residents.	It is assumed full-time, year-round employment will be provided.	Yes
To encourage development of projects that will contribute toward improving roadways adjacent to the proposed development site.	Like the proposed project, this alternative would be evaluated relative to traffic impacts and mitigation measures to improve roadways would be required, as necessary.	Yes
To ensure that industrial areas are developed in an attractive manner.	All projects are subject to City review and approval.	Yes
To develop a project consistent with the City General Plan and zoning ordinance.	This alternative would be consistent with the City's General Plan and zoning ordinance. This site has the same designation as does the project site (Industrial) and the same zoning.	Yes
To develop a distribution/warehouse facility near other industrial uses.	Areas in the vicinity are also designated for industrial use.	Yes
To construct and operate a distribution/warehouse facility in Merced County to take advantage of the strategic location between large urban centers and smaller urban and rural markets throughout the Central Valley in California.	This alternative would involve a distribution/warehouse facility in Merced County.	Yes

**Table 5-5
Alternative Site #1 and Project Objectives**

Project Objective	Discussion	Fulfill Objective?
To construct a distribution/warehouse facility on a site sufficiently large (a minimum of 230 acres) to allow necessary building space and parking for trucks and employees.	This alternative would involve a warehouse/distribution facility on a site of approximately 200-250 acres.	Yes
To construct a distribution/warehouse facility with sufficient space (approximately 1.2 million square feet) to allow operational efficiency and adequate distribution of goods to stores in a broad geographic area in California.	This alternative is assumed to develop with a warehouse/distribution facility of roughly the same amount of developed building space as proposed with the project.	Yes
To locate a distribution/warehouse facility with access to a regional roadway network including interstate, state, and regional roads.	This alternative would involve development of a warehouse/distribution facility with access to State Route (SR) 99, Highway 140, and other nearby transportation corridors.	Yes
To locate a distribution/warehouse facility in an area well served by major local thoroughfares to minimize truck traffic traveling through residential neighborhoods.	This alternative would involve development of a warehouse/distribution facility adjacent to SR 99, and therefore allowing transportation to occur largely along the highway corridor and avoid residential streets.	Yes
To provide sufficient parking for trucks and employees in order to minimize impacts to the surrounding area.	This alternative assumes that a similarly configured warehouse or industrial facility would be developed, given the existing land use designations and other factors. It is also assumed that a similar parking configuration could be designed, given the size of the project site.	Yes
To take advantage of an existing labor pool living in the Merced area.	This alternative would involve industrial or warehouse uses in Merced County.	Yes
Source: Data compiled by EDAW in 2007.		

5.8 ALTERNATIVE SITE #2

Alternative Site #2 is located on the west side of SR 99, approximately 1 mile west/southwest of the project site. This site is northeast of the intersection of South Henry Street and East Mission Avenue, and just southwest of State SR 99. The site is roughly 250 acres in land area. This site is in unincorporated Merced County. Please refer to the discussion at the beginning of Alternative Site #1 regarding the basis for selection of alternative sites.

5.8.1 AGRICULTURE

The site is designated as Prime Agricultural land. The site is currently used for dry-farmed field crops. Development of the distribution center on this site would eliminate all of the agricultural resources from the site, similar to the proposed project.

Impact to agricultural resources (Loss of Prime Farmland) has been identified as significant and unavoidable and cumulatively considerable for the proposed project. The Alternative Site #2 alternative would not change that conclusion. [Similar]

5.8.2 AIR QUALITY

Because the same level of activity would occur, mass emissions of criteria air pollutants and precursors, GHGs, and TACs would be the same as the proposed project. However, because the location of the development would not be the same, different intersections may experience increased traffic congestion and associated increases in CO concentrations than those affected by the proposed project. The health risk associated with TAC emissions would also be similar to the proposed project because the same level of TAC emissions would occur during construction and operations and the proximity of the site to nearby sensitive receptors would be similar.

Impact to air quality, related to construction and long-term emissions has been identified as less than significant for the proposed project. Impacts to air quality related to construction and long-term emissions of greenhouse gases have been identified as significant and unavoidable and a cumulatively considerable contribution to global climate change. The Alternative Site #2 alternative would not change that conclusion. [Similar]

5.8.3 BIOLOGICAL RESOURCES

Existing habitat conditions on Alternative Site #2 are similar to the dry-farmed field crop habitat in the eastern portion of the proposed site. This alternative site is not expected to support sensitive habitats, special-status plants, or special-status wildlife that are also unlikely to occur on the proposed site. The agricultural fields on this alternative site likely provide suitable foraging habitat for Swainson's hawk and nesting burrowing owls, and a larger amount of suitable habitat for these species would be lost than under the proposed project. Impacts to Swainson's hawk and burrowing owl that could result from use of Alternative Site #2 could be reduced to a less-than-significant level with mitigation.

Biological resources impacts have been identified as cumulatively considerable for the proposed project. Alternative Site #2 would not change that conclusion. [Greater]

5.8.4 CULTURAL RESOURCES

The CCIC record search did not note the presence of any previously documented cultural resources within Alternative Site #2. However, because of heavy crop cover at the time of the EDAW cultural resources reconnaissance, this alternative could not be adequately surveyed. Although it is not likely that undocumented significant (per CEQA) cultural resources are present at the Alternative Site #2, an intensive survey must be completed before construction activities to reduce impacts to documented sites to less-than-significant levels. [Similar]

5.8.5 GEOLOGY/SOILS/PALEONTOLOGY

Alternative Site #2 is underlain by Pleistocene-age sediments of the Riverbank Formation, which is a paleontologically sensitive rock formation. Therefore, impacts related to paleontological resources would be the same as under the proposed project. Impacts related to geology and soils would be similar to those identified under the proposed project, because this site has similar seismic and soils conditions to the proposed project site. The potential for this site to contain valuable deposits of mineral resources is expected to be similar to the proposed project site. [Similar]

5.8.6 HAZARDS AND HAZARDOUS MATERIALS

Development of the project at Alternative Site #2 would result in similar land uses that would occur under the proposed project. Land uses surrounding Alternative Site #2 are similar to those surrounding the proposed project site and include agricultural and industrial uses and a few rural residences, although SR 99 and the Southern Pacific Railroad tracks are located immediately east of the site. Hazards and hazardous materials impacts would

likely be the similar to the project, although the proximity of the site to the railroad and SR 99 could necessitate some level of soil testing and possible soil removal due to long-term exposure to exhaust from diesel and leaded gasoline. [Similar]

5.8.7 HYDROLOGY AND WATER QUALITY

Development of this project alternative would result in similar land uses that would occur under the proposed project. Impacts related to hydrology and water quality under this alternative would be similar to those that would result from implementation of the proposed project. However, this alternative is located outside of the City of Merced Storm Drain Master Plan Area. Therefore a new stormwater management system design would be required, as would collaboration with the Merced Irrigation District regarding stormwater runoff discharge to their adjacent conveyances. Because it is unknown if stormwater facilities would be available to meet demands, this alternative could potentially result in greater hydrology and water quality impacts than the proposed project. [Greater]

5.8.8 LAND USE

The site is located outside Merced's city limits, in the unincorporated area of the County. The site is within the City's sphere of influence, however. The City's General Plan designates the site "Business Park." Warehousing is listed as an appropriate use in the City's General Plan for the Business Park land use designation.

Surrounding land use designations include Residential Reserve, Industrial Reserve, Commercial Reserve, and Business Park. Like the proposed project, this alternative would not divide an existing community. This site is located in an agricultural area. No residences or other sensitive uses are adjacent to this alternative site. This alternative has land use impacts that are similar to the proposed project due to the potential for residential development nearby in the Residential Reserve area. [Similar]

5.8.9 NOISE

This alternative would consist of the same size facility on a site located just west of SR 99. The proximity of future nearby sensitive receptors to this location would be similar to the proposed project location. Because freeway noise from adjacent SR 99 is the predominant noise source in the area surrounding this alternative site location, existing ambient noise levels are higher than at the proposed project site. Thus, noise generated on site by the construction and/or operation of this alternative is less likely to result in a substantial or noticeable change in ambient noise levels at nearby sensitive receptors.

With regard to traffic noise, because this alternative would generate the same number of vehicle trips, traffic noise impacts under this alternative would be similar to those that would result from the proposed project. Because this alternative would have closer access to SR 99 than the proposed project location, traffic noise increases (including single-event noise levels from nighttime truck pass-bys) could potentially impact fewer noise sensitive receptors between this alternative site and highway.

Noise impact related to traffic and sensitive receptors along roadways has been identified as significant and unavoidable and cumulatively considerable for the proposed project. The Alternative Site #2 alternative would not change that conclusion. [Similar]

5.8.10 POPULATION AND HOUSING

This alternative would have the same number of jobs created and people served by the proposed project, and both projects would avoid any impacts associated with potential displacement of existing housing or people. Therefore, the proposed alternative would have similar impacts to the City's population and housing, and potential for future availability of jobs. [Similar]

5.8.11 UTILITIES AND PUBLIC SERVICES

Under this alternative, the size and extent of development would be the same as the proposed project, and utilities and public service demands would be approximately the same as the proposed project. However, Alternative Site #2 would be located in an unincorporated area of Merced County. Fire and police protection services for this alternative would be provided by the County, and the alternative would increase demand on County fire and sheriff services. This additional demand may require additional County facilities. Water supplies would be provided by the Merced Irrigation District. Similar to the proposed project, this alternative would be required to pay its fair share of costs associated with the increased demand of fire and police services, and would include the same on-site security measures and incorporate all California Fire Code requirements as the proposed project. A water supply assessment would be required for this alternative to determine as to whether the Merced Irrigation District's projected water supplies available would meet the water demand associated with this alternative, in addition to the existing and planned future uses. Because it is unknown if water supplies would be available to meet demands, this alternative could potentially result in greater impacts on utilities than the project.

The proposed project would have cumulatively considerable impacts on wastewater treatment and disposal. The Alternative Site #2 alternative would not change that conclusion. [Greater]

5.8.12 TRANSPORTATION/TRAFFIC

Under this alternative, more truck trips from SR 99 and SR 140 would now be assumed to use the SR 99/Mission interchange to access the site. Truck trips from SR 152 would be assumed to use SR 59 and Mission Avenue.

Auto trips from Kibby Road, SR 140 East, Childs Avenue east of Tower would use Campus Parkway as a major route to the project site. Auto trips from SR 140 between Parsons Avenue and Santa Fe Avenue were assumed to use SR 99 via Parsons Avenue and Childs Avenue. The auto trips from other area were assumed to use SR 99. A few trips Childs Avenue, west of SR 99 would be expected to use Tyler Road and Mission Avenue.

As a result, it is anticipated that traffic conditions at the study intersections along Childs Avenue (at Parsons Avenue and SR 99 northbound and southbound ramps) would worsen when compared to the proposed project's location.

However, an increase in traffic volumes from the project trips would not be trigger any new impacts at these intersections, and thus no significant impacts at any of the study intersections and roadway segments would be anticipated.

The proposed project would have cumulatively considerable impacts on a number of intersections. Development of Alternative Site #2 would shift traffic impacts somewhat, but would still result in cumulatively considerable impacts. [Greater]

5.8.13 VISUAL RESOURCES

The aesthetic impacts would be similar to those of the proposed project. The alternative site is located directly adjacent to the south of the proposed project site, and would be visible from many of the same viewpoints. Both the alternative site and the proposed site would convert an open space lot into a built environment that includes an approximately 1-million-square-foot building, and would include similar amounts of parking spaces, and lighting. Furthermore, both the alternative site and the proposed project site are zoned for industrial or manufacturing uses. Therefore, the aesthetic environment would be impacted at a similar level.

The proposed project would have cumulatively considerable visual impacts. The Alternative Site #2 alternative would not change that conclusion. [Similar]

5.8.14 ATTAINMENT OF PROJECT OBJECTIVES

Table 5-6 below assesses this alternative relative to the project objectives. As shown, this alternative would fulfill 12 of the 16 project objectives.

Table 5-6 Alternative Site #2 and Project Objectives		
Project Objective	Discussion	Fulfill Objective?
To develop the industrially zoned area in the City with permitted industrial uses.	Because the site is in the unincorporated County, it does not have City zoning designations.	No
To locate industrial projects in areas with good access to major highway transportation links, and provide opportunities for buffers between industrial and nonindustrial uses.	The site is adjacent to existing and planned major roadway corridors and two State highways. The site's GP designations do not allow meaningful buffering. For example, the Business Park designation abut Residential Reserve.	No
To encourage development of industrial projects that will create jobs, including full-time, nonseasonal employment opportunities for local residents.	It is assumed full-time, year-round employment will be provided.	Yes
To encourage development of projects that will contribute toward improving roadways adjacent to the proposed development site.	Like the proposed project, this alternative would be evaluated relative to traffic impacts and mitigation measures to improve roadways would be required, as necessary.	Yes
To ensure that industrial areas are developed in an attractive manner.	Presumably, County requirements would address the attractiveness of the development.	Yes
To develop a project consistent with the City General Plan and zoning ordinance.	This site is in unincorporated Merced County. It is located on land designated for Business Park. Warehousing is listed as an appropriate use in the City's General Plan for the Business Park land use designation.	No
To develop a distribution/warehouse facility near other industrial uses.	Areas in the vicinity are also designated Residential Reserve and Community Commercial.	No
To construct and operate a distribution/warehouse facility in Merced County to take advantage of the strategic location between large urban centers and smaller urban and rural markets throughout the Central Valley in California.	This alternative would involve a distribution/warehouse facility in Merced County.	Yes
To construct a distribution/warehouse facility on a site sufficiently large (a minimum of 230 acres) to allow necessary building space and parking for trucks and employees.	This alternative would involve a warehouse/distribution facility on a site of approximately 250 acres.	Yes
To construct a distribution/warehouse facility with sufficient space (approximately 1.2 million square feet) to allow operational efficiency and adequate distribution of goods to stores in a broad geographic area in California.	This alternative is assumed to develop with a warehouse/distribution facility of roughly the same amount of developed building space as proposed with the project.	Yes
To locate a distribution/warehouse facility with access to a regional roadway network including interstate, state, and regional roads.	This alternative would involve development of a warehouse/distribution facility with access to State Route (SR) 99, Highway 140, and other nearby transportation corridors.	Yes

**Table 5-6
Alternative Site #2 and Project Objectives**

Project Objective	Discussion	Fulfill Objective?
To locate a distribution/warehouse facility in an area well served by major local thoroughfares to minimize truck traffic traveling through residential neighborhoods.	This alternative would involve development of a warehouse/distribution facility adjacent to SR 99, and therefore allowing transportation to occur largely along the highway corridor and avoid residential streets.	Yes
To provide sufficient parking for trucks and employees in order to minimize impacts to the surrounding area.	This alternative assumes that a similarly configured warehouse or industrial facility would be developed, given the existing land use designations and other factors. It is also assumed that a similar parking configuration could be designed, given the size of the project site.	Yes
To take advantage of an existing labor pool living in the Merced area.	This alternative would involve industrial or warehouse uses in Merced County.	Yes
Source: Data compiled by EDAW in 2007.		

5.9 ALTERNATIVE SITE #3

Alternative Site #3 is located between Dickenson Ferry Road, Thornton Road, and immediately south of Merced Municipal Airport. The site is roughly 250 acres in land area. This site is in unincorporated Merced County. Please refer to the discussion at the beginning of Alternative Site #1 regarding the basis for selection of alternative sites.

5.9.1 AGRICULTURE

This site is used for crop production. Development of a distribution center would result in the conversion of agricultural land to urban use. Therefore, impacts would be similar to the project.

Impact to agricultural resources (Loss of Prime Farmland) has been identified as significant and unavoidable and cumulatively considerable for the proposed project. The Alternative Site #3 alternative would not change that conclusion. [Similar]

5.9.2 AIR QUALITY

This alternative would consist of the same size facility on a differently-shaped footprint west of SR 99.

Because the same level of activity would occur, mass emissions of criteria air pollutants and precursors, GHGs, and TACs would be the same as the proposed project. However, because the location of the development would not be the same, different intersections may experience increased traffic congestion and associated increases in CO concentrations than those affected by the proposed project. The health risk associated with TAC emissions would also be similar to the proposed project because the same level of TAC emissions would occur during construction and operations and the proximity of the site to nearby sensitive receptors would be similar.

Impact to air quality, related to construction and long-term emissions has been identified as less than significant for the proposed project. Impacts to air quality related to construction and long-term emissions of greenhouse gases have been identified as significant and unavoidable and a cumulatively considerable contribution to global climate change. The Alternative Site #3 alternative would not change that conclusion. [Similar]

5.9.3 BIOLOGICAL RESOURCES

Existing habitat conditions at alternative site #3 are similar to the dry-farmed field crop habitat in the eastern portion of the preferred site. This alternative site is not expected to support special-status wildlife that are also unlikely to occur on the proposed site, but, based on initial site reconnaissance, it may support wetland features that qualify for protection under state and/or federal regulations and provide suitable habitat for special-status plants. Therefore, use of this site could result in significant impact on resources that would not be affected by the proposed project. The agricultural fields on this alternative site likely provide suitable foraging habitat for Swainson's hawk and nesting burrowing owls, and a larger amount of suitable habitat for these species would be lost than under the proposed project. Impacts on wetlands, special-status plants, Swainson's hawk, and burrowing owl that could result from use of Alternative Site #3 could be reduced to a less-than-significant level with mitigation.

Biological resources impacts have been identified as cumulatively considerable for the proposed project. Alternative Site #2 would not change that conclusion. [Greater]

5.9.4 CULTURAL RESOURCES

The CCIC record search did not note the presence of any previously documented cultural resources within Alternative Site #3. A field reconnaissance did identify two residential complexes that appear to be in excess of 50 years in age. These complexes (two houses and associated outbuildings) must be assessed as to their potential significance before project-related removal or alteration. In addition, because of the presence of heavy crop cover at the time of the cultural resources reconnaissance, this alternative could not be adequately surveyed. An intensive survey and documentation and evaluation of the noted residential complexes must be completed before construction activities to reduce impacts to documented sites to less-than-significant levels. [Greater]

5.9.5 GEOLOGY/SOILS/PALEONTOLOGY

Alternative Site #3 is underlain by Pleistocene-age sediments of the Riverbank Formation, which is a paleontologically sensitive rock formation. Therefore, impacts related to paleontological resources would be the same as under the proposed project. Impacts related to geology and soils would be similar to those identified under the proposed project, because this site has similar seismic and soils conditions to the proposed project site. The potential for this site to contain valuable deposits of mineral resources is expected to be similar to that of the proposed project site. [Similar]

5.9.6 HAZARDS AND HAZARDOUS MATERIALS

Development of the project at Alternative Site #3 would result in similar land uses that would occur under the proposed project. However, Alternative Site #3 would be immediately south of Merced Municipal Airport. As such, this alternative could result in safety hazards related to airport operations. Therefore, this alternative would result in greater public health and hazards impacts compared to the project. [Greater]

5.9.7 HYDROLOGY AND WATER QUALITY

Development of this project alternative would result in similar land uses that would occur under the proposed project. Impacts related to hydrology and water quality under this alternative would be similar to those that would result from implementation of the proposed project. However, this alternative is located outside of the City of Merced Storm Drain Master Plan Area. Therefore a new stormwater management system design would be required, as would collaboration with the Merced Irrigation District regarding stormwater runoff discharge to their adjacent conveyances. Because it is unknown if stormwater facilities would be available to meet demands, this

alternative could potentially result in greater hydrology and water quality impacts than the proposed project. [Greater]

5.9.8 LAND USE

This alternative site is designated for industrial use. Development of the proposed project on this site would continue to conform to the existing land use designation; therefore, the impact on land use would be similar to the project. This alternative site is located south of the airport in an area of open land and agricultural uses. There is no neighborhood or any other land uses that would be considered a community, and therefore implementation of this alternative would not divide an existing community. Surrounding land use designations include Agricultural, Public Use (the airport), and Industrial. This site is also at the very edge of the Merced Planning Area. Overall, the land use impacts of this alternative would be less than anticipated for the project due to the lack of nearby residential communities. [Less]

5.9.9 NOISE

This alternative would consist of the same size facility on a differently-shaped footprint west of SR 99. Because the proximity of existing nearby sensitive receptors would be similar to the proposed project, impacts from on-site noise sources associated with construction and operation of this alternative would be similar to the proposed project. With regard to traffic noise, because this alternative would generate the same number of vehicle trips, traffic noise generated under this alternative would be similar to those that generated by the proposed project. However, because this alternative is located farther from SR 99 than the proposed project location, traffic noise increases could potentially impact more noise sensitive receptors along local roadways between the project site and highway.

