UC Merced and University Community Project

Draft Environmental Impact Statement/Environmental Impact Report

Volume 3

SCH No. 2008041009

November 2008

U.S. Army Corps of Engineers, Sacramento District

University of California

UC Merced and University Community Project
Draft Environmental Impact Statement/ Environmental Impact Report

Volume 3

SCH # 2008041009

November 2008

Prepared for:

U.S. Army Corps of Engineers, Sacramento District
University of California, Merced

Prepared by:

Impact Sciences, Inc.
ICF Jones & Stokes
Fehr & Peers

U.S. Army Corps of Engineers, Sacramento District

University of California

TABLE OF CONTENTS

VOLUME 1

TABLE OF CONTENTS (continued)

VOLUME 1 (continued)

TABLE OF CONTENTS (continued)

VOLUME 1 (continued)

TABLE OF CONTENTS (continued)

VOLUME 2

TABLE OF CONTENTS (continued)

VOLUME 2 (continued)

TABLE OF CONTENTS (continued)

VOLUME 2 (continued)

TABLE OF CONTENTS (continued)

VOLUME 3

TABLE OF CONTENTS (continued)

VOLUME (continued)

TABLE OF CONTENTS (continued)

VOLUME 3 (continued)

Appendices (on CD; Volume 2 back cover)

ES Notice of Preparation/Notice of Intent and Scoping Comments

2.0 Resource Management Documentation

2.0-1 Management Plan for Conservation Plan

2.0-2 Final Biological Opinion on the Proposed University of California Merced Campus

2.0-3 Conservation Strategy

2.0-4 Compensatory Wetland Mitigation and Monitoring Plan

2.0-5 Resource Mitigation Plan

3.0 Alternative Analyses
2004 Alternatives Analysis
Supplemental Alternatives Analysis

4.2 Land Evaluation and Site Assessment Model Output

4.3 Air Quality Documentation
General Conformity Analysis
Emissions Calculations

4.13 Traffic Impact Analysis

LIST OF FIGURES

VOLUME 1

LIST OF FIGURES (continued)

VOLUME 2

VOLUME 3

LIST OF TABLES

VOLUME 1

LIST OF TABLES (continued)

VOLUME 1 (continued)

LIST OF TABLES (continued)

VOLUME 1 (continued)

VOLUME 2

LIST OF TABLES (continued)

VOLUME 2 (continued)

LIST OF TABLES (continued)

VOLUME 2 (continued)

VOLUME 3

1.0 INTRODUCTION

This project-level analysis assesses the potentially significant environmental effects of the UC Merced (UCM) 2020 Project. This section presents a brief overview of the proposed project and the purpose of the project-specific impact analyses; the relationship of this volume to the 2009 UC Merced LRDP and Volumes 1 and 2 of the Draft EIS/EIR; the role of the lead agency preparing this Draft EIR; the review and certification process; areas of known controversy; and the organization of this volume of the Draft EIS/EIR.

1.1 OVERVIEW OF THE PROPOSED PROJECT

The UCM 2020 Project is a project proposed by the University that would develop the next phase of the UC Merced Campus with facilities needed to support an enrollment level of approximately 10,000 full-time equivalent (FTE) students. These facilities would include academic, administrative, research, and recreational buildings, student residences and student services buildings, utilities and infrastructure, outdoor recreation areas, and associated roadways, parking, and landscaping.

1.2 PURPOSE OF THE PROJECT-SPECIFIC IMPACT ANALYSES

UC Merced has prepared this environmental impact analysis for the UCM 2020 Project for the following purposes:

- To satisfy the requirements of the California Environmental Quality Act (CEQA);
- To inform the general public, the local community, public agencies, and the University of the nature of the proposed project, its potentially significant environmental impacts, and feasible measures to mitigate those impacts; and
- To enable The Regents to consider the environmental consequences of the proposed project when deciding whether or not to approve the proposed UCM 2020 Project.

1.3 RELATIONSHIP OF PROPOSED PROJECT TO THE 2009 UC MERCED LRDP AND VOLUMES 1 AND 2 OF THE DRAFT EIS/EIR

The Proposed Action analyzed in Volumes 1 and 2 of this Draft EIS/EIR consists of the development of a major research university in Merced County and an associated community needed to support the Campus. The 2009 LRDP is proposed by the University to guide the development of the 815-acre UC Merced Campus for an ultimate enrollment level of 25,000 FTE students. Volumes 1 and 2 of the Draft EIS/EIR present the environmental impacts from the development of the Campus pursuant to the proposed 2009 LRDP and the potential environmental impacts from the development of the proposed

University Community. The Draft EIS/EIR for the 2009 LRDP is a subsequent EIR as it updates the previous 2002 LRDP EIR that was prepared and certified by The Regents in 2002. That 2002 LRDP EIR evaluated the environmental impacts from the adoption and implementation of the 2002 LRDP and the implementation of the UC Merced Phase 1 Project.

Because the 2009 LRDP and the proposed University Community are long-term development plans for the two components of the Proposed Action, the analysis in Volumes 1 and 2 is a program-level analysis as defined by CEQA. The University recognizes that additional environmental review pursuant to CEQA is required before any specific development project within the campus can be approved for implementation. This volume of the Draft EIS/EIR, Volume 3, analyzes the proposed development of the Campus through 2020 at a project level of detail. The project-specific environmental analyses in Volume 3 build upon the broader programmatic analysis in Volumes 1 and 2, and focus on evaluating and disclosing environmental impacts that could potentially result if the development proposed as part of the UCM 2020 Project is implemented. The organization of the project-specific analysis follows the same overall format as that of the Draft EIS/EIR in Volumes 1 and 2. However, it avoids repetition of general background and setting information for environmental topic areas, the regulatory context, overall growth-related issues, issues that were evaluated in sufficient detail in Volumes 1 and 2 for which there is no additional information that would require further analysis, cumulative impacts, and alternatives to the 2009 LRDP. Instead, the project-specific analyses evaluate more detailed project-level information.

Mitigation measures identified in Volumes 1 and 2 that apply to a significant environmental effect caused by development of the UCM 2020 Project will be implemented as part of this project and are identified in this volume. To the extent that additional project-specific mitigation measures for potentially significant impacts of the proposed UCM 2020 Project are required, those are identified in this volume.

1.4 REVIEW AND CERTIFICATION PROCESS

The Board of Regents of the University of California (The Regents) is the lead agency for compliance with CEQA. The Regents has determined that an EIR must be prepared to evaluate the environmental impacts from the implementation of UCM 2020 Project. The evaluation presented in this volume is at a level such that if this volume is certified, new buildings and other improvements to be developed within the Campus through 2020 could proceed for construction without additional environmental review or be evaluated for approval with an environmental review tiered from this analysis in the future if necessary. This volume is part of the UC Merced and University Community Project Draft EIS/EIR, and is being circulated in conjunction with Volumes 1 and 2 for public and agency review. It is anticipated that the UCM 2020 Project would be presented to The Regents for approval at the same time as the 2009 LRDP, and project approval would be subsequent to and contingent on The Regents' approval of the 2009 LRDP.

The analysis in this volume is a CEQA only analysis. The environmental consequences of the Proposed Action for purposes of National Environmental Policy Action (NEPA) compliance were addressed in Volumes 1 and 2. The roles of other Cooperating, Responsible, and Trustee Agencies are discussed in **Section 1.0** of **Volume 1** of this Draft EIS/EIR.

1.5 AREAS OF KNOWN CONTROVERSY OR CONCERN

No issues specific to the UCM 2020 Project were raised during the public scoping meeting and/or in written scoping comments. Issues raised for the UC Merced and University Community Project as a whole include potential impacts related to the following:

- Conversion of prime farmland
- Wetlands, aquatic resources, and other biological resources
- Groundwater and surface water quality
- Water supply and water supply infrastructure
- Stormwater drainage
- Energy use, air quality, and climate change
- Traffic and road safety
- Growth inducement
- Project location

1.6 ORGANIZATION OF THIS VOLUME

This volume is organized into six chapters:

Section 1.0, Introduction. This section provides an overview of the project and the relationship of the proposed project to the Proposed Action evaluated in Volumes 1 and 2.

Section 2.0, Executive Summary. This section summarizes the UCM 2020 Project and alternatives, describes potentially significant impacts and mitigation measures, and identifies the environmentally superior alternative (in accordance with CEQA).

Section 3.0, **Project Description**. This section describes the project location, project background, project need and project objectives, the project evaluated in this document (in accordance with *State CEQA*

Guidelines, Section 15126.2d), and the public agency approvals that would be required to implement the project.

Section 4.0, Environmental Setting, Impacts, and Mitigation Measures. This section contains the analysis of each of the environmental topics addressed in this volume. Each topic is addressed in a separate subsection organized as follows: introduction; environmental setting; project impacts and mitigation measures; and cumulative impacts.

Section 5.0, Alternatives. This section provides an analysis of the alternatives to the proposed project. As required by the *State CEQA Guidelines*, a discussion of the reasons for selecting the alternatives analyzed in this section is provided, along with a comparative analysis of each alternative with the proposed project and identification of the "environmentally superior" alternative.

Section 6.0, References. This section identifies the references cited in this volume.

For preparers of this volume, please see **Section 8.0** in **Volume 2**.

2.0 EXECUTIVE SUMMARY

2.1 PURPOSE

This volume of the Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the UC Merced and University Community Project evaluates the potential for significant environmental impacts associated with the development of the next phase of the UC Merced (UCM) campus with facilities to support an enrollment level of approximately 10,000 full-time equivalent (FTE) students. Proposed facilities would include academic, administrative, research, and recreational buildings, student residences and student services buildings, utilities and infrastructure, outdoor recreation areas, and associated roadways, parking, and landscaping. This Executive Summary is intended to provide the decision makers, responsible agencies, and the public with a clear, simple, and concise description of the proposed project and its potential significant environmental impacts. The *California Environmental Quality Act (CEQA) (*Section 15123) requires that a summary be included in an EIR that identifies all major conclusions, identifies each significant effect, recommended mitigation measure(s), and alternatives that would minimize or avoid potential significant impacts. The summary is also required to identify areas of controversy known to the lead agency, including issues raised by agencies and the public and issues to be resolved. These issues include the choice among alternatives and whether or how to mitigate significant effects.