Noise impact related to traffic and sensitive receptors along roadways has been identified as significant and unavoidable and cumulatively considerable for the proposed project. The Alternative Site #3 alternative would not change that conclusion. [Greater]

5.9.10 POPULATION AND HOUSING

This alternative would have the same number of jobs created and people served by the proposed project, and both projects would avoid any impacts associated with potential displacement of existing housing or people. Therefore, the proposed alternative would have similar impacts to the City's population and housing, and potential for future availability of jobs. [Similar]

5.9.11 UTILITIES AND PUBLIC SERVICES

Under this alternative, the size and extent of development would be the same as the proposed project, and utilities and public service demands would be approximately the same as the proposed project. However, Alternative Site #3 would be located in an unincorporated area of Merced County. Fire and police protection services for this alternative would be provided by the County, and water supplies would be provided by the Merced Irrigation District. Similar to the proposed project, this alternative would be required to pay its fair share of costs associated with the increased demand of fire and police services, and would include the same on-site security measures and incorporate all California Fire Code requirements as the proposed project. A water supply assessment would be required for this alternative to determine as to whether the Merced Irrigation District's projected water supplies available would meet the water demand associated with this alternative, in addition to the existing and planned future uses. Because it is unknown if water supplies would be available to meet demands, this alternative could potentially result in greater impacts on utilities than the project.

The proposed project would have cumulatively considerable impacts on wastewater treatment and disposal. The Alternative Site #3 alternative would not change that conclusion. [Greater]

5.9.12 TRANSPORTATION/TRAFFIC

Most truck trips would access the project site via the SR 99/Mission interchange. Truck trips from SR 140 West and SR 152 would be assumed to use Thornton Road and SR 59 respectively. It was assumed that auto trips from the area north of the project site would access the project site via SR 140 West, Thornton Road, Childs Avenue and SR 59.

The study intersections analyzed under the proposed project condition would not be significantly impacted by the project trips for this alternative, and many would experience less traffic as the alternative site is much further west. However, an increase in traffic volumes from the project would be expected along a different set of travel routes. Because the analysis of the proposed project did not extend this far west, the potential transportation impacts of this alternative site would need to be investigated at several additional intersections and roadway segments not previously analyzed, listed below:

Intersections

- ▶ V Street/16th Street
- ▶ Dickenson Ferry/Thornton
- ▶ Thornton/SR 140
- ▶ Dickenson Ferry-Mission/SR 59
- ▶ Childs/SR 59

Roadway Segments

- ▶ Thornton Rd between SR 140 and Dickenson Ferry Road
- ▶ SR 59 between Mission Avenue and Childs Avenue
- ▶ Childs Avenue between SR 59 and SR 99
- ▶ Mission Avenue between Thornton Road and SR 99

While a quantitative analysis has not been performed, given the distance of this alternative site to major transportation routes, it is likely that a traffic impact greater than the proposed project would occur if this site were developed with the distribution center.

The proposed project would have cumulatively considerable impacts on a number of intersections and roadway segment. The Alternative Site #3 alternative would not change that conclusion. [Greater]

5.9.13 VISUAL RESOURCES

The aesthetic impacts would be similar to those of the proposed project. The alternative site is located at the fringe of the City's urban footprint in proximity to an existing municipal airport. Both the alternative site and the proposed site would convert an open space lot into a built environment that includes an approximately 1-million-square-foot building, and similar amounts of parking spaces, and lighting. Furthermore, the location of both site's are away from the City's core development area, and in proximity to other compatible more industrial/manufacturing types of uses. Therefore, the aesthetic environment would be impacted to a similar degree.

The proposed project would have cumulatively considerable visual impacts. The Alternative Site #3 alternative would not change that conclusion. [Similar]

5.9.14 ATTAINMENT OF PROJECT OBJECTIVES

Table 5-7 below assesses this alternative relative to the project objectives. As shown, this alternative would fulfill 13 of the 16 project objectives.

**Table 5-7
Alternative Site #3 and Project Objectives**

Project Objective	Discussion	Fulfill Objective?
To develop the industrially zoned area in the City with permitted industrial uses.	Because the site is in the unincorporated County, it does not have City zoning designations.	No
To locate industrial projects in areas with good access to major highway transportation links, and provide opportunities for buffers between industrial and nonindustrial uses.	The site is not adjacent to highways, but is along major roadway corridors leading to the highways. The site is surrounded by industrial land and the airport.	Yes
To encourage development of industrial projects that will create jobs, including full-time, nonseasonal employment opportunities for local residents.	It is assumed full-time, year-round employment will be provided.	Yes
To encourage development of projects that will contribute toward improving roadways adjacent to the proposed development site.	Like the proposed project, this alternative would be evaluated relative to traffic impacts and mitigation measures to improve roadways would be required, as necessary.	Yes
To ensure that industrial areas are developed in an attractive manner.	Presumably, County requirements would address the attractiveness of the development.	Yes
To develop a project consistent with the City General Plan and zoning ordinance.	As with the proposed project, the City General Plan land use designation for this alternative site is Industrial. Warehousing uses are listed as being compatible with this designation. This site is in unincorporated Merced County and has no City zoning. In this sense, development of this project site would not be consistent with the current zoning ordinance.	No
To develop a distribution/warehouse facility near other industrial uses.	Areas in the vicinity are also designated for industrial use. The site is also adjacent to an airstrip.	Yes
To construct and operate a distribution/warehouse facility in Merced County to take advantage of the strategic location between large urban centers and smaller urban and rural markets throughout the Central Valley in California.	This alternative would involve a distribution/warehouse facility in Merced County.	Yes
To construct a distribution/warehouse facility on a site sufficiently large (a minimum of 230 acres) to allow necessary building space and parking for trucks and employees.	This alternative would involve a warehouse/distribution facility on a site of approximately 250 acres.	Yes
To construct a distribution/warehouse facility with sufficient space (approximately 1.2 million square feet) to allow operational efficiency and adequate distribution of goods to stores in a broad geographic area in California.	This alternative is assumed to develop with a warehouse/distribution facility of roughly the same amount of developed building space as proposed with the project.	Yes
To locate a distribution/warehouse facility with access to a regional roadway network including interstate, state, and regional roads.	This alternative would involve development of a warehouse/distribution facility with access to State Route (SR) 99 and other nearby transportation corridors.	Yes

**Table 5-7
Alternative Site #3 and Project Objectives**

Project Objective	Discussion	Fulfill Objective?
To locate a distribution/warehouse facility in an area well served by major local thoroughfares to minimize truck traffic traveling through residential neighborhoods.	This site is further from SR 99. Areas along Mission Avenue between this site and SR 99 are designated Residential Reserve. Areas between this site and SR 99 along Thornton Road are also designated Residential Reserve.	No
To provide sufficient parking for trucks and employees in order to minimize impacts to the surrounding area.	This alternative assumes that a similarly configured warehouse or industrial facility would be developed, given the existing land use designations and other factors. It is also assumed that a similar parking configuration could be designed, given the size of the project site.	Yes
To take advantage of an existing labor pool living in the Merced area.	This alternative would involve industrial or warehouse uses in Merced County.	Yes
Source: Data compiled by EDAW in 2007.		

5.10 SUMMARY OF COMPARATIVE EFFECTS OF THE PROJECT ALTERNATIVES

Table 5-8 summarizes the environmental analysis provided above for each of the six alternatives to the proposed project, including the No Project alternative. In each instance the alternative is compared with potential impacts of the proposed project in terms of whether the potential impact is expected to be greater, less, or similar to the proposed project.

**Table 5-8
Comparison of Environmental Impacts of Alternatives in Relation to the Proposed Project**

Issue Area	No Project Alternative	Redesigned Site Plan	Reduced Plan/ Operations	Alternative Site #1	Alternative Site #2	Alternative Site #3
Agriculture	Similar	Similar	Less	Similar	Similar	Similar
Air Quality/Greenhouse Gases	Similar/Greater	Less/Similar	Less/Less	Similar/Similar	Similar/Similar	Similar/Similar
Biological Resources	Similar	Similar	Less	Greater	Greater	Greater
Cultural Resources	Similar	Similar	Less	Similar	Similar	Greater
Geology/Soils/Paleontology	Similar	Similar	Similar	Similar	Similar	Similar
Hazards and Hazardous Materials	Similar	Similar	Similar	Similar	Similar	Greater
Hydrology and Water Quality	Similar	Similar	Less	Similar	Greater	Greater
Land Use	Similar	Less	Similar	Similar	Similar	Less
Noise	Similar	Less	Less	Similar	Similar	Greater
Population and Housing	Similar	Similar	Similar	Similar	Similar	Similar
Utilities and Public Services	Similar	Similar	Less	Similar	Greater	Greater
Transportation/Traffic	Similar	Similar	Less	Similar	Greater	Greater
Visual Resources	Similar	Similar	Less	Similar	Similar	Similar

Source: Data compiled by EDAW in 2007.

5.11 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

In addition to the discussion and comparison of impacts of the alternatives to the proposed project, CEQA requires that an “environmentally superior” alternative among the alternatives considered be selected and the reasons for such selection disclosed. In general, the environmentally superior alternative is the alternative that would generate the fewest or least severe adverse impacts.

Based on the preceding comparative analysis, and as summarized in Table 5-8, the Reduced Site Plan and Operations alternative has been identified as having fewer potential environmental effects than the proposed project and the other alternatives that were analyzed in the EIR. The Reduced Site Plan and Operations alternative would be expected to have fewer impacts on the following resources:

- ▶ agricultural resources,
- ▶ air quality,
- ▶ biological resources (special-status species),
- ▶ cultural resources,
- ▶ hydrology and water quality,
- ▶ noise,
- ▶ utilities and public services,
- ▶ transportation and traffic, and
- ▶ visual resources.

In addition to being the environmentally superior alternative, the Reduced Site Plan and Operations alternative would meet all of the project objectives identified by the City and project proponent, except the following:

To construct a distribution/warehouse facility with sufficient space (approximately 1.2 million square feet) to allow operational efficiency and adequate distribution of goods to stores in a broad geographic area in California.

While the Reduced Site Plan and Operations alternative would meet the objectives related to siting the project (i.e., locating the facility in an industrially zoned area with access to major local and regional roadways), with 825,000 square feet of floor area it would not meet the size component of the objective which has identified by the project proponent.

The Redesigned Site Plan Alternative shares many of the same environmental impacts with the proposed project, with reductions to a few of the project impacts, and the alternative meets all of the project objectives.

6 CUMULATIVE AND GROWTH-INDUCING IMPACTS

A cumulative impact is created when two or more projects act in combination to cause related impacts that are greater than the subject project alone. Growth-inducing impacts are those impacts of the project that would remove obstacles to growth or otherwise promote growth. The focus of this section is an analysis of the cumulative and growth-inducing impacts associated with the proposed project.

6.1 CUMULATIVE IMPACTS

Section 15130 of the California Environmental Quality Act (CEQA) Guidelines requires that an environmental impact report (EIR) discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable. According to State CEQA Guidelines Section 15065, "Cumulatively considerable means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects as defined in Section 15130." Sections 15130 and 15355 of the State CEQA Guidelines both stress cumulative impacts in the context of closely related projects and from projects causing related impacts.

The term "considerable" is subject to interpretation. The standards used herein to determine whether an effect is "considerable" are that either the impact of the proposed project would contribute to the existing significant cumulative impact, or the cumulative impact would exceed an established threshold of significance when the proposed project's incremental effects are combined with similar effects from other projects.

The State CEQA Guidelines also state that the cumulative impacts discussion does not need to provide as much detail as is provided in the analysis of project-only impacts and should be guided by the standards of practicality and reasonableness.

In addition, Section 15130(b) of the State CEQA Guidelines identifies that one of the following two may be used to complete an adequate cumulative analysis:

- ▶ A list of past, present, and reasonably anticipated future projects producing related or cumulative impacts, including those projects outside the control of the lead agency (i.e., the list approach), or
- ▶ A summary of projections contained in an adopted General Plan or related planning document designed to evaluate regional or area-wide conditions. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency (i.e., the plan approach).

This EIR uses the list approach, with related past, present, and reasonably foreseeable future projects identified by the City of Merced (City) for use in cumulative analysis, as described in the balance of this section.

6.1.1 PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE PROJECTS

This EIR uses the list method for its cumulative impact analysis. As directed in Section 15130(b)(1)(a) of the State CEQA Guidelines, the EIR must consider "past, present, and probable future projects producing related or cumulative impacts." The environmental influences of past projects and present projects that have been implemented already exist as a part of current conditions in the project area. Therefore, the contributions of past and present projects to environmental conditions are adequately captured in the description of the existing setting and need not be specifically listed here. This cumulative impact analysis focuses on the potential cumulative physical changes to the existing setting that could occur as a result of a combination of the proposed project and probable future projects, which are referred to as "related projects."

The cumulative impact analysis presented in this document is based on an examination of existing urban development in southeast Merced, near the proposed project, and a summary of anticipated projects identified by

City staff. The summary of projects presented in Tables 6-1 include a variety of land uses in various states of development; some are in the review process, others have been approved but have not started construction, while others are under construction or nearing completion. Each is expected to be operational by the time the proposed project is operational. These were the projects that, in staff's opinion, should be considered in the cumulative impact analysis of the Wal-Mart Distribution Center. Exhibit 6-1 shows the locations of these projects, keyed to numbers in the table.

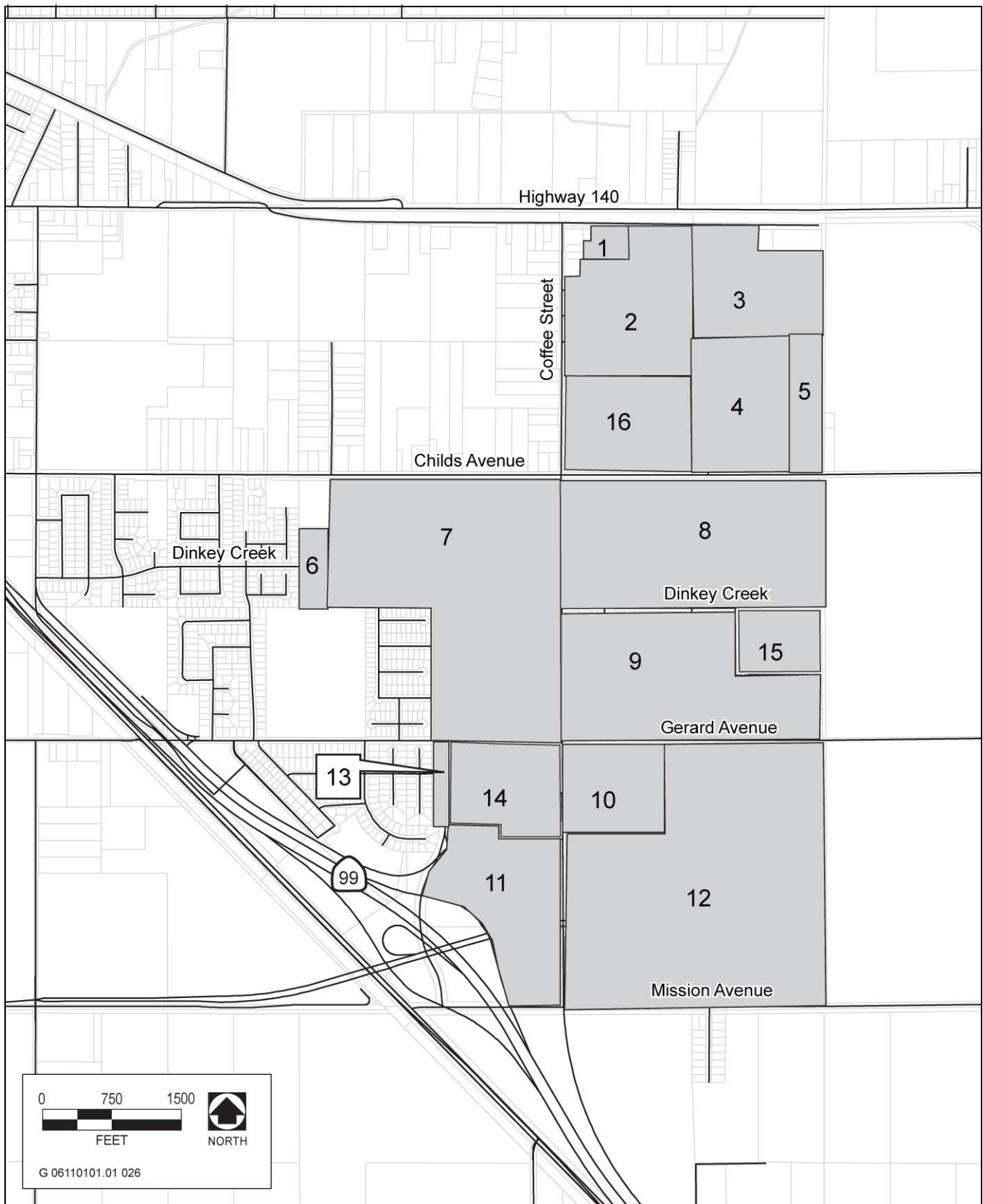
Table 6-1 Residential, Commercial, and School Projects in Southeast Merced						
# on Map	Development Name	Acres	Approval Date	Retail Sq. Ft.	CUP Approval	# of Lots
1	Makinson	3.3	5/17/2006	—	—	18
2	Sierra Vista Subdivision	40	10/6/2004	—	—	224
3	Rennissance II	26.42	3/23/2005	—	—	158
4	Rennissance I	32	12/17/2003	—	—	166
5	Tuscany East	8.6	2/23/2005	—	—	47
6	Hartley Crossings	5.7	2/23/2005	—	—	28
7	Coffee Street Annexation	107	Not approved	—	—	240
8	Crossings at River Oaks	66.76	12/8/2004	5-acre C-N site	Is required	280
9	Sandcastle	78.47	4/23/2003	—	—	334
10	Matthew Homes Condos	16.8	10/4/2006	—	10/4/2006	296
11	Steiner Commercial Project (below)	27.3	6/18/2001	243,624	Is required	—
12	Merced Gateway Park (below)	160	Proposed	1.4 million	Is required	—
13	Alfarata Ranch #2	2.4	4/21/2004	—	—	12
14	Pioneer School and Park	—	—	—	—	—
15	Elementary School and Basin	—	—	—	—	—
16	Weaver School/Existing Homes	—	—	—	—	—

Source: City of Merced

This analysis assumes development of the projects summarized above in addition to the existing developed areas in the Merced Planning Area. Although the schedule for developing these projects is not known, it is assumed that buildout would coincide with or would occur prior to project buildout, and therefore be a part of the cumulative scenario examined here.