2.2 PROJECT LOCATION

The project site is located in eastern Merced County, approximately 2 miles northeast of the limits of the City of Merced. The UCM 2020 Project is located in the north-central portion of the proposed 815-acre campus**,** and is adjacent to the main entry of the existing campus. Existing land uses on the UCM campus consist of three predominant uses: the developed Phase 1.1 Campus, grasslands used for seasonal grazing, and areas under irrigated pasture. The previously developed Phase 1.1 Campus includes three major academic buildings, a recreation and wellness building, 10 student-housing buildings, a recreational field, a central utilities plant and related structures, a water well and storage tank, and a number of paved or gravel parking lots. The buildings on the Phase 1.1 Campus are two to four stories high and have exterior earth-tone colors, such as brown, beige, dark orange, and gray. Larger structures on site are accented with decorative metal siding and large windows. Landscaping is present throughout the Phase 1.1 Campus. The remainder of the Campus site surrounding the Phase 1.1 Campus area to the northeast, east, and south consists of undeveloped land that is covered with annual grasses or is under irrigated pasture use.

2.3 PROJECT DESCRIPTION

The UCM 2020 Project is a project proposed by the University to develop the next phase of the UC Merced campus with the facilities needed to support an enrollment level of 10,000 full-time equivalent (FTE) students. The UCM 2020 Project represents a portion of the long-term development proposed under the UCM 2009 Long Range Development Plan (2009 LRDP). Volume 1 of this Draft EIS/EIR presents the a summary of the 2009 LRDP, which is proposed by the University to guide the development of the UC Merced campus for an ultimate enrollment level of 25,000 FTE students. The 2009 LRDP envisions that the development of the 815-acre campus would occur in four phases.

The proposed project consists of the next major phase of campus development and encompasses approximately 193 acres of the land to the south and southeast of the Phase 1.1 Campus. When completed, the combined development within UCM Phases 1 and 2 would support an enrollment level of 10,000 FTE students. A portion of Phase 1 and the entirety of UCM Phase 2 have not been previously evaluated at a project level or approved by the University. These development phases together make up the UCM 2020 Project that is evaluated at a project level in this volume for its environmental impacts.

This Draft EIS/EIR also considers the federal actions associated with the development of the Campus and University Community. Because the federal actions associated with the UC Merced and University Community Project are fully evaluated in Volumes 1 and 2 of this Draft EIS/EIR, this volume includes only a program-level analysis of the UCM 2020 Project as defined by CEQA.

2.4 PURPOSE AND NEED/OBJECTIVES OF THE PROPOSED ACTION

The specific purpose of the UCM 2020 Project is to construct the buildings and other facilities needed to provide adequate space for envisioned programs and enrollment growth through academic year 2019-20. All of the objectives of the 2009 LRDP also apply to the UCM 2020 Project. Additionally, the specific objectives are to:

- construct the next set of buildings that support the projected enrollment growth and new programs that are anticipated to be established on the campus in the next 10 years;
- construct buildings that are designed with enough flexibility to accommodate the growing university programs while providing state-of-the-art facilities for the growing campus population; and
- develop facilities in a manner that promotes a logical development pattern for later phases of campus development.

2.5 TOPICS OF KNOWN CONCERN

To determine which environmental topics should be addressed in this Draft EIS/EIR, UC Merced circulated a Notice of Preparation (NOP) and Notice of Intent (NOI) in order to receive input from interested public agencies and private parties. Copies of the NOP and NOI are presented in **Appendix ES** of this Draft EIS/EIR. No issues specific to the UCM 2020 Project were raised during the public scoping meeting or in written scoping comments. However, the following topics are analyzed in this volume of the EIR/EIS:

- Aesthetics
- Agricultural Resources (including Prime Farmlands)
- Air Quality
- Biological Resources (including wetlands, ecologically critical areas, endangered and threatened species)
- Cultural Resources (historical and archaeological resources)
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Socioeconomics (including Environmental Justice)
- Public Services and Recreation (including Parklands)
- Transportation and Traffic
- Utilities and Service Systems
- Other Resources (mineral resources, public health and safety, navigation, and wild and scenic rivers)

2.6 ISSUES TO BE RESOLVED/AREAS OF CONTROVERSY

Although no issues specific to the UCM 2020 Project were raised during the public scoping meeting and/or in written scoping comments, issues raised for the UC Merced and University Community Project as a whole include potential impacts related to the following:

- Conversion of prime farmland
- Wetlands, aquatic resources, and other biological resources
- Groundwater and surface water quality
- Water supply and water supply infrastructure
- Stormwater drainage
- Energy use, air quality, and climate change

- Traffic and road safety
- Growth inducement
- Project location

2.7 ALTERNATIVES

Consistent with CEQA requirements, a reasonable range of alternatives was evaluated and considered in an effort to identify a preferred alternative that was consistent with the stated purpose of constructing facilities to provide adequate space for envisioned programs and enrollment growth through academic year 2019-20 to support 10,000 full-time equivalent students. The alternatives analyzed in detail in this EIS/EIR are presented below.