6.1.2 CUMULATIVE IMPACTS OF THE PROPOSED PROJECT

In the impact analysis that follows, the analysis for certain environmental topics is more detailed, or quantified, with regard to the cumulative scenario. Topics such as traffic and circulation involve measurement of vehicle trips, which can effect measurements of air and noise emissions. Other topics are addressed in a more qualitative manner, since exact numbers are not available to measure potential cumulative impacts. The following are descriptions of the project's potential cumulative impacts, by environmental topic.



Cumulative Projects

Exhibit 6-1

AGRICULTURAL RESOURCES

CUMULATIVE IMPACT Cumulative Agricultural Land Impact. *The project would contribute to cumulative loss of farmland in the region. This is a cumulatively considerable incremental contribution, and the cumulative impact is therefore considered significant.*

According to Department of Conservation (DOC), 565 acres of Prime Farmland, 177 acres of Farmland of Statewide Importance, 55 acres of Unique Farmland, and 231 acres of Farmland of Local Importance were converted to urban and built-up land between 2000 and 2002 in Merced County. As of 2004, there were 535,562 acres of Farmland in the County. In the period between 2000 and 2004, 7,149 acres of Prime Farmland and 3,345 acres of Farmland of Statewide Importance were lost, and 71 acres of Unique Farmland was gained for a net loss of 10,423 acres over this four-year period. The continued loss of high-quality farmland in the City and surrounding areas of Merced County is a significant cumulative impact.

The project would result in a loss of approximately 158.2 acres of Prime Farmland, 57.87 acres of Farmland of Statewide Importance, and 12.61 acres of Unique Farmland, which is considered a cumulatively considerable contribution to this cumulative impact when considered along with past farmland conversions identified above and planned future development proposed in the City of Merced, as shown in the list at the beginning of this section. The City has adopted a Statement of Overriding Considerations for conversion of agricultural land throughout the City's Specific Urban Development Plan (SUDP). Regardless, the impact represents a cumulatively considerable incremental contribution and is **significant** cumulative impact.

AIR QUALITY

CUMULATIVE IMPACT Cumulative Air Quality Impact (Construction and Operations). *The project would not contribute to cumulative degradation of air quality in the region as a result of construction (short term) and operational (long term) air emissions. This would not be a cumulatively considerable incremental contribution, and the project's cumulative impact would be less than significant.*

Project implementation would result in significant air quality impacts from short-term, construction-related, and long-term operation-related (regional) emissions of reactive organic gases (ROG), oxides of nitrogen (NO_x), respirable particulate matter (PM₁₀), and fine particulate matter (PM_{2.5}). However, implementation of Mitigation Measures 4.2-1a, 4.2-1b, 4.2-1c, 4.2-1d, 4.2-1e, 4.2-2a, 4.2-2b, 4.2-2c, and 4.2-2d would reduce these project-level impacts to less than significant. Ozone impacts are the result of the cumulative emissions from numerous sources in the region and transport from outside the region. Ozone is formed in chemical reactions involving ROG, NO_x, and sunlight. All but the largest individual sources emit ROG and NO_x in amounts too small to have a measurable effect on ambient ozone concentrations by themselves. However, when all sources throughout the region are combined, they result in severe ozone problems. For the evaluation of cumulative ozone impacts SJVAPCD recommends that lead agencies use the project-level significance standards to determine whether a project's construction or operational emissions of ROG and NO_x would not have a cumulatively considerable contribution to a significant cumulative impact (SJVAPCD 2002). The project-level impact of ROG and NO_x emissions associated with construction and operation of the project would not be cumulatively considerable with mitigation.

PM₁₀ has a similar cumulative regional emphasis when particulates are entrained into the atmosphere and build to unhealthful levels over time. PM₁₀, however, has the potential to cause significant local problems during periods of dry conditions accompanied by high winds, and during periods of heavy earth disturbing activities. PM₁₀ may have cumulative local impacts, if for example, several unrelated grading or earth moving projects are underway simultaneously at nearby sites. For cumulative analysis, SJVAPCD recommends that lead agencies examine the potential PM₁₀ exposure to sensitive receptors near the project site from earth disturbing activities from the proposed project and any construction of nearby projects that may occur at the same time. For the sake of this analysis, it is not anticipated that other earth movement activities associated with other nearby projects would

occur at the same time as grading and earth movement for the proposed project. Furthermore, the project-level impact would be less than significant with mitigation with respect to PM₁₀ emissions. As a result, PM₁₀ emissions from proposed project would not be cumulatively considerable. Therefore, with mitigation, emissions of ROG and NO_x and PM₁₀ associated with construction and operation of the project be a ***less-than-significant*** cumulative impact.

CUMULATIVE IMPACT Cumulative Air Quality Impact (Carbon Monoxide). *Traffic associated with project operations would not exceed standards for carbon monoxide concentrations at nearby intersections. This would not be a cumulatively considerable incremental contribution, and the project's cumulative impact would be less than significant.*

As described in Section 4.2, “Air Quality,” implementation of the proposed project would result in less-than-significant air quality impacts related to carbon monoxide (CO) from local mobile sources. According to the traffic analysis prepared for this project, signalized intersections in the vicinity of the project site under existing plus project conditions would be anticipated to operate at level of service (LOS) D or better with implementation of the recommended traffic improvements (DKS 2008). Under cumulative plus project conditions, in the year 2030, two signalized intersections would be anticipated to operate at LOS E or F, as shown in Table 6-3 (DKS 2008). These LOS ratings would result from traffic generated by other future development in the area, including those reasonably anticipated future projects listed in the cumulative projects list shown in Table 6-1. First, the signalized intersection of SR 140 and Parsons Avenue would operate at LOS F and the signalized intersection of Childs Avenue and Parsons Avenue would operate at LOS E with or without implementation of the proposed project. The future concentrations of CO at these intersections are not anticipated to exceed the 1-hour ambient air quality standard of 20 ppm or the 8-hour standard of 9 ppm because regulatory controls and anticipated technological improvements are anticipated to continue current trends of reductions in CO emissions from mobile sources. Moreover, because the delay at these two intersections would not be substantially worsened by the project-generated traffic. In the year 2030, project-generated traffic at the intersection of SR 140 and Parson Avenue would increase from 89.8 to 93.1 seconds and project-generated traffic at the intersection of Childs Avenue and Parson Avenue would increase from 66.0 to 66.4 seconds, as shown by Tables 6-3 and 6-6 (DKS 2008). Therefore, the contribution by project generated traffic to the poor LOS at these intersections is not cumulatively considerable. Consequently, the project’s contribution to CO concentrations at future congested intersections is not cumulatively considerable, and the impact is ***less than significant***.

CUMULATIVE IMPACT Cumulative Air Quality Impact (Toxic Air Emissions). *Project operations would not result in the release of toxic air emissions that constitute a public health risk at existing or potential future sensitive receptors, based on SJVAPCD's thresholds. This would not be a cumulatively considerable incremental contribution, and the project's cumulative impact would be less than significant.*

The health risk assessment (HRA) performed to analyze the levels of health risk associated with operation toxic air contaminants (TAC) emissions determined that the maximum increase in cancer risk at a nearby sensitive receptor would be 7.3 in 1 million and the maximum increase noncancer chronic risk level would be an HI of 0.0086. Respectively, these levels of increased risk do not exceed SJVAPCD’s threshold of 10 in 1 million for increased cancer risk (or an HI) of 1 for increased noncarcinogenic chronic risk. In addition to estimating the increased health risk at nearby existing receptors, the HRA also accounted for the increased health risk at future planned receptors that could potentially be approved by the City, developed, and then exposed to TAC emissions from project operations (as shown in Figure 2 on page 13 of the HRA in Appendix C). Based on an analysis of potential sources of toxic air emissions in the area, the project’s contribution to health risk at existing and potential future (cumulative) nearby sensitive receptors is not cumulatively considerable and therefore the impact is ***less than significant***.

CUMULATIVE IMPACT Cumulative Air Quality Impact (Greenhouse Gas Emissions). *Project construction and operations would result in release of carbon dioxide and other greenhouse gases. Even with mitigation measures, the project would result in a net increase of greenhouse gasses and conflict with California's Assembly Bill (AB) 32 goals. This would potentially be a cumulatively considerable incremental contribution, and the cumulative impact would be therefore considered significant.*

Project implementation would also result in significant air quality impacts with respect to global climate change from both construction- and operation-related emissions of carbon dioxide (CO₂) and other greenhouse gases. Implementation of Mitigation Measures 4.2-6a, 4.2-6b, 4.2-6c, and 4.2-6d would lessen these impacts by requiring specific measures to reduce and/or offset CO₂ emissions. In addition, implementation of Mitigation Measures 4.2-1a and 4.2-2a, which require the project to comply with SJVAPCD's Indirect Source Review (ISR) rule, and Mitigation Measures 4.2-1c and 4.2-2e, which require implementation of an emissions reduction agreement with SJVAPCD, would also result in a reduction in operational CO₂ emissions. However, the extent of the reduction is not quantifiable at the time of writing of this EIR and the resultant contribution of CO₂ emissions by the project may potentially be substantial. Despite mitigation this net increase may potentially conflict with the state's AB 32 goal to reduce statewide GHG emissions to 1990 levels by 2020. Moreover, CO₂ emissions attributable to the project would contribute to the existing and projected global warming trend. Thus, the project's contribution to the significant impact of global climate change would be considered cumulatively considerable, and the project would result in a **significant** cumulative impact.

BIOLOGICAL RESOURCES

CUMULATIVE IMPACT Cumulative Biological Resources Impact (Special Status Species Foraging Habitat). *Project construction would result in the conversion of foraging habitat that supports Swainson's hawk and burrowing owl. However, because of proposed mitigation, the project's contribution to habitat loss would be mitigated to a less-than-significant level. However, there is a cumulatively considerable incremental contribution, and the project would result in a significant cumulative impact.*

Implementation of the proposed project would result in loss of approximately 150 acres of suitable foraging habitat for Swainson's hawk and could result in destruction and/or disturbance of occupied burrowing owl burrows. These special-status species are very susceptible to impacts as a result of land development activities occurring throughout the San Joaquin Valley. While it is possible to minimize impacts through avoidance and to preserve compensation habitat, a net loss nevertheless results from the impact. Mitigation included in Section 4.3, "Biological Resources," would be implemented to address potential direct effects on these resources. Preservation and management of Swainson's hawk foraging habitat at an off site location, and surveys and other avoidance measures for burrowing owl as described in Mitigation Measure 4.3-2 would reduce potential impacts to Swainson's hawk and burrowing owl to a **less-than-significant** level.

Implementation of the proposed project, with mitigation measures, would have less-than-significant impacts on sensitive habitats, federally protected wetlands, wildlife corridors, special-status plant species, and special-status wildlife species. However, although the project would preserve off-site habitat, the project's conversion of habitat, considered alongside the conversion of habitat associated with future development that will occur throughout the range of these raptors, would result in wide-spread loss of habitat, despite the preservation of habitat required by many of these projects. Therefore, the project would have a cumulatively considerable effect related to these resources, and the cumulative impact is considered **significant**.

CULTURAL RESOURCES

CUMULATIVE IMPACT Cumulative Cultural Resources Impact. *As a result of research conducted and mitigation measures proposed, project construction would not contribute to the cumulative loss of cultural resources in the region. This is not a cumulatively considerable incremental contribution, and the project's cumulative impact is less than significant.*

Cultural resources in the project area vicinity and the surrounding region include evidence of early Native American occupation and historic-era agricultural and ranching activities. Particularly from the latter half of the 20th century to the present, historic buildings and structures and Native American sites have been disturbed and destroyed by development activities. During this period, the creation and enforcement of various regulations, such as CEQA protecting cultural resources, have substantially reduced the rate and intensity of these impacts; however, even with these regulations, cultural resources are still degraded or destroyed as cumulative development in the region proceeds.

Research conducted for the proposed project indicates that as-yet undiscovered cultural resources might be present in the project area. The cultural resources mitigation measures proposed would reduce impacts on prehistoric and historic-era resources and human interments to less-than-significant levels. Implementing these mitigation measures also would ensure that project-related activities would not incrementally contribute to any significant cumulative impacts on important cultural resources in the project area. These measures ensure compliance with State CEQA Guidelines California Code of Regulations Section 15064.5 and related provisions of the PRC. Consequently, the proposed project would not incrementally contribute to a significant cumulative effect on cultural resources. The project's impact is ***less than significant***.

GEOLOGY, SOILS, AND PALEONTOLOGY

Geology and Soils

CUMULATIVE IMPACT Cumulative Geology and Soils Impact. *Project construction would be subject to adopted construction standards, thus ensuring that impacts associated with soils and geology would not occur. This is a less-than-significant cumulative impact.*

The project site is not located on any known faults or traces of active faults. The nearest active/potentially active seismic sources are approximately 30 miles west of the project site. Construction of the proposed project would conform to the current California Building Standards Code, which contains specifications to minimize adverse effects on structures caused by ground shaking from earthquakes and to minimize secondary seismic hazards. Through conformance with the California Building Standards Code and implementation of site-specific engineering measures developed in compliance with this code, development of the proposed project would not result in exposure of people or structures to substantial adverse effects related to seismic hazards.

The project site is subject to high shrink-swell potential, and contains areas that could present hazards related to liquefaction and subsidence. Implementation of mitigation measures contained in Chapter 4.5, "Geology, Minerals, Soils, and Paleontological Resources," would reduce these impacts to less-than-significant levels through completion of site-specific geotechnical studies and implementation of construction and design measures developed in response to the studies.

Implementation of the various related projects and other projects in the region could expose additional structures and people to seismic and soils hazards. The potential seismic and soils hazards, therefore, could represent a significant cumulative impact if projects are not developed to the latest building standards and do not incorporate recommendations from site-specific geotechnical reports and grading/erosion plans prepared for these projects. However, each project considered in this cumulative analysis must individually meet building code requirements, and no additive effect would result from the combination of the related projects considered in this cumulative

analysis and the proposed project. Therefore, no significant cumulative impact related to seismic or soil hazards would occur. Implementation of the proposed project would not result in any cumulatively considerable incremental contributions to any significant cumulative impacts. The impact is ***less than significant***.

Paleontological Resources

CUMULATIVE IMPACT Cumulative Paleontological Resources Impact. *As a result of research conducted and the anticipated low occurrence, project construction would not contribute to the cumulative loss of paleontological resources in the region. This is not a cumulatively considerable incremental contribution, and the project's cumulative impact is less than significant.*

Most of the project site is underlain by younger Pleistocene-age sediments of the Modesto Formation, which is considered a paleontologically sensitive rock unit under the Society of Vertebrate Paleontology guidelines. The fact that vertebrate fossils have been recovered near the project site and other recorded vertebrate fossil localities have been recorded throughout the San Joaquin Valley, and that all have been in sediments referable to the Modesto Formation, suggests that there is a potential for uncovering additional similar fossil remains during construction-related earthmoving activities at the project site. Mitigation measures are contained in Chapter 4.5, “Geology, Minerals, Soils, and Paleontological Resources,” to reduce impacts on previously undiscovered paleontological resources to less-than-significant levels.

Fossil discoveries resulting from excavation and earth-moving activities associated with development are occurring with increasing frequency throughout the state. However, unique, scientifically-important fossil discoveries are relatively rare, and the likelihood of encountering them is based on the type of specific rock formations found underground. These rock formations vary from location to location. Furthermore, when unique, scientifically-important fossils are encountered by construction activities, the subsequent opportunities for data collection and study generally provide a benefit to the scientific community. Therefore, because of the low probability that any project would encounter unique, scientifically-important fossils, and the benefits that would occur from recovery and further study of those fossils if encountered, development of the related projects and other development in the region are not considered to result in a significant cumulative impact on paleontological resources. The impact is ***less than significant***.

HAZARDS AND HAZARDOUS MATERIALS

CUMULATIVE IMPACT Cumulative Hazards and Hazardous Materials Impact. *Existing laws addressing storage, transport, and disposal of hazardous materials that may be stored and used at the project site are subject to existing regulations. This is not a cumulatively considerable incremental contribution, and the project's cumulative impact is less than significant.*

The proposed project and related projects would all involve the storage, use, disposal, and transport of hazardous materials to varying degrees during construction and operation. Existing laws and regulations address the storage, use, disposal, and transport of hazardous materials. The cumulative impact is ***less than significant***.

Impacts related to these activities for the project are not cumulatively considerable since routine application of federal, state, and local laws and regulations will address storage, use, disposal, and transport of hazardous materials to protect public and environmental health.

HYDROLOGY AND WATER QUALITY

CUMULATIVE IMPACT Cumulative Hydrology and Water Quality Impact. *Existing laws address water resources at the project site, and construction and operation of the proposed project would be subject to existing regulations. This is not a cumulatively considerable incremental contribution, and the project's cumulative impact is less than significant.*

As described in Section 4.6, “Hydrology and Water Quality,” the proposed project would, after implementation of mitigation measures, result in less than significant impacts associated with degradation or depletion of ground or surface water quality; depletion of ground water resources; reduction of water quantity through groundwater recharge interference or demand in excess of available supplies; and creation of flooding or other water related hazards. In terms of hydrologic and water quality cumulative impacts, the City of Merced General Plan (City General Plan) has designated the proposed Project site for “Industrial” land use, and to that end has approved the Storm Drain Master Plan, which sets required drainage infrastructure recommendations for the proposed Project site. These recommendations, designed to accommodate stormwater runoff under buildout conditions per the *City of Merced Vision 2015 General Plan*, would be incorporated in the proposed project infrastructure. Because these standards would also apply to any related project, and because the water requirements for the proposed project would be less than the existing agricultural requirements, hydrology and water quality impacts are **less than significant**.

LAND USE

CUMULATIVE IMPACT Cumulative Land Use Impact. *The proposed project is consistent with local land use regulations and would not result in an incremental contribution to potential division of an established community or adverse affects on adjacent land uses. The project's cumulative impact is less than significant.*

Planned projects in the City are consistent with environmental plans and policies, to the extent that proposed land uses have been identified. The impact is not cumulatively considerable.

As described in Section 4.7, “Land Use,” of this document, implementing the proposed project would not physically divide a community. It therefore also would not contribute to a cumulative impact regarding this issue.

Development of the project would change the site from rural, undeveloped land to urban land uses. The project is located at the outer fringe area of existing development. The site currently contains agricultural uses, with adjacent agricultural land uses; however, the site is adjacent to existing industrial uses to the north. The project site is located within a larger area in Southeast Merced that is designated for industrial development. As such, development of the proposed distribution center would not act in conjunction with development of the surrounding lands to physically divide the community. There is no cumulative impact.