Alternative 1, No Project. With this alternative, the proposed project would not be implemented. In the short term, the existing campus would continue to be used, but would not be expanded beyond its present level of development except for a few facilities already approved but not yet constructed as part of the Phase 1.1 Campus. The remainder of the campus would likely remain rural in character with continued agricultural and pasture operations dominating the land uses. On-site wetlands would remain mostly intact with continued disturbance and some degradation from ranching and other agricultural activities. In the long term, however, the existing campus could be subject to some form of intensified development as demand for academic and support facilities and services increases. This alternative would reduce or avoid all of the significant impacts of the proposed project, but would not achieve any of its objectives.

Alternative 2, Reduced Density. This alternative would develop facilities and infrastructure to support a campus population of approximately 7,000 to 7,500 FTE students, equivalent to the existing campus population plus approximately half the population increase associated with the UCM 2020 Project as proposed. Fewer academic buildings and student housing and support facilities would be needed in order to support this reduced population, and the amount of new infrastructure needed would also be reduced. Alternative 2 would include approximately 2 million GSF of academic space, 300,000 GSF of research space, 70,000 GSF of student services space, and 3,000 beds for resident students. Buildings would generally be smaller in scale and height than proposed under the UCM 2020 Project. This alternative would reduce or avoid some of the significant impacts of the proposed project, but would not reduce the project's significant and unavoidable impacts to a less than significant level. Alternative 2 would achieve most of the project objectives.

2.8 IMPACT SUMMARY

A detailed discussion regarding potential impacts of the proposed project is provided in **Section 4.0, Affected Environment and Environmental Consequences.** A summary of the impacts of the UCM 2020 Project is provided below in **Table 2.0-1, Summary of Impacts and Mitigation Measures, UCM 2020 Project**. Also provided in **Table 2.0-1** are mitigation measures that are proposed to avoid or reduce significant project impacts. The table indicates whether or not implementation of the recommended mitigation measures would reduce the impact to a less than significant level. A summary of the impacts of the UCM and University Community Project as a whole is provided in **Table 2.0-1, Summary of Impacts and Mitigation Measures**, in **Volume 1** of this Draft EIS/EIR.

Impacts related to aesthetics (visual character and light and glare), air quality, and population growth were found to be significant and unavoidable. All other impacts were found to be less than significant or less than significant after incorporation of mitigation measures identified in this Draft EIS/EIR.

Table 2.0-1
Summary Table of Impacts, Mitigation Measures, and Level of Significance after Mitigation

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.1 Aesthetics			
Impact AES-1		**Mitigation Measure AES-1**	
Development under the UCM 2020 Project would affect scenic vistas.	Potentially Significant	**Implement Program Level Mitigation Measure AES-1:** **Mitigation Measure AES-1a:** The University will plant tall trees along the campus' western boundary to screen views of the campus facilities from Lake Yosemite Regional Park. **Mitigation Measure AES-1b:** Where possible, major vehicular and pedestrian transportation corridors on the Campus shall be located and designed to provide views of the Sierra Nevada.	Less than Significant
Impact AES-2		**Mitigation Measure AES-2**	
Development under the UCM 2020 Project would substantially alter the visual quality and character of the site and its surroundings.	Significant	Implement **Program Level Mitigation Measure AES-3**: **Mitigation Measure: AES-3a:** New above-ground infrastructure in the University Community and the Campus shall be designed to the following standards: (a) Screen above-ground infrastructure from view from public rights-of-way or scenic vistas, via landscaping, fencing, or other architectural screening; (b) Require creative design measures to camouflage structures by integrating them with existing buildings and among other existing uses; (c) Locate above-ground infrastructure on sites that are not visible from visually sensitive areas, such as residential communities and open space areas; (d) Require providers to co-locate their structure on a single site, where technically feasible and visually desirable; and (e) Locate antennae and equipment on other existing community facility sites, such as water tanks or utility poles.	Significant and Unavoidable

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.1 Aesthetics (continued)			
Impact AES-3		**Mitigation Measure AES-3**	
Development under the UCM 2020 Project would create a new source of nighttime light and glare in the vicinity.	Potentially Significant	No further mitigation is feasible.	Significant and Unavoidable
4.2 Agricultural Resources			
Impact AG-1		**Mitigation Measure AG-1**	
Development under the UCM 2020 Project would result in the conversion of Important Farmland, including Prime Farmland, Unique Farmland, and Farmland of Statewide Importance.	Less than Significant	No mitigation is required.	Less than Significant
4.3 Air Quality			
Impact AQ-1		**Mitigation Measure AQ-1**	
Development under the UCM 2020 Project would result in construction emissions that would violate an air quality standard or contribute substantially to an existing or projected air quality violation.	Less than Significant	No mitigation is required.	Less than Significant