Impacts involving land use plans or policies and zoning generally would not combine to result in cumulative impacts. The determination of significance for impacts related to these issues, as considered in Appendix G of the State CEQA Guidelines, is whether a project would conflict with any applicable land use plan or policy adopted for the purpose of reducing or avoiding environmental impacts. Such a conflict is site-specific; it is addressed on a project-by-project basis. As described in Section 4.7 of this EIR, implementing the proposed project is consistent with the existing land use designation and zoning, and local land use plans, and policies.

The project’s impact is **less than significant**.

NOISE

CUMULATIVE IMPACT Cumulative Noise Impact. *Transportation source noise would extend beyond the project site along existing and future approved offsite roads. Project traffic can cause significant traffic noise impacts to sensitive uses along these roadways. This is a cumulatively considerable incremental contribution, and the project's cumulative impact would be significant.*

Because the City has not developed a noise ordinance (Espinosa, pers. comm. 2006), the City has elected to adopt the time-of-day exemption established by the Merced County Noise Ordinance for construction noise. Construction activities occurring during the daytime hours are exempt from the noise limits set forth in the Merced County Noise Ordinance (Merced County Code [Code 18.41.070]). Under the terms of the County Code, in order to qualify for this exemption, construction equipment must be fitted with factory installed muffling devices and maintained in good working order, and staging areas must be set back away from off-site sensitive receptors as much as possible.

For the proposed project, it was determined that adherence to the existing County noise regulations would be sufficient to avoid significant construction noise impacts. While the construction noise sources associated with the proposed project could be considered exempt if limited to the daytime, there is no guarantee that other noise in the area would be created only during the exempt daytime hours. Therefore, significant cumulative noise impacts associated with construction activities could occur. However, noise levels are not directly additive and attenuate rapidly with distance. Thus, if construction of nearby projects occurs simultaneously, these projects would likely not result in cumulative impacts unless sites are being developed in close proximity to one another and expose sensitive receptors to significant noise levels at the same time. Because the proposed project would not result in significant construction noise impacts after mitigation, it would not contribute to any such significant cumulative noise impacts.

Stationary noise associated with the proposed project would not result in exceedence of the City's general plan policies or Merced County's (County's) noise regulations at off-site sensitive receptors. While the noise from any stationary noise sources associated with the proposed project could be controlled at the source (via noise walls, enclosures, site planning), there is no guarantee that all other projects in the area would include such noise controls. Hence, significant cumulative noise impacts associated with stationary noise sources could occur. However, because the proposed project would not result in significant stationary noise impacts, it would result in a small contribution to any significant cumulative noise impacts.

While construction- and stationary-source noise can be controlled onsite at the point of origin, transportation-source noise may extend beyond a project site along existing and future approved offsite roads. Project traffic can cause significant traffic noise impacts to sensitive uses along these roadways. As described in Section 4.8, "Noise," implementation of the proposed project would result in significant and unavoidable long-term traffic-generated noise impacts under baseline plus project conditions at residences along the segment of Tower Road between State Route (SR) 140 and Childs Avenue, the segment of Tower Road between Childs Avenue and Gerard Avenue, and the segment of Gerard Avenue between Campus Parkway and the project site entrances. In addition, truck trips generated by the proposed project would result in significant and unavoidable single-event noise level (SENL) impacts at residential land uses located near affected road segments.

As explained in the traffic noise analysis of Section 4.8, traffic noise increases would result in significant and unavoidable impacts at the project level at residential receptors along some area roads, including the farm house located along the south side of the segment of Gerard Avenue between Campus Parkway and the project site entrances. Under cumulative conditions, project-generated traffic would cause the traffic noise level to increase 12.4 dBA along this road segment. A 14.7 dBA traffic noise level increase would occur along the segment of Gerard Avenue between the project site entrances and Tower Road; however, no sensitive receptors are located along this road segment.

The combined cumulative increase in traffic on local roadways anticipated from the proposed project and regional growth would result in a substantial number of additional existing and proposed sensitive receptors. Thus, the traffic noise impacts from the proposed project and related projects, taken together, are considered cumulatively significant.

Future development in the project area may generate additional traffic volume, including truck trips that pass by sensitive receptors, thereby increasing traffic noise, as shown in Table 4.8-10, and the frequency of exposure to SENLs. While some of the future planning projects in the area may result in removal and/or redevelopment of some existing affected receptors, and thereby serve as an opportunity to provide design features that reduce exposure to traffic noise and SENLs, there is no guarantee that these design features would be sufficient.

Because it is considered infeasible to sufficiently reduce noise at every existing and proposed sensitive receptor that would be affected, the project's cumulative contribution to exposure of sensitive receptors to traffic noise would remain cumulatively considerable and the impact would remain **significant**.

Groundborne vibration generated by the project would not result in exceedence of vibration level standards from the California Department of Transportation (Caltrans) or Federal Transit Administration at off-site sensitive receptors. While the sources of groundborne vibration from any on-site stationary noise sources associated with the project operation or construction, or associated truck trips on area roads, would be set back far enough from off-site sensitive receptors, there is no guarantee that all other projects in the area would include such set back distances as part of their proposals. Hence, significant cumulative noise impacts associated with sources of groundborne vibration could occur. However, because the proposed project would not result in significant groundborne vibration impacts, it would not contribute to any such significant cumulative noise impacts.

POPULATION AND HOUSING

CUMULATIVE IMPACT Cumulative Population and Housing Impact. *The project is consistent with existing local land use policies and regulations and would not result in a cumulatively considerable incremental contribution. The cumulative impact is therefore less than significant.*

Past, present, and probable future projects within the City, as described at the beginning of this section, are the basis for this cumulative analysis. These development projects would result in generation of approximately 1,336 dwelling units. Please refer to information presented under the heading "Past, Present, and Reasonably Foreseeable Future Projects."

The project would provide jobs in an area with relatively high unemployment. As of May 2006, the County had nearly double the unemployment rate of California as a whole (4.6% vs. 8.9%), and the number of families and individuals below the poverty level is higher in the City than in the County, on a 10-year average in 1989 and again in 1999. According to the California Employment Development Department, the County currently experiences a 10.9% unemployment rate, which is the fourth highest in California.

The proposed project would provide an estimated 1,200 jobs, which would primarily not require advanced degrees or specialized training. Due to the high unemployment rate and the level of education and training necessary, it is likely that the proposed project would employ mostly existing residents from the region.

The City's General Plan states that economic development and urban expansion is a City goal, and available commercial and industrial uses are currently limited in the City. The project's conformance with the existing land use designation and zoning would further ensure that the project would not cumulatively impact population and housing in Merced.

In the cumulative scenario, there is no potentially significant population and housing related cumulative impact. According to Appendix G of the CEQA Guidelines, a project could induce population growth in an area either directly (for example, by creating a demand for new homes and businesses) or indirectly (for example, through

extension of public infrastructure). In the case of the proposed distribution center, neither direct nor indirect population and housing growth is likely to result from the project because the project would employ mostly existing residents, thereby not increasing demand for new housing, and the project would not extend infrastructure sized to accommodate additional development in currently undeveloped areas. The project's contribution to any such cumulative effects is not cumulatively considerable and the project's cumulative impact is ***less than significant***.

UTILITIES AND PUBLIC SERVICES

As indicated in Section 4.12, "Utilities and Public Services," the proposed project would result in less-than-significant impacts associated with increased demands for water supply, wastewater conveyance and treatment, solid waste disposal, electricity and natural gas, fire protection services, police protection services, and school facilities and services.

In terms of cumulative impacts, the City and the appropriate service providers are responsible for ensuring adequate provision of utilities and public services within their jurisdictional boundaries. The City General Plan identifies goals and policies associated with providing water, wastewater, solid waste, electricity, natural gas, fire services, police services, and school facilities and services to new development, including many of the related projects identified in this chapter.

Utilities—Water

CUMULATIVE IMPACT Cumulative Water Supply Impact. *Based on a water supply assessment prepared for the proposed project, there are sufficient water resources to support the proposed project. . This is not a cumulatively considerable incremental contribution, and the project's cumulative impact is less than significant.*

The City's 2005 Urban Water Management Plan (UWMP) projects future potable water demands to ensure that the future needs of residents and businesses in the SUDP are planned for and adequately addressed.

The City's total projected water supplies available during normal, single dry and multiple dry water years during a 20-year projection will meet the projected water demand associated with the project in addition to existing and planned future uses. As shown in Table 4.12-2 in this DEIR, buildout of the City would result in a water supply demand of 55,677 acre-feet per year (afy), and a sufficient water supply would be available to meet this demand under normal, single dry and multiple dry water years. Based upon the analysis undertaken by the City in its UWMP, and the groundwater management and planning efforts being undertaken by the City and MID, City has concluded that it can continue to provide potable water to future development included in the SUDP, including the project. Therefore, the proposed project and related projects would not result in cumulative impacts related to water supply. The impact is ***less than significant***.

As shown in Table 4.12-3 of this DEIR, the total domestic water demand for the proposed project is estimated to be 55,000 gallons per day (gpd) (61.6 acre-feet per year [afy]). It should be noted that the project facility would have two 300,000-gallon ground-level water storage tanks (0.9 afy) with a total water demand of 600,000 gallons (1.8 afy). Because it is not possible to predict when, if ever, these water tanks would be needed for fire protection, it is assumed that the amount of water necessary to fill the tanks is an annual water demand. A WSA has been prepared for the proposed project consistent with Water Code Section 10912 (Appendix F). This assessment includes a determination as to whether the projected water supplies available would meet the water demand associated with the proposed project, in addition to the existing and planned future uses. The projected water demand associated with industrial land use for the project site was accounted for in the most recently adopted UWMP. According to the water supply assessment, future water supplies would be adequate to meet water demands of the project and impacts on increased water demand would not be cumulatively considerable, and the project's cumulative impact is ***less than significant***.

Utilities—Wastewater

CUMULATIVE IMPACT Cumulative Wastewater Impact. *The approved WWTP expansion would accommodate wastewater demand of the project and related projects. Therefore the project's increase in demand is not a cumulatively considerable incremental contribution, and the project's cumulative impact is less than significant.*

Wastewater from the project site would be conveyed to the Merced Wastewater Treatment Plant (WWTP). As described in Section 4.12, "Utilities and Public Services," the proposed project is estimated to generate a 49,500 gpd (0.049 million gallons per day [mgd]) of wastewater. The wastewater treatment plant is currently operating at an average dry weather flow of 7.8 mgd, or 78% of the plant's permitted average dry-weather flow capacity of 10 mgd. The plant's current wet-weather flow is 8.15 mgd.

The City is planning to increase wastewater treatment capacity and improve treated effluent quality of the existing City of Merced WWTP facility, and the City has evaluated the environmental impacts of the expansion and improvement to the WWTP in the certified *City of Merced Wastewater Treatment Plant Expansion Project, Final Environmental Impact Report* (City of Merced 2006a). Expansion of the WWTP will accommodate planned wastewater loads generated within its SUDP area, including the project site, and will comply with current and anticipated effluent quality regulatory limits. The WWTP project would initially increase the capacity of the WWTP from the currently permitted 10 mgd to 11.5 mgd, and this initial upgrade is scheduled to begin immediately after certification of the final EIR. Following this initial upgrade a series of improvements would be made to the WWTP enabling the capacity of the treatment system to be rated at 12 mgd by 2012 by adding a series of tertiary-treatment facility improvements. The WWTP would reach a capacity of 16 mgd between 2017 and 2025 with additional improvements as needed to meet future wastewater loads with ultimate capacity eventually reaching 20 mgd.

In addition, it should be noted that the wastewater generated by a distribution center is far less than that generated by other industrial types of uses (such as food processing facilities). The wastewater demand assumed for this site in determining the regional wastewater demand for the WWTP expansion is therefore higher than what the distribution center would actually generate.

Because the WWTP expansion will appropriately accommodate the project's wastewater demand (which is less than assumed for the site), as well as the demand of other future projects in the region, the impact is ***less than significant***.

Utilities—Electricity

CUMULATIVE IMPACT Cumulative Electrical Impact. *Because sufficient electricity supplies are available to support cumulative development and cumulative electricity impacts from the proposed project and related projects, the cumulative impact of the project would not result in a cumulatively considerable incremental contribution, and the project's cumulative impact would be less than significant.*

Pacific Gas and Electric Company (PG&E) and Merced Irrigation District (MID) facilities are located in the project area, and either utility provider could provide electrical service to the project site, and cumulative development would also increase the amount of demand for electrical supply. PG&E or MID would be able to provide electricity to the project site, and the increase in demand for electricity would not be substantial in relation to the existing electricity consumption in PG&E's or MID's service area. Therefore, sufficient electricity supplies are available to support cumulative development and cumulative electricity impacts from the proposed project and related projects. In addition, because future development would be required to comply with all existing City, PG&E or MID, and California Public Utilities Commission requirements, and applicable California Building Standard Code requirements, it is anticipated that electrical service and infrastructure would be available.

The project would therefore not result in a cumulatively considerable incremental contribution, and the impact is ***less than significant***.

Utilities—Natural Gas

CUMULATIVE IMPACT Cumulative Natural Gas Impact. *Sufficient natural gas supplies are available to support cumulative development and cumulative natural gas demands from the proposed project and related projects. . This is not a cumulatively considerable incremental contribution, and the project's cumulative impact is less than significant.*

PG&E is the natural gas supplier for the City. The energy demands that would be created by the project would not be considered substantial in relation to the total demand for energy. Cumulative development would increase the amount of demand for natural-gas supply. The total amount of natural gas supplied by PG&E in its northern and central California service area was estimated to be 887 million cubic feet per day in 2000. Additional energy supplies are expected to be available in the future. In addition, because future development would be required to comply with all existing City and PG&E requirements as well as applicable California Building Standard Code requirements, gas infrastructure would be available. Therefore, cumulative natural-gas impacts are expected to be less than significant. The project would not result in a cumulatively considerable incremental contribution to this cumulatively significant impact from the proposed project and related projects. The cumulative impact is ***less than significant***.

Public Services—Solid Waste

CUMULATIVE IMPACT Cumulative Solid Waste Impact. *Existing storage and conveyance capacity would be adequate to serve the project and other development in its service area. . This is not a cumulatively considerable incremental contribution, and the project's cumulative impact is less than significant.*

The SR 59 Landfill, which would receive project waste, has remaining capacity of 2.9 million cubic yards and is expected to remain open over the next two decades. The Highway 59 Landfill is permitted to accept a maximum of 1,500 tpd of solid waste, and the average daily rate of solid waste tonnage accepted at the facility is approximately 488 tpd. On a daily basis, the estimated 6.3 tpd of solid waste generated by the proposed project would represent approximately 0.4% of the maximum daily disposal and approximately 1.4% of the average daily disposal. Because this landfill would have adequate capacity to serve the project and other development in its service area, cumulative impacts related to solid waste are ***less than significant***.

Public Services—Police, Fire, and Schools

CUMULATIVE IMPACT Existing fire and police protection services would be adequate to serve the proposed project. . *This is not a cumulatively considerable incremental contribution, and the project's cumulative impact is less than significant.*

Development of the proposed project would result in increased demand for fire and police protection facilities and services. The City of Merced Fire Department and the City of Merced Police Department would be capable of providing fire and polices services, respectively, to the proposed project. In addition, it is the City's policy to ensure that new development pays its fair share of costs for increased demands in fire and police services through payment of the Public Facilities Impact Fees. Currently, the parks and recreational facilities, school facilities and services, and other public services in the City are adequate to serve the existing City residents. The proposed project is not expected to result in substantial, direct population growth; therefore, the project would not increase long-term demand for these services. Cumulative impacts related to public services are ***less than significant***.

TRANSPORTATION/TRAFFIC

2030 Cumulative No Project Condition

This section discusses the traffic operating conditions of the study intersections and roadway segments under the 2030 Cumulative Condition. The forecasted intersection and roadway segment traffic volumes were obtained from a traffic analysis and report prepared by DKS Associates in December, 2008. The 2030 Cumulative No Project Condition traffic volumes were developed from the forecasted traffic from the Merced County Association of Governments travel demand forecast model plus the addition of net-new trips expected to be generated by the approved projects within the study area. Please see Exhibit 6-2 for 2030 Cumulative No Project peak hour intersection volumes.

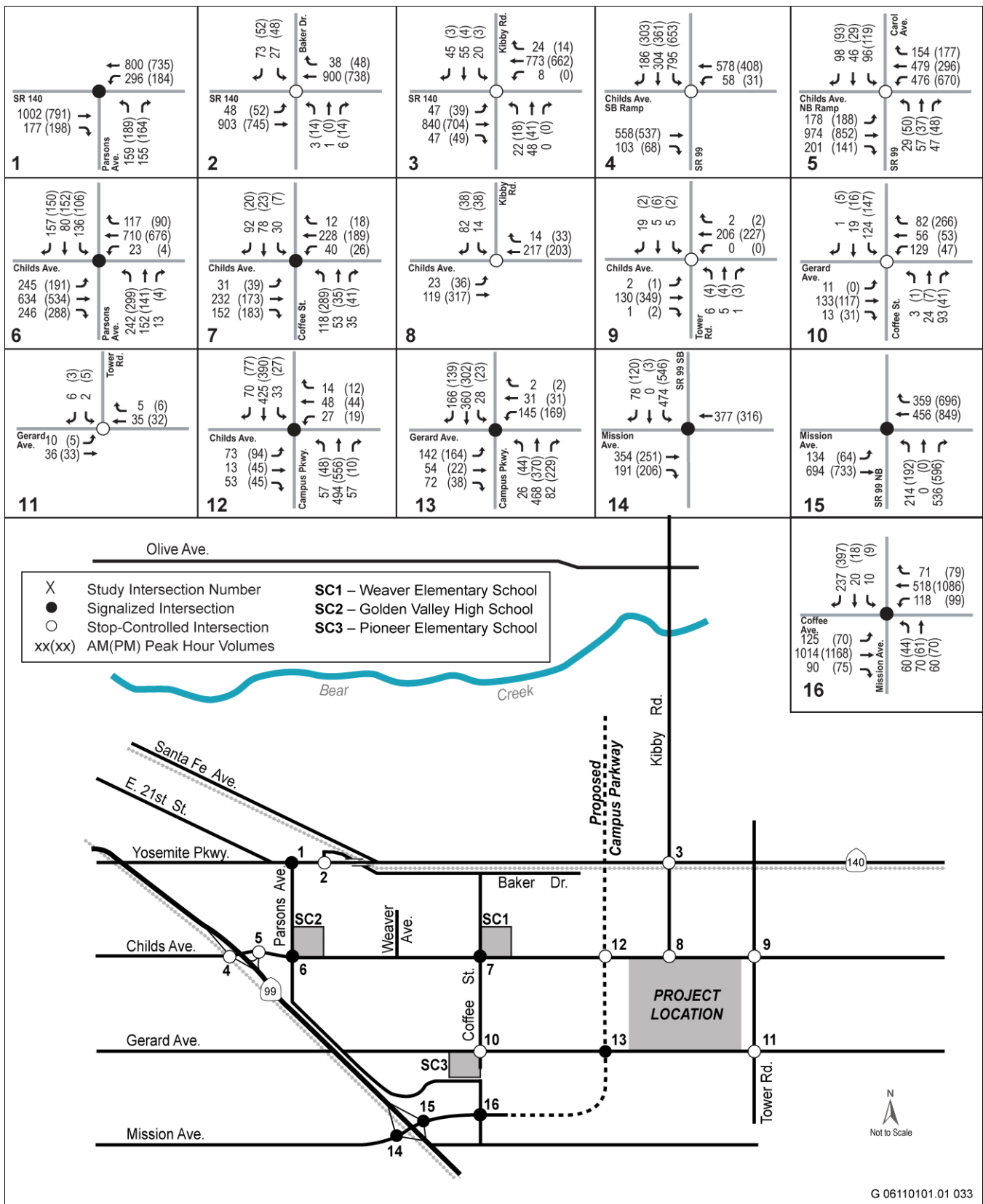
Roadway Improvements

In addition to the roadway improvement discussed in Section 4.11, "Traffic and Transportation," of this EIR, the following roadway improvements were assumed to be implemented after the anticipated completion date of the proposed project, and thus were included in this analysis:

- ▶ Extension of Campus Parkway north of Childs Avenue to connect to SR 140 by providing two loop ramps on the north side of SR 140.
- ▶ Access from Campus Parkway to the new University of California Merced and the development areas north of Merced.
- ▶ New traffic signal at the intersection of Childs Avenue and Campus Parkway.
- ▶ SR 99 would be upgraded to a six-lane facility with three lanes in each direction.
- ▶ Replacement of Bradley Overhead Bridge on SR 140 with a four-lane facility with a continuous left-turn lane including SR 140 from Parsons Avenue to past Santa Fe Avenue.
- ▶ Realignment and upgrading of Baker Drive and Santa Fe Avenue with signals at Kelly Avenue and Santa Fe Avenue.

2030 Cumulative Background Trip Generation

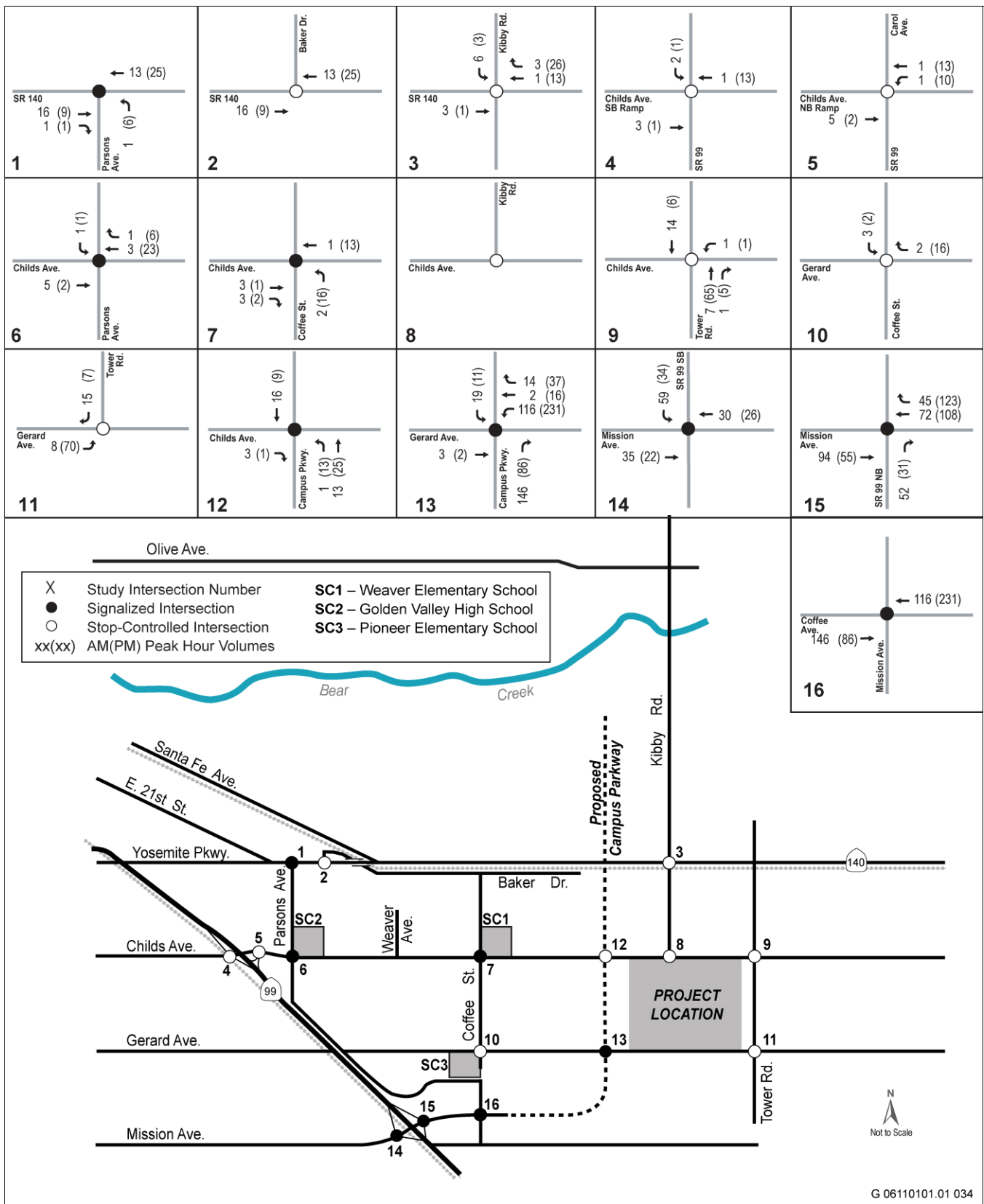
In addition to the approved projects described in Traffic and Transportation section of this EIR, Section 4.11, it was assumed the Merced Gateway Park project would be developed by year 2030 and, therefore, included in the 2030 Cumulative Condition. Merced Gateway Park is a proposed shopping center for which the City is currently processing applications and having EIRs prepared. The project actually consists of two separate projects involving over 130 acres of Regional Commercial development at the northeast and southeast corners of Campus Parkway and Coffee Street. The trip generation for the Merced Gateway Park was determined based on the standard trip rates published in the Institute of Transportation Engineers, *Trip Generation, 7th Edition* (2003), for weekday conditions, as summarized in Table 6-2. In table 6-2 trip reductions are shown in *italics*. Dashes shown for a.m. mean there were no trips generated during that time period and/or there was no trip reduction during that time period. Retail typically opens after the a.m. peak hour, so it generally has no or very little trip generation. Please see Exhibit 6-3 for 2030 Project Trips and Exhibit 6-4 for 2030 Cumulative with Project peak hour intersection volumes.



Source: DKS Associates

2030 Cumulative No Project Peak Hour Intersection Volumes (G 33)

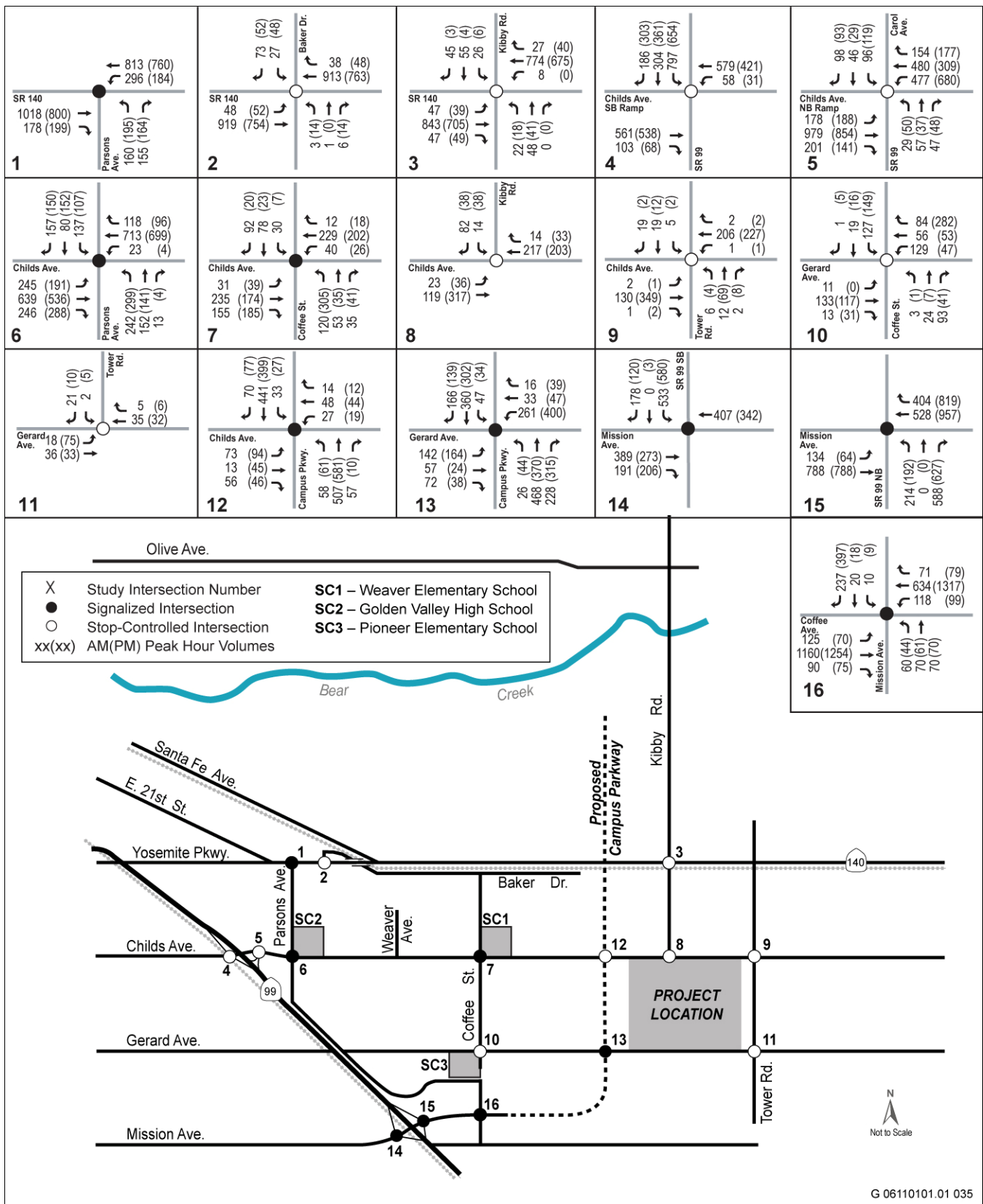
Exhibit 6-2



Source: DKS Associates

2030 Project Trips

Exhibit 6-3



Source: DKS Associates

2030 Cumulative with Project Peak Hour Intersection Volumes

Exhibit 6-4

2030 Cumulative Trip Generation

It was assumed that the trip distribution patterns of Merced Gateway Park would be similar to Steiner Commercial Development project, as described in Section 4.11, “Traffic and Transportation,” of this EIR. For more information on existing, 2010, and cumulative traffic conditions, please refer to Appendix E.

Intersection Operating Conditions

Table 6-3 summarizes the results of the intersection level of service calculations for the 2030 Cumulative No Project Condition. Cumulative traffic growth without the project would cause six and five of the 16 study intersections to operate at an unacceptable LOS (LOS E or F) during the respective a.m. or p.m. peak hours as summarized below. Additional information regarding the traffic impact is contained in the Traffic Study (Appendix E).

Table 6-2 Merced Gateway Park—Trip Generation									
Land Use	Size	Unit	Daily Trip	A.M. Trip			P.M. Trip		
				Total	Inbound	Outbound	Total	Inbound	Outbound
North Site									
Retail ¹	553,000	sf	24,509	—	—	—	1,499	660	839
Internal Trip Reduction				—	—	—	-120	-59	-61
Net External Trip							1,379	601	778
Restaurant ²	56,000	sf	7,120	645	335	310	612	373	239
Hotel ³	42,000	sf	760	52	32	20	55	29	26
Theatre ⁴	3600	Seats	—	—	—	—	252	98	154
Subtotal	651,000	sf	32,389	697	367	330	2,298	1,101	1,197
South Site									
Retail ¹	150,000	sf	6,648	—	—	—	407	179	228
Internal Trip Reduction				—	—	—	-93	-40	-53
Net External Trip							314	139	175
Restaurant ²	18,000	sf	2,289	207	108	99	197	120	77
Office ²	472,000	sf	5,197	732	644	88	703	120	583
Internal Trip Reduction				—	—	—	-49	-32	-17
Net External Trip				—	—	—	654	88	566
Hotel ²	83,500	sf	1,520	104	63	41	110	58	52
Subtotal	723,500	sf	15,654	1043	815	228	1,275	405	870
Total	1,374,500		48,043	1,740	1,182	558	3,573	1,506	2,067
Note: sf = square feet ¹ The project descriptions were provided by the City of Merced ² Trip generations were determined based on Institute of Transportation Engineers Land Use 814 (Special Retail Center) for Retail, Land Use 932 (High-Turnover [Sit-down] Restaurant) for Restaurant, Land Use 310 (Hotel) for Hotel, Land Use 444 (Movie Theater with Matinee) for Theatre and Land Use 710 (General Office) for Office. Source: Institute of Transportation Engineers 2003									

Cumulative traffic growth would cause five of the sixteen study intersections to operate at an unacceptable LOS (LOS E or F) during both a.m. and p.m. peak hours. These intersections are:

- SR 140 at Baker Drive
- SR 140 at Kibby Road
- Childs Avenue at SR 99 southbound off-ramp
- Childs Avenue at SR 99 northbound off-ramp
- Childs Avenue at Parsons Avenue

In addition, the intersection of SR 140 and Parsons Avenue operates at an unacceptable LOS F during the a.m. peak hour only.

All other intersections would continue to operate at acceptable LOS (LOS D or better).

It is recommended that improvement measures be implemented at the intersections that currently (or are projected to) operate at LOS E or F, in order to maintain traffic operation at LOS D or better. While the proposed project may not cause the impacts at these intersections to occur, it would contribute to impaired operations that already exist. Accordingly, the City may wish to calculate and require the project to contribute on a pro-rata basis to the improvements (Improvement Measures) described below and based on the information in Table 6-7 "Project's Share of Traffic" on page 6-29. (These are distinguished from mitigation measures, which address potential impacts directly caused by the proposed project.) Some of the intersections in Table 6-3 are not in the impact fee program; therefore, fees paid by the project do not contribute to needed improvements.

Table 6-3 2030 Cumulative No Project Condition Intersection Level of Service Analysis						
No	Intersection Location	Control	AM Peak Hour		PM Peak Hour	
			Delay ^a	LOS ^b	Delay	LOS
1	SR 140 / Parsons Avenue	Signalized	89.8	F	37.7	D
2	SR 140 / Baker Drive	Unsignalized	5.4		6.1	
	SB Approach		>50.0 ^c	F	>50.0	F
	EB Left		10.2	B	9.6	B
3	SR 140 / Kibby Road	Unsignalized	39.1		3.1	
	NB Approach		>50.0 ^c	F	>50.0	F
	SB Approach		>50.0 ^c	F	36.6	E
	EB Left		9.6	A	9.1	A
	WB Left		9.7	A	0.0	A
4	Childs Avenue / SR 99 Southbound Off-Ramp	AWSC ^d	>50.0	F	>50.0	F
5	Childs Avenue / SR 99 Northbound Off-Ramp	AWSC	>50.0	F	>50.0	F
6	Childs Avenue / Parsons Avenue	Signalized	66.0	E	61.8	E
7	Childs Avenue / Coffee Street	Signalized	28.6	C	32.2	C

Table 6-3
2030 Cumulative No Project Condition Intersection Level of Service Analysis

No	Intersection Location	Control	AM Peak Hour		PM Peak Hour	
			Delay ^a	LOS ^b	Delay	LOS
8	Childs Avenue / Kibby Road	Unsignalized	2.5		1.8	
	SB Approach		10.3	B	12.1	B
	EB Left		7.7	A	7.8	A
9	Childs Avenue / Tower Road	Unsignalized	1.2		0.5	
	NB Approach		11.1	B	12.8	B
	SB Approach		10.1	B	12.8	B
	EB Left		7.6	A	7.7	A
	WB Left		0.0	A	0.0	A
10	Gerard Avenue / Coffee Street	AWSC	9.5	A	9.8	A
11	Gerard Avenue / Tower Road	Unsignalized	7.1		7.1	
	SB Approach		6.7	A	7.0	A
	EB Left		7.2	A	7.1	A
12	Childs Avenue / Campus Parkway	Signalized	26.3	C	26.4	C
13	Gerard Avenue / Campus Parkway	Signalized	28.8	C	29.8	C
14	Mission Avenue / SR 99 Southbound	Signalized	20.6	C	21.5	B
15	Mission Avenue / SR 99 Northbound	Signalized	28.3	C	39.6	D
16	Mission Avenue / Coffee Street	Signalized	37.1	D	45.8	D

Notes:

- a. Delay is in seconds per vehicle. For signalized intersections, delay is based on average stopped delay. For unsignalized intersections, delay is based at the worst approach for two-way stop controlled intersection.
- b. LOS = Level of Service
- c. For unsignalized intersections, delays >50 are beyond the upper limits of LOS delay estimation equations under the HCM 2000 methodologies.
- d. AWSC = All-way stop control

Source: DKS Associates 2008

CUMULATIVE IMPACT Cumulative Traffic Impact— SR 140 and Parsons Avenue Intersection Operation (2030 No Project). Cumulative traffic growth without the project would cause the SR 140 and Parsons Avenue intersection to operate at an unacceptable LOS (LOS E or F) during the a.m. and p.m. peak hour. This is a cumulatively considerable impact that would occur without the proposed project.

Mitigation Measure 6-1: Intersection of SR 140 and Parsons Avenue. Under the 2030 Cumulative No Project Conditions, traffic on SR 140 would operate at deficient LOS F due to high traffic volumes along SR 140. In order to achieve acceptable levels of service, the intersection would have to have a revised traffic signal timing plan as part of a regular signal maintenance routine. This would improve the intersection to operate at an acceptable LOS of D during the a.m. peak hour for the 2030 Cumulative No Project Condition.

CUMULATIVE IMPACT Cumulative Traffic Impact— *SR 140 and Baker Drive Intersection Operation (2030 No Project).* Cumulative traffic growth without the project would cause the SR 140 and Baker Drive intersection to operate at an unacceptable LOS (LOS E or F) during both a.m. and p.m. peak hours. This is a cumulatively considerable impact that would occur without the proposed project.

Mitigation Measure 6-2: Intersection of SR 140 and Baker Drive. Under the 2010 Background and 2030 Cumulative No Project Conditions, traffic on Baker Drive would operate at deficient LOS (LOS E or F) due to high traffic volumes on SR 140. The intersection would also meet the traffic signal warrant under both 2010 Background and 2030 Cumulative No Project Conditions. In order to achieve acceptable levels of service, the intersection would have to be signalized to accommodate the southbound left-turn traffic. This would improve the intersection to LOS C during both a.m. and p.m. peak hours under the 2010 Background Conditions and the 2030 Cumulative No Project Conditions.