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.3 Air Quality (continued)			
Impact AQ-2		**Mitigation Measure AQ-2**	
Development under the UCM 2020 Project would result in operational emissions that would violate an air quality standard or contribute substantially to an existing or projected air quality violation.	Potentially Significant	Implement **Program Level Mitigation Measures AQ-2a through 2c:** **Mitigation Measure AQ-2a:** The Campus will work with the SJVAPCD to ensure that emissions directly and indirectly associated with the Campus, University Community, and induced growth are adequately accounted for and mitigated in applicable air quality planning efforts. The SJVUAPCD can and should adopt adequate measures consistent with applicable law to ensure that air quality standard violations are avoided. **Mitigation Measure AQ-2b:** The Campus and the University Community shall implement the following measures to reduce emissions from vehicles: • Provide pedestrian-enhancing infrastructure to encourage pedestrian activity and discourage vehicle use. • Provide bicycle facilities to encourage bicycle use instead of driving. • Provide transit-enhancing infrastructure to promote the use of public transportation. • Provide facilities to accommodate alternative-fuel vehicles such as electric cars and CNG vehicles. • Improve traffic flows and congestion by timing of traffic signals to facilitate uninterrupted travel.	Significant and Unavoidable

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.3 Air Quality (continued)			
Impact AQ-2 (continued)		**Mitigation Measure AQ-2 (continued)**	
		Mitigation Measure AQ-2c: The Campus and the University Community shall implement the following measures to reduce emissions from area sources, as feasible: • Use solar or low-emission water heaters. • Orient buildings to take advantage of solar heating and natural cooling and use passive solar designs. • Increase wall and attic insulation. • EPA certified wood burning appliances, or residential natural-gas fireplaces. • Provide electric equipment for landscape maintenance.	
Impact AQ-3		**Mitigation Measure AQ-3**	
Development under the UCM 2020 Project would result in a cumulatively considerable net increase of a criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).	Potentially Significant	Implement **Program Level Mitigation Measures AQ-1 and AQ-2.**	Significant and Unavoidable

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.4 Biological Resources			
Impact BIO-2 (Program Level Impact)		**Mitigation Measure BIO-2**	
The Proposed Action, including development under the UCM 2020 Project, could result in adverse impacts on special-status plant species.	Potentially Significant	Implement **Program Level Mitigation Measure BIO-2:** **Mitigation Measure BIO-2:** Mitigate for loss of special-status plants and habitat through additional off-site compensation. To compensate for the loss of succulent owl's-clover, shining navarretia, and dwarf downingia plants, seeds from all three species will be collected from the project site and translocated to suitable habitat within the CNR. Translocating the stands to the CNR would minimize any potential genetic contamination, because the affected stands are part of the occurrences present within the CNR and, presumably, part of the same populations. The University will retain a qualified restoration ecologist to work closely with resource agency specialists (USFWS and CDFG staff) and knowledgeable individuals to locate and determine the suitability of translocation sites within the CNR. Translocation of the stands that would be affected by the Proposed Action would involve (1) identifying suitable transplant sites, (2) moving the plant material to the transplant sites, and (3) monitoring the transplant sites to document recruitment and survival rates. The restoration ecologist will develop a detailed transplantation and monitoring plan that provides detailed information on: • coordination efforts with agencies and knowledgeable individuals, methods for collecting seeds from the affected populations, • seed storage methods, planting plan and specifications (including planting locations and densities),	Less than Significant

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.4 Biological Resources (continued)			
Impact BIO-2 (Program Level Impact)		**Mitigation Measure BIO-2 (continued)**	
		• measurable success criteria that can be achieved within a 10-year period, • monitoring and reporting methods and schedule, • funding source and responsible party, and • adaptive management measures to ensure that the desired success criteria are achieved. The University will submit draft copies of the transplantation and monitoring plan to the appropriate resource agencies (e.g., USFWS and CDFG) for review and comment. The plan will be approved by the appropriate agencies before it is implemented. As part of the plan, the following general steps would be involved in the translocation and monitoring efforts, as appropriate: • A site analysis will be conducted to document the biotic and physical requirements of succulent owl's-clover, shining navarretia, and dwarf downingia within the project site. This task will include an evaluation of the populations. Information on soil type, plant species associations, aspect, vegetation cover, and level of disturbance will be gathered during this evaluation. • Sites that may be suitable for transplanting the seeds will be identified and evaluated. Suitable sites may not contain existing stands of species being translocated. The same information as identified above will be gathered for the translocation sites. The University will submit draft copies of the transplantation • Seeds will be collected for propagation or storage purposes. Seed collection, storage, and propagation will be done by a qualified restoration ecologist. The seeds will be planted at the transplant sites at the appropriate time to ensure higher survival rates.	

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.4 Biological Resources (continued)			
Impact BIO-2 (Program Level Impact)		**Mitigation Measure BIO-2 (continued)**	
		• Dried plants and topsoil containing seeds will be excavated from the area containing the affected plants. The seed material will be excavated after the plants have set seed and dried (generally by late summer). The excavation will be done using hand tools. A post-translocation report that documents the measures used to relocate the populations and where they were relocated will be prepared. • Translocated populations will be monitored to document survival and recruitment rates over a period of time established in consultation with the resource agencies but for a minimum of five years. The populations would be monitored annually during the flowering period to document success rates and to identify remedial actions. The detailed transplant and monitoring plan will provide specific monitoring protocol and documentation procedures. A copy of the annual monitoring reports and the final monitoring report will be provided to the appropriate resource agencies for review.	

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.4 Biological Resources (continued)			
Impact BIO-9 (Program Level Impact)		**Mitigation Measure BIO-9**	
The Proposed Action, including development under the UCM 2020 Project, would result in potentially significant adverse impacts on nesting special-status bird species and non-special-status migratory birds and raptors.	Potentially Significant	Implement **Program Level Mitigation Measure BIO-9a and BIO-9b:** **Mitigation Measure BIO-9:** Avoid and minimize impacts on special-status and non-special-status migratory birds, and raptors. (a) Limit construction to the non-breeding season or, if breeding season work is required, conduct pre-construction (tree, shrub, and ground) nest surveys to identify and avoid active nests or as an option, remove potential breeding habitat during the non-breeding season. • If feasible, the applicant shall conduct all construction-related activities including (but not limited to) tree and shrub removal, other vegetation clearing, grading, or other ground disturbing activities during the non-breeding season (between August 16 and February 14) for special-status and non-special-status migratory birds and raptors. If construction activities are scheduled to occur during the breeding season, a qualified avian biologist, with knowledge of the species to be surveyed, shall be retained to conduct focused nesting surveys within 15 days of the start of ground-disturbing or construction activities and within the appropriate habitat.	Less than Significant

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.4 Biological Resources (continued)			
Impact BIO-9 (Program Level Impact)		**Mitigation Measure BIO-9 (continued)**	
		• Specifically, tree, shrub, and ground nesting surveys for special-status birds (including but not limited to white-tailed kite, Swainson's hawk, northern harrier, burrowing owl, loggerhead shrike, and tricolored blackbird), and other migratory birds and raptors shall be conducted before any construction disturbances occur in or near suitable nesting habitat within 500 feet (0.25 mile for Swainson's hawk) of the construction work area between February 15 and August 15. • If an active nest is located on or within 500 feet (0.25 mile for Swainson's hawk) of the project area, CDFG shall be consulted to determine an appropriate no-disturbance buffer around the nest until the nest is no longer active and the young have fledged. No construction shall be allowed within this exclusion area without consulting with CDFG. A wildlife biologist shall monitor the nest site during construction at least once a week, or at a frequency determined by CDFG, to ensure that the nest site is not disturbed and the buffer is maintained. • If the project proponent elects to remove a nest tree, nest trees may only be removed between August 16 and February 28, after the qualified avian biologist has determined that the nests are unoccupied.	

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.4 Biological Resources (continued)			
Impact BIO-9 (Program Level Impact)		**Mitigation Measure BIO-9 (continued)**	
		(b) Minimize impacts to burrowing owl and compensate for habitat loss. The CDFG (1995) recommends that preconstruction surveys be conducted to locate active burrowing owl burrows in the construction work area and within a 500-foot-wide buffer zone around the construction area. The project proponent or its contractor shall retain a qualified biologist to conduct preconstruction surveys for active burrows according to the CDFG's Staff Report on Burrowing Owl Mitigation (California Department of Fish and Game 1995). The preconstruction surveys shall include a breeding season survey and a wintering season survey. If no burrowing owls are detected, no further mitigation is required. If active burrowing owls are detected, the following additional measures are required: • Occupied burrows shall not be disturbed during the breeding season (February 1 to August 31), which requires a 250 foot no disturbance buffer. • If owls must be moved away from the project site during the nonbreeding season, passive relocation techniques (e.g., installing one-way doors at burrow entrances) shall be used instead of trapping, as described in CDFG guidelines. At least 1 week will be necessary to complete passive relocation and allow owls to acclimate to alternate burrows.	

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.4 Biological Resources (continued)			
Impact BIO-9 (continued)		**Mitigation Measure BIO-9 (continued)**	
		• When destruction of occupied burrows is unavoidable during the nonbreeding season (September 1 to January 31), unsuitable burrows shall be enhanced (enlarged or cleared of debris) or new burrows created (by installing artificial burrows) at a ratio of 2:1 on protected lands approved by the CDFG. Newly created burrows shall follow guidelines established by the CDFG (1995). These guidelines also require compensation for loss of foraging habitat described in detail under Impact BIO-8 above.	
4.5 Cultural Resources			
Impact CUL-1 (Program Level Impact)		**Mitigation Measure CUL-1**	
Implementation of the Proposed Action, including development under the UCM 2020 Project, could damage or destroy significant historic resources located within the project footprint.	Less than Significant	No mitigation is required.	