CUMULATIVE IMPACT Cumulative Traffic Impact— *SR 140 and Kibby Road Intersection Operation (2030 No Project).* Cumulative traffic growth without the project would cause the SR 140 and Kibby Road Intersection to operate at an unacceptable LOS (LOS E or F) during both a.m. and p.m. peak hours. This is a cumulatively considerable impact that would occur without the proposed project.

Mitigation Measure 6-3: Intersection of SR 140 and Kibby Road. Under the 2030 Cumulative No Project Conditions, the northbound and southbound traffic on Kibby Road would deteriorate to deficient LOS. Even though the peak hour traffic volumes on SR 140 would be relatively light, the operating condition would not be improved by lane re-striping or adding a lane in any direction. The intersection would also meet the traffic signal warrant under the 2030 Cumulative No Project Conditions. In order to achieve acceptable levels of service, the intersection would have to be signalized and the signal would need to be synchronized with the railroad signal just south of the intersection. This would improve the operating condition on Kibby Road approaches to acceptable LOS (LOS D or better) and maintain the intersection operating conditions at LOS B during both a.m. and p.m. peak hours.

CUMULATIVE IMPACT Cumulative Traffic Impact— *Childs Avenue and SR 99 Northbound Off-ramp Operations (2030 No Project).* Cumulative traffic growth without the project would cause the Childs Avenue and SR 99 Northbound Off-ramp to operate at an unacceptable LOS (LOS E or F) during both a.m. and p.m. peak hours. This is a cumulatively considerable impact that would occur without the proposed project.

Mitigation Measure 6-4: Intersection of Childs Avenue and SR 99 Northbound Off-Ramp. This intersection would operate at LOS F under the 2010 Background and 2030 Cumulative No Project Conditions during both a.m. and p.m. peak hours. The intersection would also meet the peak hour traffic signal warrant under both 2010 Background and 2030 Cumulative No Project Conditions. In order to achieve acceptable levels of service under 2010 Background Conditions, the intersection would have to be signalized and the eastbound approach would have to be widened to two lanes. The intersection would operate at acceptable levels of service under 2030 Cumulative No Project Conditions by adding the second westbound left-turn lane in addition to widening the eastbound approach. The improvement, however, may not be feasible within the existing right-of-way due to the overcross structure. The measures would improve the intersection to LOS C during the a.m. and p.m. peak hours under both the 2010 Background Conditions and the 2030 Cumulative No Project Conditions.

CUMULATIVE IMPACT Cumulative Traffic Impact— *Childs Avenue at SR 99 Southbound Off-ramp Operations (2030 No Project).* Cumulative traffic growth without the project would cause the Childs Avenue at SR 99 Southbound Off-ramp to operate at an unacceptable LOS (LOS E or F) during both a.m. and p.m. peak hours. This is a cumulatively considerable impact that would occur without the proposed project.

Mitigation Measure 6-5: Intersection of Childs Avenue and SR 99 Southbound Off-Ramp. This intersection would operate at LOS F during the p.m. peak hour and would meet a peak hour signal warrant under the 2010

Background Conditions. This intersection would operate at LOS F the 2030 Cumulative No Project Conditions during the both a.m. and p.m. peak hours.

The improvement would include adding a second left-turn lane to the southbound approach, adding a westbound left-turn lane, and that the intersection be signalized and coordinated with the intersection of Childs Avenue at SR 99 northbound off-ramp. This would improve the intersection to LOS C during the p.m. peak hour under the 2010 Background Conditions and for both peak hours for the 2030 Cumulative No Project Condition.

CUMULATIVE IMPACT Cumulative Traffic Impact—Childs Avenue at Parsons Avenue Intersection Operation (2030 No Project). *Cumulative traffic growth without the project would cause the Childs Avenue at Parsons Avenue intersection to operate at an unacceptable LOS (LOS E or F) during both a.m. and p.m. peak hours. This is a cumulatively considerable impact that would occur without the proposed project.*

Mitigation Measure 6-6: Intersection of Childs Avenue and Parsons Avenue. Under 2030 Cumulative No Project Conditions, traffic at the intersection would deteriorate to LOS E for both of the a.m. and p.m. peak hours. In order to achieve acceptable levels of service, the signalized intersection would need a revised signal timing plan as part of a regular signal maintenance routine. This would improve the intersection to operate at an acceptable LOS D during the a.m. and p.m. peak hours for the 2030 Cumulative No Project Condition.

All other intersections would continue to operate at acceptable LOS (LOS D or better).

Roadway Segment Operating Conditions

Table 6-4 summarizes the roadway segment operating level of service under the 2030 Cumulative No Project Condition. For more information on existing, 2010, and cumulative traffic conditions, please refer to Appendix E.

The addition of cumulative growth traffic would cause the roadway segment of SR 140 between Santa Fe Avenue and Kibby Road to deteriorate from LOS D to LOS E during the a.m. peak hour. All other study roadway segments would continue to operate at an acceptable LOS (LOS D or better).

CUMULATIVE IMPACT Cumulative Traffic Impact—Roadway Segment Operations (2030 No Project). *SR 140 between Santa Fe Avenue and Kibby Road.*

Mitigation Measure 6-7: SR 140 between Santa Fe Avenue and Kibby Road . It was determined that the roadway segment of SR 140 between Santa Fe Avenue and Kibby Road would deteriorate to LOS E under the 2030 Cumulative No Project Condition. Currently, the roadway is classified as a two-lane highway. By adding one lane in each direction in this segment, the roadway would be improved to operate at an acceptable LOS A. The widening of the roadway, however, may require right of way acquisition, the need for utility relocation, and approval by Caltrans.

CUMULATIVE IMPACT Cumulative Traffic Impact—Roadway Segment Operations (2030 No Project). *Tower Road between SR 140 and Gerard Avenue.*

Mitigation Measure 6-8: Tower Road between SR 140 and Gerard Avenue. Tower Road would be one of the truck access routes to the proposed Wal-Mart Distribution Center. Based on field observations, this roadway segment has poor pavement conditions, and the pavement markings along the middle of the road are faded. It is recommended that the roadway segment between SR 140 and Gerard Avenue be improved to address these issues.

Table 6-4
2030 Cumulative No Project Condition Roadway Segment-Level of Service Analysis

	Roadway Segment	Type of Facilities	Location	Measure of Effectiveness (MOE)	AM Peak Hour			PM Peak Hour		
					Volume (veh/hr)	MOE ^a	LOS ^b	Volume (veh/hr)	MOE	LOS
1.	SR 99	Freeway	from Mission Ave. to SR 140	Density (pc/mi/ln)	2531	17.4	C	3164	21.7	C
			from SR 140 to Mission Ave.	Density (pc/mi/ln)	2712	18.6	C	4173	28.7	D
2.	SR 140	Urban Class III	from SR 99 to Parsons Ave.	Travel Speed (mi/hr)	1179	29.2	B	989	31.9	A
			from Parsons Ave. to SR 99	Travel Speed (mi/hr)	959	32.2	A	924	32.6	A
		Urban Class II	from Parsons Ave. to Santa Fe Ave.	Travel Speed (mi/hr)	1096	39.1	A	919	39.6	A
			from Santa Fe Ave. to Parsons Ave.	Travel Speed (mi/hr)	1157	38.8	A	955	39.6	A
		Two-lane Highway Class I	between Santa Fe Ave. and Kibby Rd	Percent Time-Spent-Following	1871	82.3	E	1729	79.8	D
3.	Parson Avenue	Urban Class III	from Childs Avenue and SR 140	Travel Speed (mi/hr)	514	34.8	A	422	34.9	A
			from SR 140 and Childs Ave.	Travel Speed (mi/hr)	473	34.8	A	408	34.9	A
4.	Coffee Street	Urban Class IV	from Baker Dr. to Childs Ave.	Travel Speed (mi/hr)	96	30.0	A	92	30.0	A
			from Childs Ave. to Baker Dr.	Travel Speed (mi/hr)	200	30.0	A	50	30.0	A
		Urban Class IV	from Childs Ave. to Gerard Ave.	Travel Speed (mi/hr)	206	30.0	A	365	29.8	A
			from Gerard Ave. and Childs Ave.	Travel Speed (mi/hr)	270	29.9	A	232	30.0	A
5.	Gerard Avenue	Urban Class III	from Parson Ave. and Coffee Str.	Travel Speed (mi/hr)	157	35.0	A	148	35.0	A
			from Coffee Str. to Parson Ave.	Travel Speed (mi/hr)	60	35.0	A	59	35.0	A
		Urban Class II	from Coffee Str. to Project Site	Travel Speed (mi/hr)	350	40.0	A	305	40.0	A
			from Project Site to Coffee Str.	Travel Speed (mi/hr)	267	40.0	A	366	40.0	A
6.	Kibby Road	Urban Class II	from SR 140 to Childs Ave.	Travel Speed (mi/hr)	70	45.0	A	69	45.0	A
			from Childs Ave. to SR 140	Travel Speed (mi/hr)	110	45.0	A	76	45.0	A

Table 6-4

	Roadway Segment	Type of Facilities	Location	Measure of Effectiveness (MOE)	AM Peak Hour			PM Peak Hour		
					Volume (veh/hr)	MOE ^a	LOS ^b	Volume (veh/hr)	MOE	LOS
7.	Childs Avenue	Urban Class III	from SR 99 to Parsons Ave	Travel Speed (mi/hr)	1125	30.1	A	1013	31.6	A
			from Parsons Ave to SR 99	Travel Speed (mi/hr)	1109	30.3	A	1125	30.1	A
		Urban Class III	from Parsons Ave to Coffee Str	Travel Speed (mi/hr)	783	33.7	A	644	34.4	A
			from Coffee Str to Parsons Ave	Travel Speed (mi/hr)	850	33.2	A	770	33.8	A
		Urban Class II	from Coffee Str to Kibby Rd	Travel Speed (mi/hr)	297	40.0	A	221	40.0	A
			from Kibby Rd to Coffee Str	Travel Speed (mi/hr)	280	40.0	A	233	40.0	A
		Urban Class II	from Kibby Rd to Tower Rd	Travel Speed (mi/hr)	133	40.0	A	355	40.0	A
	from Tower Rd to Kibby Rd	Travel Speed (mi/hr)	231	40.0	A	236	40.0	A		
8.	Campus Pkwy	Urban Class III	from Coffee Str to Gerard Ave	Travel Speed (mi/hr)	576	35.0	A	643	35.0	A
			from Gerard Ave to Coffee Str	Travel Speed (mi/hr)	707	34.9	A	1264	34.4	A
		Urban Class III	from Gerard Ave to Childs Ave	Travel Speed (mi/hr)	612	35.0	A	536	35.0	A
			from Childs Ave to Gerard Ave	Travel Speed (mi/hr)	554	35.0	A	464	35.0	A
		Urban Class III	from Childs Ave to SR 140	Travel Speed (mi/hr)	581	35.0	A	662	35.0	A
			from SR 140 to Childs Ave	Travel Speed (mi/hr)	528	35.0	A	494	35.0	A
Notes: a. MOE= Measures of Effectiveness. For freeway facilities, MOE is measured in density (passenger cars per mile per lane). For urban facilities, MOE is measured in travel speed (miles per hour). For two-lane highway facilities, MOE is measured in percent time-spent following (percent). b. LOS = Level of Service is based on Transportation Research Board, Highway Capacity Manual 2000. Source: DKS Associates										

In addition, the Tower Road approaches to the intersection at Gerard Avenue (and the approaches along Gerard Avenue to Tower Road) should be improved to provide proper turning radii for standard trucks as classified under the Surface Transportation Assistance Act (STAA). It is also recommended that the intersection of Tower Road and SR 140 be widened to accommodate truck turning activities (such as providing turn bays and acceleration lane). The improvement would help maintain traffic flow on SR 140. As a Caltrans facility, the roadway widening on SR 140 would be required to follow Caltrans design standards and would need to be approved by Caltrans.2030 Cumulative No Project Condition Traffic Signal Warrant Analysis

CUMULATIVE IMPACT Cumulative Traffic Impact—Traffic Signal Operations (2030 No Project). *Based on the signal warrant analysis results, five study area intersections would meet the signal warrant during the a.m. and while four would meet the signal warrant during the p.m. peak hour. This is a cumulatively considerable impact that would occur without the proposed project.*

Table 6-5 summarizes the traffic signal warrant analysis performed at the five unsignalized intersections that would operate at unacceptable level of service under the 2030 Cumulative No Project Condition. Detailed traffic signal warrant analysis sheets are included in Appendix E. Based on the signal warrant analysis results; all of the five intersections would meet the signal warrant during the a.m. peak hour while four intersections would meet the signal warrant during the p.m. peak hour.

Table 6-5 2030 Cumulative No Project Condition Signal Warrant Analysis						
Intersection	AM Peak Hour			PM Peak Hour		
	Criteria 1	Criteria 2	Warrant met?	Criteria 1	Criteria 2	Warrant met?
SR 140 / Baker Drive	No	Yes	Yes	No	Yes	Yes
SR 140 / Kibby Road	Yes	Yes	Yes	No	No	No
Childs Avenue / SR 99 Southbound Off-Ramp	Yes	Yes	Yes	Yes	Yes	Yes
Childs Avenue / SR 99 Northbound Off-Ramp	No	Yes	Yes	No	Yes	Yes
Mission Avenue / Coffee Street	No	Yes	Yes	Yes	Yes	Yes
Source: DKS Associates 2008						

2030 Cumulative with Project Condition

This section evaluates the 2030 Cumulative with Project Condition. In addition, all roadway improvements mentioned in the 2030 Cumulative Project Condition are assumed to be implemented and thus were included in this analysis.

An adjustment was made to the distribution and assignment of trips to account for the extension of the Campus Parkway corridor and to allow for more circulation via Campus Parkway rather than via Parsons Avenue. The truck trips were also adjusted to allow for circulation via Campus Parkway between SR 140 and Gerard Avenue rather than Tower Road.

Intersection Operating Conditions

Intersection operational levels of service along with their associated delays are summarized in Table 6-6. Appendix E includes the detailed calculation level of service analysis sheets, including the weekday a.m. and p.m.

peak hours. For more information on existing, 2010, and cumulative traffic conditions, please refer to Appendix E.

The study intersections that would operate at acceptable LOS (LOS D or better) under the 2030 Cumulative No Project Condition would continue to operate at acceptable LOS under the 2030 Cumulative with Project Condition with the exception of one intersection. At the intersection of Mission Avenue at SR 99 northbound off-ramp, the LOS would deteriorate from D to E.

For the intersections that would operate at LOS E or F under the 2030 Cumulative No Project Condition, the proposed project would not contribute more than five percent of the intersection total volume at any of the intersections during either the a.m. or p.m. peak hours. Overall, the proposed project would result in significant cumulative impacts at one intersection during the p.m. peak hour.

Table 6-6 2030 Cumulative with Project Condition Intersection Level of Service Analysis										
No	Intersection Location	Control	AM Peak Hour				PM Peak Hour			
			Delay ^a	LOS ^b	% Vol Incr ^c	Project Impact	Delay	LOS	% Vol Incr ^c	Project Impact
1	SR 140 / Parsons Avenue	Signalized	93.1	F	1.2	No	38.7	D		No
2	SR 140 / Baker Drive	Unsignalized	5.8		1.5	No	6.6		2.0	No
	SB Approach		>50.0 ^d	F			>50.0	F		
	EB Left		10.3	B			9.7	A		
3	SR 140 / Kibby Road	Unsignalized	46.2		0.7	No	3.3		2.8	No
	NB Approach		>50.0	F			>50.0	F		
	SB Approach		>50.0	F			44.8	E		
	EB Left		9.6	A			9.2	A		
	WB Left		9.7	A			0.0	A		
4	Childs Avenue / SR 99 Southbound Off-Ramp	AWSC	>50.0	F	0.2	No	>50.0	F	0.6	No
5	Childs Avenue / SR 99 Northbound Off-Ramp	AWSC	>50.0	F	0.2	No	>50.0	F	0.9	No
6	Childs Avenue / Parsons Avenue	Signalized	66.4	E	0.4	No	64.8	E	1.2	No
7	Childs Avenue / Coffee Street	Signalized	28.6	C		No	32.7	C		No
8	Childs Avenue / Kibby Road	Unsignalized	2.5			No	1.8			No
	SB Approach		10.3	B			12.1	B		
	EB Left		7.7	A			7.8	A		
9	Childs Avenue / Tower Road	Unsignalized	1.7			No	2.1			No
	NB Approach		11.2	B			15.0	B		
	SB Approach		10.7	B			13.5	B		
	EB Left		7.6	A			7.7	A		
	WB Left		7.5	A			8.0	A		
10	Gerard Avenue / Coffee Street	AWSC ^e	9.5	A		No	10.0	A		No
11	Gerard Avenue / Tower Road	Unsignalized	7.1			No	7.5			No
	SB Approach		6.6	A			6.9	A		
	EB Left		7.3	A			7.7	A		
12	Childs Avenue / Campus Parkway	Signalized	25.5	C		No	27.8	C		No
13	Gerard Avenue / Campus Parkway	Signalized	31.0	C		No	51.2	D		No

Table 6-6
2030 Cumulative with Project Condition Intersection Level of Service Analysis

No	Intersection Location	Control	AM Peak Hour				PM Peak Hour			
			Delay ^a	LOS ^b	% Vol Incr ^c	Project Impact	Delay	LOS	% Vol Incr ^c	Project Impact
14	Mission Avenue / SR 99 Southbound Off-Ramp	Signalized	30.8	C		No	83.4	F	7.6	Yes
15	Mission Avenue / SR 99 Northbound Off-Ramp	Signalized	30.6	C		No	55.1	E		Yes
16	Mission Avenue / Coffee Street	Signalized	37.7	D		No	48.5	D		No

Notes: a. Delay is in seconds per vehicle. For signalized intersections, delay is based on average stopped delay. For unsignalized intersections, delay is based at the worst approach for two-way stop controlled intersection.
b. LOS = Level of Service
c. % Vol Incr = percent increase in the intersection traffic volumes due to the project trips. Percent increase is reported only at any of the intersections that would already operate at an unacceptable LOS without the project.
d. For unsignalized intersections, delays >50 are beyond the upper limits of LOS delay estimation equations under the HCM 2000 methodologies.
e. AWSC = All-way stop control

Source: DKS Associates 2008

PROJECT'S SHARE OF TRAFFIC

Table 6-7 provides a breakdown of project traffic for the purposes of calculating the fair share contribution towards any mitigation measures.

CUMULATIVE IMPACT Cumulative Traffic Impact—Intersection Operations (2030 with Project). *The study intersections that would operate at acceptable LOS (LOS D or better) under the 2030 Cumulative No Project Condition would continue to operate at acceptable LOS under the 2030 Cumulative with Project Condition with the exception of one intersection. At the intersection of Mission Avenue at SR 99 northbound off-ramp, the LOS would deteriorate from D to E.*

For the intersections that would operate at LOS E or F under the 2030 Cumulative No Project Condition, the proposed project would not contribute more than 5% of the intersection total volume. Therefore, the proposed project would result one significant impact at the study intersections. The impact to the intersection of Mission Avenue at SR 99 northbound off-ramp is a cumulatively considerable incremental contribution, and the project's cumulative impact would be significant.

Mitigation Measure 6-9: Mission Avenue at SR 99 northbound off-ramp. Restriping the northbound and westbound approaches would mitigate the impact at this intersection. It is proposed to restripe the northbound approach from a left-through turning movement and a right-only turning movement to a left-through-right turning movement and a right-only turning movement. The westbound approach would be restriped from two through lanes and one right-turn only lane to one through lane, one through-right lane, and one right-turn only lane. Restriping could be accomplished within the existing right-of-way.

With these mitigation measures, the intersection of Mission Avenue at SR 99 northbound off-ramps would operate under LOS C conditions, fully mitigating the impact occurring in the p.m. peak hour under 2030 Cumulative with Project Conditions.

**Table 6-7
Project's Share of Traffic
2030 Cumulative with Project Condition**

No	Study Intersection	Trips (veh/hr)						Percentages(%)					
		Project		2030 Cumulative		Total		Project		2030 Cumulative		Total	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	SR 140 / Parsons Avenue	31	41	2620	2302	2651	2343	1.2%	1.7%	98.8%	98.3%	100.0%	100.0%
2	SR 140 / Baker Drive	29	34	2028	1745	2057	1779	1.4%	1.9%	98.6%	98.1%	100.0%	100.0%
3	SR 140 / Kibby Road	13	43	1942	1580	1955	1623	0.7%	2.6%	99.3%	97.4%	100.0%	100.0%
4	Childs Avenue / SR 99 SB Off-Ramp	6	15	2588	2376	2594	2391	0.2%	0.6%	99.8%	99.4%	100.0%	100.0%
5	Childs Avenue / SR 99 NB Off-Ramp	7	25	2842	2725	2849	2750	0.2%	0.9%	99.8%	99.1%	100.0%	100.0%
6	Childs Avenue / Parsons Avenue	10	32	2765	2667	2775	2699	0.4%	1.2%	99.6%	98.8%	100.0%	100.0%
7	Childs Avenue / Coffee Street	9	32	1110	1075	1119	1107	0.8%	2.9%	99.2%	97.1%	100.0%	100.0%
8	Childs Avenue / Kibby Road	0	0	469	665	469	665	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%
9	Childs Avenue / Tower Road	23	77	405	679	428	756	5.4%	10.2%	94.6%	89.8%	100.0%	100.0%
10	Gerard Avenue / Coffee Street	5	18	693	749	698	767	0.7%	2.3%	99.3%	97.7%	100.0%	100.0%
11	Gerard Avenue / Tower Road	23	77	117	161	140	238	16.4%	32.4%	83.6%	67.6%	100.0%	100.0%
12	Mission Avenue / SR 99 SB Off-Ramps	165	165	2032	2332	2197	2497	7.5%	6.6%	92.5%	93.4%	100.0%	100.0%
13	Mission Avenue / SR 99 NB Off-Ramps	263	317	2656	3447	2919	3764	9.0%	8.4%	91.0%	91.6%	100.0%	100.0%
14	Mission Avenue / Coffee Street	262	317	2665	3493	2927	3810	9.0%	8.3%	91.0%	91.7%	100.0%	100.0%
15	Campus Parkway / Childs Avenue	300	383	1876	1916	2176	2299	13.8%	16.7%	86.2%	83.3%	100.0%	100.0%
16	Campus Parkway / Childs Avenue	33	48	1397	1415	1430	1463	2.3%	3.3%	97.7%	96.7%	100.0%	100.0%

Roadway Segment Operating Conditions

Table 6-8 provides a summary of the roadway segments operation conditions. For more information on existing, 2010, and cumulative traffic conditions, please refer to Appendix E.

CUMULATIVE IMPACT Cumulative Traffic Impact—SR 140 Between Santa Fe Avenue and Kibby Road Roadway Segment Operations (2030 with Project). *The addition of project traffic would cause the segment of SR 140 between Santa Fe Avenue and Kibby Road to deteriorate from LOS D under the 2030 Cumulative No Project Condition to LOS E during the p.m. peak hour. All other study roadway segments would operate at an acceptable LOS (LOS D or better). The impact to SR 140 is a cumulatively considerable incremental contribution, and the project's cumulative impact would be significant.*

Mitigation Measure 6-10: SR 140 between Santa Fe Avenue and Kibby Road. The addition of project traffic would cause the segment of SR 140 between Santa Fe Avenue and Kibby Road to deteriorate from LOS D under the 2030 Cumulative No Project Condition to LOS E during the p.m. peak hour. All other study roadway segments would operate at an acceptable LOS (LOS D or better). The level of service on SR 140 between Santa Fe Avenue and Kibby Road is a significant cumulative impact. The project's contribution to this significant impact is cumulatively considerable; therefore, the project's cumulative impact would be **significant**.

By adding one lane in each direction in this segment, the roadway would be improved to operate at an acceptable LOS A. The widening of the roadway, however, may require right of way acquisition, the need for utility relocation and, approval by Caltrans.

With implementation of this mitigation measure, the cumulative impact would be reduced to a **less-than-significant** level.

2030 Cumulative with Project Condition Traffic Signal Warrant Analysis

CUMULATIVE IMPACT Cumulative Traffic Impact—Traffic Signal Operations (2030 with Project). *Based on the signal warrant analysis results, all of five study area intersections would meet the signal warrant during the a.m. peak hour while four intersection would meet the signal warrant during the p.m. peak hour. The project's contribution to these intersections is a cumulatively considerable incremental contribution, and the project's cumulative impact would be significant.*

Table 6-9 summarizes the traffic signal warrant analysis performed at the five unsignalized intersections that would operate at an unacceptable level of service under the 2030 Cumulative No Project Condition. For more information on existing, 2010, and cumulative traffic conditions, please refer to Appendix E. Similar to the 2030 Cumulative No Project Condition, a signal warrant would be met at all five of these intersections during the a.m. peak hour and four intersections during the p.m. peak hour.

Impacts to these intersections will be reduced to a **less-than-significant** level by mitigation measures 6-9, 6-10, and 6-11.

Table 6-9 2030 Cumulative with Project Condition Signal Warrant Analysis						
Intersection	AM Peak Hour			PM Peak Hour		
	Criteria 1	Criteria 2	Warrant met?	Criteria 1	Criteria 2	Warrant met?
SR 140 / Baker Drive	No	Yes	Yes	No	Yes	Yes
SR 140 / Kibby Road	Yes	Yes	Yes	No	No	No
Childs Avenue / SR 99 Southbound Off-Ramp	Yes	Yes	Yes	Yes	Yes	Yes
Childs Avenue / SR 99 Northbound Off-Ramp	No	Yes	Yes	No	Yes	Yes
Mission Avenue/ Coffee Street	No	Yes	Yes	Yes	Yes	Yes
Source: DKS Associates 2008						

Table 6-8
2030 Cumulative with Project Condition Roadway Segment-Level of Service Analysis

	Roadway Segment	Type of Facilities	Location	Measure of Effectiveness (MOE)	AM Peak Hour			PM Peak Hour		
					Volume (veh/hr)	MOE ^a	LOS ^b	Volume (veh/hr)	MOE	LOS
1.	SR 99	Freeway	from Mission Ave. to SR 140	Density (pc/mi/ln)	2531	17.4	C	3164	21.7	C
			from SR 140 to Mission Ave.	Density (pc/mi/ln)	2773	19.0	C	4208	29.0	D
2.	SR 140	Urban Class III	from SR 99 to Parsons Ave.	Travel Speed (mi/hr)	1196	28.9	B	999	31.8	A
			from Parsons Ave. to SR 99	Travel Speed (mi/hr)	973	32.1	A	955	32.3	A
		Urban Class II	from Parsons Ave. to Santa Fe Ave.	Travel Speed (mi/hr)	1109	39.1	A	944	39.6	A
			from Santa Fe Ave. to Parsons Ave.	Travel Speed (mi/hr)	1173	38.8	A	964	39.5	A
		Two-lane Highway Class I	from Santa Fe Ave. to Kibby Rd	Percent Time-Spent-Following	1899	82.7	E	1766	80.5	E
3.	Parson Avenue	Urban Class III	from Childs Avenue and SR 140	Travel Speed (mi/hr)	515	34.7	A	428	34.9	A
			from SR 140 and Childs Ave.	Travel Speed (mi/hr)	474	34.8	A	409	34.9	A
4.	Coffee Street	Urban Class IV	from Baker Dr. to Childs Ave.	Travel Speed (mi/hr)	96	30.0	A	92	30.0	A
			from Childs Ave. to Baker Dr.	Travel Speed (mi/hr)	200	30.0	A	50	30.0	A
		Urban Class IV	from Childs Ave. to Gerard Ave.	Travel Speed (mi/hr)	208	30.0	A	381	29.8	A
			from Gerard Ave. and Childs Ave.	Travel Speed (mi/hr)	273	29.9	A	234	30.0	A
5.	Gerard Avenue	Urban Class III	from Parson Ave. and Coffee Str.	Travel Speed (mi/hr)	157	35.0	A	148	35.0	A
			from Coffee Str. to Parson Ave.	Travel Speed (mi/hr)	60	35	A	59	35	A
		Urban Class II	from Coffee Str. to Project Site	Travel Speed (mi/hr)	353	40.0	A	307	40.0	A
			from Project Site to Coffee Str.	Travel Speed (mi/hr)	269	40.0	A	382	40.0	A
6.	Kibby Road	Urban Class II	from SR 140 to Childs Ave.	Travel Speed (mi/hr)	70	45.0	A	69	45.0	A
			from Childs Ave. to SR 140	Travel Speed (mi/hr)	110	45.0	A	76	45.0	A

**Table 6-8
2030 Cumulative with Project Condition Roadway Segment-Level of Service Analysis**

	Roadway Segment	Type of Facilities	Location	Measure of Effectiveness (MOE)	AM Peak Hour			PM Peak Hour		
					Volume (veh/hr)	MOE ^a	LOS ^b	Volume (veh/hr)	MOE	LOS
7.	Childs Avenue	Urban Class III	from SR 99 to Parsons Ave	Travel Speed (mi/hr)	1130	30.0	B	1015	31.6	A
			from Parsons Ave to SR 99	Travel Speed (mi/hr)	1112	30.3	A	1148	29.7	B
		Urban Class III	from Parsons Ave to Coffee Str	Travel Speed (mi/hr)	789	33.7	A	647	34.4	A
			from Coffee Str to Parsons Ave	Travel Speed (mi/hr)	854	33.2	A	799	33.6	A
		Urban Class II	from Coffee Str to Kibby Rd	Travel Speed (mi/hr)	300	40.0	A	222	40.0	A
			from Kibby Rd to Coffee Str	Travel Speed (mi/hr)	281	40.0	A	246	40.0	A
		Urban Class II	from Kibby Rd to Tower Rd	Travel Speed (mi/hr)	133	40.0	A	355	40.0	A
			from Tower Rd to Kibby Rd	Travel Speed (mi/hr)	231	40.0	A	236	40.0	A
8.	Campus Pkwy	Urban Class III	from Coffee Str to Gerard Ave	Travel Speed (mi/hr)	722	34.9	A	729	34.9	A
			from Gerard Ave to Coffee Str	Travel Speed (mi/hr)	823	34.9	A	1495	33.9	A
		Urban Class III	from Gerard Ave to Childs Ave	Travel Speed (mi/hr)	626	35.0	A	573	35.0	A
			from Childs Ave to Gerard Ave	Travel Speed (mi/hr)	573	35.0	A	475	35.0	A
		Urban Class III	from Childs Ave to SR 140	Travel Speed (mi/hr)	594	35.0	A	687	35.0	A
			from SR 140 to Childs Ave	Travel Speed (mi/hr)	544	35.0	A	503	35.0	A

Notes: a. MOE= Measures of Effectiveness. For freeway facilities, MOE is measured in density (passenger cars per mile per lane). For urban facilities, MOE is measured in travel speed (miles per hour). For two-lane highway facilities, MOE is measured in percent time-spent following (percent).

b. LOS = Level of Service is based on Transportation Research Board, Highway Capacity Manual 2000.

Source: DKS Associates 2008

CUMULATIVE IMPACT *Cumulative Traffic Impact -Tower Road between SR 140 and Gerard Avenue. Tower Road would be one of the truck access routes to the proposed Wal-Mart Distribution Center. Based on field observations, this roadway segment currently has poor pavement conditions, and the pavement markings along the middle of the road are faded. The project's contribution to these intersections is a cumulatively considerable incremental contribution, and the project's cumulative impact would be significant.*

Mitigation Measure 6-11: It is recommended that the roadway segment between SR 140 and Gerard Avenue be improved to address these issues. In addition, the Tower Road approaches to the intersection at Gerard Avenue (and the approaches along Gerard Avenue to Tower Road) should be improved to provide proper turning radii for standard trucks as classified under the Surface Transportation Assistance Act (STAA). The project would be responsible for paying its fair share contribution toward this implementation measure.

With implementation of the mitigation measure, the impact would be reduced to a ***less-than-significant*** level.

VISUAL RESOURCES

CUMULATIVE IMPACT *Cumulative Visual Impact. The cumulative change of agricultural and open space views in the project region to urban land uses and the associated increase in nighttime light and glare and subsequent skyglow from past and planned future projects is a cumulatively considerable incremental contribution, and the project's cumulative impact would be significant.*

Past and future urban development has changed, and will continue to alter, the visual character along roadway corridors in both the City and County. Generally speaking, these changes involve the replacement of grazing/rural lands and vast areas of open space to urban uses, thus altering and limiting the open space views available to motorists along these roadways and residents living in the area. This trend will continue as future development projects are constructed in the region and in the City as a whole, consistent with growth planned in the City and County General Plans.

From a cumulative standpoint, substantial changes in visual conditions will continue as agricultural lands and open space are replaced by urban development. Increased urban development will also lead to increased nighttime light and glare and subsequent skyglow in the region and more limited views of the night sky.

Although these cumulative impacts can be minimized to a degree through topographic screening of structures, use of outdoor lighting that limits glare, appropriate building design, and other measures, the significant cumulative impact cannot be fully mitigated. The cumulative change of agricultural and open-space views in the project region to urban land uses and the associated increase in nighttime light and glare and subsequent skyglow from past and planned future projects is a significant cumulative impact. The project's incremental contribution to these impacts is cumulatively considerable, and the project's cumulative impact is therefore considered ***significant***.

6.2 GROWTH-INDUCING IMPACTS

6.2.1 REQUIREMENT FOR ANALYSIS OF GROWTH-INDUCING IMPACTS

According to Section 15126.2(d) of the State CEQA Guidelines, an EIR must discuss the growth-inducing impacts of the proposed project. Specifically, CEQA states that the EIR shall:

Discuss ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects that would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring the construction of new facilities that could cause significant environmental effects.

Also discuss characteristics of some projects that may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

A project can have direct and/or indirect growth inducement potential. Direct growth inducement would result if a project involved construction of new housing. Indirect growth inducement would result, for instance, if implementing a project resulted in substantial new permanent employment opportunities (e.g., commercial, industrial, or governmental enterprises); or a construction effort with substantial short-term employment opportunities that indirectly stimulates the need for additional housing and services to support the new employment demand; and/or removal of an obstacle to additional growth and development, such as removing a constraint on a required public utility or service (e.g., construction of a major sewer line with excess capacity through an undeveloped area).

Growth inducement itself is not an environmental effect but may lead to environmental effects. These environmental effects may include increased demand on other community and public services and infrastructure, increased traffic and noise, degradation of air or water quality, degradation or loss of plant or animal habitats, or conversion of agricultural and open space land to urban uses.

6.2.2 GROWTH INDUCING IMPACTS OF THE PROPOSED PROJECT

The project site is located within the jurisdictional boundaries of the City of Merced, and is contiguous with the City limit line on the eastern edge. Land immediately to the east of the site within the jurisdiction of the County of Merced is designated General Agriculture on the County General Plan and zoning maps; however, this area is within the City's Sphere of Influence and Specific Urban Development Plan. As such, there is a potential for this area to ultimately be annexed to the City of Merced, particularly when development is proposed.

As discussed in Sections 3.0 and 4.7, the project site and immediately surrounds lands are designated by the City of Merced for industrial uses. The City General Plan designates the site Industrial and the zoning ordinance indicates Heavy Industrial zoning. The proposed regional distribution center would be consistent with both the General Plan and zoning designations for the site.

The project site adjoins existing and planned public roadways. In particular, the site is in close proximity to Campus Parkway and the Mission Avenue/SR 99 interchange that will serve the area, including the proposed project. Since roadways serving the site were previously in existence and Campus Parkway and the Mission Avenue/SR 99 interchange were planned to be constructed before the application for the Wal-Mart Distribution Center was submitted, and are scheduled to be completed before the distribution center opens, the proposed project would not have a growth-inducing effect on roadway infrastructure.

As described in Section 4.12, public water and wastewater infrastructure is in close proximity to the project site. For example, there are 16-inch diameter water lines in Childs Avenue and in Kibby Road, and a 16-inch line exists within the Kibby Road right-of-way that transects the site. With regard to wastewater infrastructure, there is a 12-inch line in Childs, a 36-inch line in Gerard Avenue, and a 30-inch line in Kibby. Like the water line, the wastewater line transects the site within the Kibby Road right-of-way. Currently, there are no public storm drain facilities in close proximity to the site. Other critical utility infrastructure, such as electricity, natural gas, and telecommunication are in place near the site.

The proposed project would bring construction workers to the project site for each development phase. Because construction workers typically do not change where they live each time they are assigned to a new construction site, it is not anticipated that there would be any substantial relocation of construction workers to the City or Merced County associated with construction of the Wal-Mart Regional Distribution Center. According to the US Census, in 2000 there were 1,272 City residents and 5,081 County residents working in the construction industry. The existing number of residents in the City and Merced County who are employed in the construction

industry would likely be sufficient to meet the demand for construction workers that would be generated by the proposed project. Moreover, as noted elsewhere, as of May 2006 Merced County has a high unemployment rate of 8.9% (compared to 4.6% for California), which is likely to include persons trained in or suitable for employment in the construction industry. No substantial increase in demand for housing or goods and services would be created by project construction workers, and thus no growth inducement associated with construction workers would be expected.

The effect the proposed project would have on other public services, such as schools, police, fire, library and general municipal services, has been analyzed in Section 4.12. As noted, there is no anticipated significant impact that would require mitigation. Fire, protection, law enforcement, and other City services would be expanded only as necessary to meet project demand. In particular, as discussed in Section 4.12, existing police and fire protection services have sufficient capacity to serve the proposed project. In addition, the project would be required to pay fees to ensure adequate facilities and services are in place to meet project demands. Because adequate public services are available to serve the project or the proposed project would provide or ensure that additional public services would be available to meet project demands (i.e., police, fire), the project would not facilitate additional development requiring public services.

As noted in the Project Description (Section 3.0), the proposed project would not include a resident population and would not be a retail outlet for goods and services. Any growth-inducing effect the proposed regional distribution center may have relative to new Wal-Mart retail stores in the area or beyond is difficult to accurately determine. The proposed project can be viewed as a means to simply improve the service to existing retail outlets, given the fact that proximity to a distribution warehouse in and of itself and in the absence of consumer demand is not likely to warrant construction of a new retail facility.