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact CUL-2 (Program Level Impact)		**Mitigation Measure CUL-2**	
Implementation of the Proposed Action, including development under the UCM 2020 Project, could cause damage to unidentified or buried cultural resources.	Potentially Significant	Implement **Program Level Mitigation Measure CUL-2:** **Mitigation Measure CUL-2:** If buried cultural resources, such as chipped or ground stone, historic debris, building foundations, or non-human bone are inadvertently discovered during ground-disturbing activities on the Campus, work will stop in that area and within 100 feet of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures typically include development of avoidance strategies or mitigation of impacts through data recovery programs such as excavation or detailed documentation. If cultural resources are discovered during construction activities, the construction contractor and lead contractor compliance inspector will verify that work is halted until appropriate treatment measures are implemented in coordination with the USACE and UC Merced.	Less than Significant

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.5 Cultural Resources (continued)			
Impact CUL-3 (Program Level Impact)		**Mitigation Measure CUL-3**	
Implementation of the Proposed Action, including development under the UCM 2020 Project, could cause damage to previously unidentified human remains.	Potentially Significant	Implement **Program Level Mitigation Measure CUL-3:** **Mitigation Measure CUL-3:** If human remains of Native American origin are discovered during ground-disturbing activities, the Campus, UCLC and/or developer will comply with state laws relating to the disposition of Native American burials, which falls within the jurisdiction of the California Native American Heritage Commission (Public Resources Code Section 5097). If human remains are discovered or recognized in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until: • the coroner of Merced County has been informed and has determined that no investigation of the cause of death is required; and • if the remains are of Native American origin, • the descendants from the deceased Native Americans have made a recommendation to the land owner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98, or • the California Native American Heritage Commission was unable to identify a descendant or the descendant failed to make a recommendation within 24 hours after being notified by the Commission.	Less than Significant

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.5 Cultural Resources (continued)			
Impact CUL-4 (Program Level Impact)		**Mitigation Measure CUL-4**	
Development of the Proposed Action, including development under the UCM 2020 Project, would have the potential to disturb or destroy paleontological resources.	Potentially Significant	Implement **Program Level Mitigation Measures CUL-4a and CUL-4b:** **Mitigation Measure CUL-4a:** Prior to project construction, construction personnel will be informed of the potential for encountering significant paleontological resources. All construction personnel will be informed of the need to stop work in the vicinity of a potential discovery until a qualified paleontologist has been provided the opportunity to assess the significance of the find and implement appropriate measures to protect or scientifically remove the find. Construction personnel will also be informed of the requirements that unauthorized collection resources are prohibited. **Mitigation Measure CUL-4b:** A qualified paleontologist will be intermittently present to inspect exposures of Merhten Formation, North Merced Gravels, and Riverbank Formation during construction operations to ensure that paleontological resources are not destroyed by project construction.	Less than Significant

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.6 Geology and Soils			
Impact GEO-1		**Mitigation Measure GEO-1**	
Development under the UCM 2020 Project could expose people or structures to increased risk related to ground shaking and seismically induced ground failure, including liquefaction.	Potentially Significant	Implement **Program Level Mitigation Measure GEO-2:** **Mitigation Measure GEO-2:** During project-specific building design, a site-specific geotechnical investigation shall be performed by a Certified Engineering Geologist or Licensed Geotechnical Engineer to assess detailed seismic, geologic, and soil conditions at each construction site. The study shall include an evaluation of liquefaction potential, slope stability, landslide potential, expansive and compressible soils, and other structural characteristics and shall identify specific geotechnical recommendations designed to mitigate for the site hazards. The geotechnical recommendations will be followed.	Less than Significant
4.7 Hazards and Hazardous Materials			
Impact HAZ-1		**Mitigation Measure HAZ-1**	
Development under the UCM 2020 Project could be located on a site that contains hazardous materials and, could create a significant hazard to the public or the environment.	Potentially Significant	Implement **Program Level Mitigation Measure HAZ-4**: **Mitigation Measure HAZ-4:** In the event that non-permitted disposal sites, trash burn pits, wells, underground storage devices, or unknown hazardous materials are encountered during construction on the campus site, construction activities would cease until all contaminated areas are identified, and remediated or removed. This process of identification and remediation or removal would be coordinated with the Merced County Division of Environmental Health.	Less than Significant

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.8 Hydrology and Water Quality			
Impact HYD-1		**Mitigation Measure HYD-1**	
Construction-related earth disturbing activities under the UCM 2020 Project would result in soil erosion and sedimentation, but water quality would not be adversely affected.	Less than Significant	No mitigation is required.	
Impact HYD-2		**Mitigation Measure HYD-2**	
Development under the UCM 2020 Project could increase the amount of storm runoff and alter existing drainage patterns, increasing the risk of flooding downstream and flooding to Cottonwood Creek and Fairfield Canal.	Less than Significant	No mitigation is required.	Less than Significant
4.9 Land Use and Planning			
Impact LU-1		**Mitigation Measure LU-1**	
Development under the UCM 2020 Project would not conflict with the Merced County General Plan.	Less than Significant	No mitigation is required.	
Impact LU-2		**Mitigation Measure LU-2**	
Development under the UCM 2020 Project would not conflict with the City of Merced General Plan.	Less than Significant	No mitigation is required.	