Inasmuch as the proposed project would be one of the first large employers in this industrial area of Merced, it is probable that commercial uses that can service the needs of the truck drivers and anticipated 1,200 employees of the distribution center would seek location nearby. To the extent allowed by City zoning code, uses might be expected to include convenience stores, gasoline service stations, restaurants, and other retail establishments that would serve frequently recurring needs of employees and truck drivers. Development of this type would not be expected to cause significant environmental impacts based on daily operations. For example, these retail uses would not likely attract motorists not associated with the distribution center; therefore, there would be no appreciable increase in traffic. Development of new sites in the area could have impacts on resources such as wetlands, plants, and animals; however, it is anticipated that much of the demand for small retail would be accommodated by the proposed Merced Gateway Project.

In summary, growth inducement associated with the project is likely to be focused on retail services that serve the needs of the employees and vendors of the distribution center. The proposed project is not expected to induce growth of nearby industrial lands. Growth potential for industrial development on surrounding lands has been evaluated and provided for in the City General Plan and other relevant planning documents.

6.3 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES THAT WOULD BE CAUSED BY THE PROPOSED PROJECT

CEQA (Public Resources Code Section 21100[b][2]) provides that an EIR shall include a detailed statement setting forth “[i]n a separate section...[a]ny significant effects on the environment that would be irreversible if the project is implemented.” State CEQA Guidelines Section 15126.2(c) provides the following guidelines for analyzing the significant irreversible environmental changes of a project:

Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also irretrievable

damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

The proposed project would use both renewable and nonrenewable natural resources for project construction and operation. The proposed project would use nonrenewable fossil fuels in the form of oil and gasoline during construction and operation. Other nonrenewable and slowly-renewable resources consumed as a result of project development would include, but not necessarily be limited to, lumber and other forest products, sand and gravel, asphalt, petrochemical construction materials, steel, copper, lead, and water.

The proposed project is not anticipated to result in irreversible damage from environmental accidents, such as an accidental spill or explosion of a hazardous material. During construction, equipment would be using various types of fuel and material classified as hazardous. In the State of California, the storage and use of hazardous substances are strictly regulated and enforced by various local, regional, and state agencies. The enforcement of these existing regulations would preclude anticipated significant project impacts related to environmental accidents.

While the project site is designated for industrial use, the proposed project involves conversion of 230 acres of agricultural land to urban uses. This change in land use would represent a long-term commitment to urbanization, as the potential for developed land to be reverted back to productive agricultural land use is highly unlikely. From a cumulative standpoint, as noted earlier in this section, this conversion would also result in an irreversible loss of habitat for Swainson's hawk and burrowing owl, both special-status species, and a cumulative loss of the visual resource open agricultural land affords.

As described earlier in this section, vehicle movements resulting from the project would result in significant cumulative traffic impacts on certain study area intersection operations and on the roadway level of service of a segment of SR 140. Related to vehicle trips, as noted in Section 4.2, air emissions from project traffic would exceed SJVAPCD thresholds of significance for reactive organic gases and nitrogen oxides, resulting in a significant impact both during construction (short-term impact) and during project operations (long-term impact). Vehicle trips associated with the project would also result in a net gain in greenhouse gas emissions, thus contributing to global warming. A final impact related to vehicle traffic resulting from the proposed project is a significant noise impact on sensitive receptors along certain roadways.

6.4 UNAVOIDABLE SIGNIFICANT IMPACTS

Section 21100(b)(2)(A) of the Public Resources Code (PRC) provides that an EIR shall include a detailed statement setting forth "in a separate section any significant effect on the environment that cannot be avoided if the project is implemented." Accordingly, a summary of significant environmental impacts of the project that cannot be mitigated to a less-than-significant level is provided, as follows.

CONVERSION OF FARMLAND

As described under Impact 4.1-1, conversion of Prime soils to nonagricultural production uses is considered a significant adverse impact under CEQA. The General Plan EIR states that future industrial, residential, and service area needs must be met through the provision of urban land uses with adequate infrastructure. Compact urban development, as concluded by a report prepared by the American Farmland Trust (Alternatives for Future Urban Growth in California's Central Valley), results in less agricultural land conversion than low-density "sprawl" type of development. The General Plan EIR concludes that to achieve the goals of maintaining a compact urban form, and other types of land-use compatibility issues, mitigation that would eliminate this loss is not possible.

Impacts related to direct conversion of farmland have been quantified according to several criteria using the California Land Evaluation and Site Assessment model, as described below. Using methodology recommended

by DOC, the LESA model is used to assess the significance of agricultural land conversion resulting from implementation of the proposed project. In Section IV of the LESA Instructional Manual, the significance of project impacts is characterized in the following manner.

The LESA model was used to analyze the project site, and the project scored an 88.4 with subtotals of 43.4 and 45 for the land evaluation and site assessment portions, respectively. Based on the scoring established by the state, this is considered significant. Furthermore, the project would result in the conversion of approximately 228.68 acres of farmland, as defined by CEQA, which is also considered a significant impact. Because of the project would result in the conversion of 228.68 acres of Farmland and the significant LESA score, the effect on Farmland is considered a significant impact. Furthermore, industrial uses adjacent to agricultural land can result in land use conflicts and create incentives for agricultural producers to discontinue agricultural operations and sell their land for development.

The proposed project would be within the Merced city limits on the fringe of existing development in the southeast portion of the City, with a large amount of the surrounding land uses in agriculture, but the area also includes adjacent industrial uses. The proposed project would be located in an area that is planned for future industrial development, according to the General Plan. The site is surrounded to the east, south, and west by other agricultural uses. To the north are two existing manufacturing and industrial businesses. Further to the northwest is the City of Merced, which is primarily urbanized.

As mentioned previously, placing industrial adjacent to agriculture can produce land use conflicts and can lead to increased conversion of agricultural land. Approximately 70% of the project site consists of Prime Farmland, the conversion of which would be considered a **significant** impact.

The City's General Plan EIR further concludes that to achieve the goals of maintaining a compact urban form, and other types of land-use compatibility issues, mitigation that would eliminate the loss of agricultural land to urban development is not possible. Furthermore, while protection of Farmland through purchase of voluntary farmland conservation easements can help to reduce the level of impact that the loss of farmland associated with this project would have, it would not fully compensate for the direct loss of agricultural land in Merced and the region. Therefore, because no mitigation is available to reduce this impact, the project would result in a **significant and unavoidable** impact. This conclusion is consistent with the conclusion of the EIR prepared for the Merced Vision 2015 General Plan. It should be noted that the City considered the significant impact associated with the conversion of farmland resulting from buildout of the General Plan and adopted a Statement of Overriding Considerations (Resolution No. 97-22).

OPERATIONAL TRAFFIC NOISE

As discussed under Impact 4.8-3, the increase in daily traffic volumes resulting from implementation of the proposed project would generate increased noise levels along nearby roadway segments. Project-generated traffic would result in a noticeable increase in traffic noise levels (i.e., greater than 3 dBA) on six of the modeled roadway segments (i.e., Gerard Avenue between Campus Parkway and project site entrances, Gerard Avenue between the project site entrances and Tower Road, Mission Avenue between SR 99 and Coffee Street, Campus Parkway between Coffee Street and Gerard Avenue, Tower Road between Gerard Avenue and Childs Avenue, Tower Road between Childs Avenue and SR140).

The traffic noise level 100 feet from the segment of Tower Road between Gerard Avenue and Childs Avenue would increase from 45.5 to 57.2 dBA L_{dn} under baseline 2010 conditions (modeling provided in Appendix D). While the resultant noise levels at the houses located along both road segments would be less than the County's land use compatibility threshold of 65 dBA L_{dn} , the L_{dn} increase at both sensitive receptors would be noticeable (i.e., greater than 3 dBA). Furthermore, because the size of the noise level increase along both Tower Road between Gerard Avenue and Childs Avenue would be greater than 10 dBA, it would be perceived as a doubling of the sound level (Egan 1988). The traffic noise level along Tower Road between Gerard Avenue and Childs

Avenue would be 53.2 dBA CNELL_{dn}, which is a 7.7 dBA increase compared to Baseline 2030 conditions, and the traffic noise level along Tower Road between Childs Avenue and SR 140 would be 52.9 dBA CNELL_{dn}, which is a 7.4 dBA increase compared to Baseline 2030 conditions. These increases are due to the fact that the project would continue to generate some employee-based trips on Tower Road. Because the noise level increases would be noticeable (i.e., greater than 3 dBA) at both residences along Tower Road, during both the near-term and long-term baseline conditions, they would be considered a **significant impact**.

The traffic noise level along the segment of Gerard Avenue between Campus Parkway and the project site entrances would increase from 56.5 to 66.9 dBA L_{dn}/CNEL at a distance of 100 feet from the road under baseline 2010 conditions, as shown in Table 4.8-11. This segment passes by only one off-site sensitive receptor, a farm house located approximately 95 feet south of the road and within the city limits. At this distance the resultant noise level would be approximately 67.3 dBA L_{dn}/CNEL, which exceeds the City's "normally acceptable" standard of 60 dBA L_{dn}/CNEL for residential land uses. Assuming a typical exterior-to-interior noise reduction of 25 dBA, the interior noise level at this residence would be 42.3 dBA L_{dn}/CNEL, which is less than the interior noise level standard of 45 dBA L_{dn}/CNEL. Nonetheless, the 10.5 dBA increase in the exterior L_{dn}/CNEL noise level would be perceived as a doubling of sound (i.e., greater than 10 dBA). As a result, the traffic noise level increase at this farmhouse would be considered a **significant impact**.

The traffic noise level would increase by 10.4 dBA along the segment of Gerard Avenue between the project site entrances and Tower Road, by 4.6 dBA along the segment of Campus Parkway between Coffee Street and Gerard Avenue, and by 3.7 dBA along the segment of Mission Avenue between SR 140 and Coffee Street; however, there are no existing or planned noise-sensitive receptors located along these road segments.

Mitigation Measure 4.8-3 requires the developer to implement the following measures to reduce the exposure of existing sensitive receptors to project-generated traffic noise levels:

- ▶ The applicant shall offer the owners of the two affected residences on the east side of Tower Road between SR 140 and Gerard Avenue and the single residence located on the south side of Gerard Avenue between Campus Parkway and the project site entrances the installation of a sound barrier along the property line of their affected residential properties. The sound barriers must be constructed of solid material (e.g., wood, brick, adobe, an earthen berm, or combination thereof). All barriers shall blend into the overall landscape and have an aesthetically pleasing appearance that agrees with the color and rural character of the houses and the general area, and not become the dominant visual element of the community. Relocation of the driveway at each residence may be necessary in order to preclude having gaps in the sound barrier. Relocation of landscaping may also be necessary to achieve an aesthetically pleasing appearance. The owners of the affected properties may choose to refuse this offer; however, the offer shall be made available to subsequent owners of the property. If an existing owner refuses these measures a deed notice must be included with any future sale of the property to comply with California state real estate law, which requires that sellers of real property disclose "any fact materially affecting the value and desirability of the property" (California Civil Code, Section 1102.1[a]) and shall indicate that the applicant agrees to install a sound barrier, as described above.. The applicant shall be responsible for all costs incurred by the implementation of this mitigation measure.
- ▶ To ensure compliance with applicable noise standards, a site-specific noise study shall be conducted by the City or its approved consultant to determine specific noise barrier design. The applicant shall be responsible for all costs incurred by the implementation of this mitigation measure.
- ▶ The cost to fully implement this mitigation measure, including related studies, and design and installation shall be completely funded by the applicant.
- ▶ The applicant shall maintain its truck fleet in proper working condition, including truck mufflers and exhaust systems, according to manufacturers' specifications.

The sound barriers required along the east side of Tower Road by Mitigation Measure 4.8-3 are considered feasible because they would need to achieve a minimum 4.7 dBA reduction to minimize the traffic noise increase to a less-than-significant level under baseline 2030 conditions (i.e., to an increase smaller than 3 dBA); however, this would not occur until some of the project-generated traffic is diverted to the future extended Campus Parkway. Until the completion of Campus Parkway north of Childs Road, a reduction of 8.8 dBA would be needed at the house located on the segment of Tower Road between Gerard Avenue and Childs Avenue and a reduction of 5.1 dBA would be needed along the segment of Tower Road between Childs Avenue and SR 140 to offset noticeable traffic noise increases. Because it would not be feasible to design sound barriers that provide 8.3 dBA levels of reduction and meet the required aesthetic and design elements required by Mitigation Measure 4.8-3, this impact would be considered ***significant and unavoidable until Campus Parkway is extended to SR 140.***

The sound barriers study required by Mitigation Measure 4.8-3 along the south side of the segment of Gerard Avenue between Campus Parkway and the project site entrances would provide some protection against the increased levels of traffic noise generated by the project; however, these barriers would not provide enough reduction to offset the 15.210.5 dBA traffic noise level increase along this road segment. Therefore, because it would not be possible to design a sound barrier that provides enough reduction to reduce the resultant noise level to less than the City's "normally acceptable" standard of 60 dBA L_{dn} /CNEL for residential land uses and meet the required aesthetic and design requirements, this impact would be considered ***significant and unavoidable.***

GREENHOUSE GAS EMISSION

As indicated under Impact 4.2-6, construction of the project would generate approximately 5,226.7 tons of CO₂ during the 12-month construction period. Though the construction period is projected to last for one year, the CO₂ emissions generated during that year-long period would persist in the atmosphere for much longer periods of time, on the order of tens to hundreds of years. Operation of the project would generate annual emissions of approximately 12,595 tons of CO₂ during each year of the life of the project. There are no adopted numeric thresholds above or below which a significant increase in greenhouse gas emissions would occur. Absent this type of guidance, and given the cumulative nature of contribution of these emissions to global climate change, these levels would constitute a considerable net increase in GHG emissions. In addition, this increase could conflict with the state's AB 32 goals, which require reductions in statewide GHG emission levels. As a result, this impact would be ***significant.***

The applicant is required to implement Mitigation Measures 4.2-6a through 4.2-6d, which include a variety of emission reduction measures and offsets; however, at the time of preparing this EIR, these reductions cannot be fully quantified. In addition, implementation of Mitigation Measure 4.2-1c and Mitigation Measure 4.2-2e, which require the Applicant to implement an emissions reduction agreement with SJVAPCD to reduce construction and operational emissions of ROG and NO_x to less than the SJVAPCD-established threshold for ROG and NO_x 10 TPY, will have the added benefit of reducing construction and operational GHG emissions. However, the size of the associated GHG reduction cannot be quantified at the time of writing this EIR and, more significantly, there is not established methodology for verifying the associated GHG reductions from emission reduction agreements. Moreover, the net increase in GHG emissions would may still be of an amount that would be considered substantial. Because the project would potentially still result in a net increase in CO₂ emission levels and conflict with the state's AB 32 goals, this impact would be remain ***significant and unavoidable.***

DEGRADATION OF VISUAL CHARACTER

As described under Impact 4.13-2, the site contains agricultural fields, fallow agricultural lands, and orchard trees that cover much of the 230 acres of the project site. Various aspects of project development have the potential to alter views of the project site. Grading activities and construction of buildings and appurtenant structures have the greatest potential for creating such impacts. While the existing project vicinity is predominately agricultural uses, two existing manufacturing warehouses are located directly north of the project site, and continuing progressively northward is the urbanized area of Merced. Extending southward from the project site are existing, primarily

agricultural uses and scattered agricultural and residential units. The project site is not readily visible from State Route 99, which is approximately 2 miles west of the site.

The proposed project would involve grading of most of the site, thus removing the existing crops and orchard trees. Buildings up to 40 feet in height with wide horizontal surfaces would be constructed, along with storage tanks. Numerous vehicles, including large tractor trailers, would be visible on the site at any given time, and large portions of the site would be paved to accommodate vehicle and pedestrian movement. Landscaping is expected to be added, which may soften and obscure buildings to some degree; however, details are not known at this time. Nonetheless, the site is similar to other agricultural land in the Merced area and does not contain any notable visual resources. Moreover, proposed development will not block any scenic vista. However, implementation of the proposed project would degrade the existing character of the project site, replacing undeveloped orchards and agricultural fields with industrial development, and would consequently result in a **significant and unavoidable** impact.

The City has nine areas throughout its planning area designated as Scenic Corridors. None of these corridors includes the project site. The project site is not visible from State Route 99, located approximately 2 miles west of the site, nor is this highway considered scenic. Therefore, the project site is not readily visible from a designated State Scenic Highway and the project would not have an adverse visual impact on a scenic vista or substantially degrade a scenic resource. The project would result in a **significant and unavoidable** impact.

Although impacts would be significant and unavoidable after mitigation, Mitigation Measure 4.13-2 is included to reduce impacts to the extent feasible. This mitigation measure requires the applicant to prepare and submit and landscaping plan to the satisfaction of the City that includes the following features and accomplishes the following objectives on the site

- ▶ The developer shall plant trees (minimum 15 gallon) no further than 30 feet apart, on site along the perimeter roads surrounding the project site, including Childs Avenue, Gerard Avenue, and Tower Road. These trees are in addition to the street trees required every 40 feet per City Standards. Shrubs and turf shall be combined with the trees in a minimum 15-foot wide landscape strip along the entire project perimeter which abut public streets. Irrigation shall be provided to all landscape areas. A detailed landscape and irrigation plan per MMC 17.60 shall be approved by City staff at the building permit stage.
- ▶ Parking lot trees at a minimum of one for each six spaces (per MMC 20.58.385) shall be required in all employee and visitor parking areas on site. Parking lot trees, however, shall not be required in truck or trailer parking areas.
- ▶ Existing almond trees shall be preserved in any areas of the site that are to be left undeveloped by buildings, parking areas, driveways, drainage basins, etc. The developer shall submit a plan showing the location of existing trees and the proposed development and the City shall approve a plan at the building permit stage for preserving as many trees as feasible.
- ▶ Landscaping along the entire site perimeter shall consist of a combination of evergreen and deciduous trees, and shrubs that will interrupt views of the site from adjoining roadways.
- ▶ Landscaping consisting of a combination of evergreen and deciduous trees, and shrubs shall be provided within the boundaries of all parking areas.
- ▶ Landscaping consisting of a combination of evergreen and deciduous trees shall be provided in planters in front of all building walls to soften the appearance of the vertical surfaces. All vegetation shall be maintained by an automatic irrigation system. The landscaping and irrigation plans and details shall be subject to review and approval by the City. The City shall create and adopt a mechanism that will ensure that Wal-Mart Stores East, LP maintains the landscaping in accordance with the adopted plan.

The impact remains **significant and unavoidable** following mitigation.

CUMULATIVE IMPACTS

The following cumulative impacts are identified earlier in this section as “significant.”

- ▶ Cumulative Agricultural Land Impact
- ▶ Cumulative Air Quality Impact (Greenhouse Gas Emissions)
- ▶ Cumulative Biological Resources Impact (Special Status Species Foraging Habitat)
- ▶ Cumulative Noise Impact
- ▶ Cumulative Traffic Impact—Intersection Operations (2030 with Project)
- ▶ Cumulative Traffic Impact—SR 140 Between Santa Fe Avenue and Kibby Road Roadway Segment Operations (2030 with Project)
- ▶ Cumulative Traffic Impact—Traffic Signal Operations (2030 with Project)
- ▶ Cumulative Traffic Impact -Tower Road between SR 140 and Gerard Avenue
- ▶ Cumulative Visual Impact

Mitigation measures would not reduce these cumulative impacts to a less-than-significant level. Please refer to the discussion under 6.1.2 “Cumulative Impacts of the Proposed Project” above for more detailed discussion.

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