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.10 Noise			
Impact NOI-1		**Mitigation Measure NOI-1**	
Development under the UCM 2020 Project would result in increased vehicular traffic on the regional road network, which would increase ambient traffic noise levels at existing off-site noise sensitive uses.	Less than Significant	No mitigation is required.	
Impact NOI-2		**Mitigation Measure NOI-2**	
Construction of the UCM 2020 Project could expose existing off-site and future on-site noise sensitive receptors to elevated noise levels.	Potentially Significant	Implement **Program Level Mitigation Measures NOI-3, NOI-4a, and NOI-4b**: **Mitigation Measure NOI-3:** Prior to initiation of campus or community construction, the project proponents shall approve a construction noise mitigation program including but not limited to the following. • Construction activities within 500 feet of any residences shall be restricted to between the hours of 7:00 AM and 6:00 PM on weekdays and Saturdays with no construction on Sundays and holidays. • All noise-producing project equipment and vehicles using internal combustion engines shall be equipped where appropriate with exhaust mufflers and air-inlet silencers in good operating condition that meet or exceed original factory specifications. • Mobile or fixed "package" equipment (e.g., arc-welders, air compressors) shall be equipped with shrouds and noise control features that are readily available for that type of equipment.	Less than Significant

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.10 Noise (continued)			
Impact NOI-2 (continued)		**Mitigation Measure NOI-2 (continued)**	
		• All mobile or fixed noise-producing equipment used on the project that is regulated for noise output by local, state or federal agency shall comply with such regulation while engaged in project-related activities. • Electrically powered equipment shall be used instead of pneumatic or internal combustion powered equipment, where practicable. • Material stockpiles, mobile equipment staging, construction vehicle parking, and maintenance areas shall be located as far as practicable from noise-sensitive land uses. • Stationary noise sources such as generators or pumps shall be located away from noise-sensitive land uses as feasible. • The use of noise-producing signals, including horns, whistles, alarms, and bells, shall be for safety warning purposes only. No project-related public address loudspeaker, two-way radio, or music systems shall be audible at any adjacent noise-sensitive receptor except for emergency use. • The erection of temporary noise barriers shall be considered where project activity is unavoidably close to noise-sensitive receptors.	

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.10 Noise (continued)			
Impact NOI-2 (continued)		**Mitigation Measure NOI-2 (continued)**	
		• The noisiest construction operations shall be scheduled to occur together to avoid continuing periods of the greatest annoyance, wherever possible. • Construction vehicle trips shall be routed as far as practical from existing residential uses. • The loudest campus construction activities, such as demolition, blasting, and pile driving, shall be scheduled during summer, Thanksgiving, winter, and spring breaks when fewer people would be disturbed by construction noise. • Whenever possible, academic, administrative, and residential areas that will be subject to construction noise shall be informed a week before the start of each construction project.	

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
	Potentially Significant	**Mitigation Measure NOI-4a:** The project proponents shall avoid impact pile driving where possible in vibration-sensitive areas. Drilled piles or the use of vibratory pile driving will be used where geological conditions permit their use. For impact pile driving activities occurring within 50 feet of typical structures, limit groundborne vibration due to construction activities to 0.50 inch/second, ppv (limit of potential for damage to typical structures) in the vertical direction at sensitive receptors. Since in many cases the information available during the preliminary engineering phase would not be sufficient to define specific vibration mitigation measures, the project proponents shall describe and commit to a mitigation plan to minimize construction vibration damage using all feasible means available. Thresholds for individual structures could be established based on the assessment of each structure's ability to withstand vibration, and vibration monitoring could be conducted to ensure compliance with the vibration thresholds. **Mitigation Measure NOI-4b:** For construction adjacent to highly sensitive uses such as laboratories, apply additional measures as feasible, including advance notice to occupants of sensitive facilities to ensure that precautions are taken in those facilities to protect ongoing activities from vibration effects.	Less than Significant
Impact NOI-3		**Mitigation Measure NOI-3**	
The UCM 2020 Project could expose new on-site noise sensitive land uses, such as Campus and University Community residences, to noise levels exceeding noise thresholds.	Less than Significant	No mitigation is required.	

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.11 Population and Housing			
Impact POP-1		**Mitigation Measure POP-1**	
Development under the UCM 2020 Project would induce substantial population growth in the City of Merced and Merced County.	Significant	No feasible mitigation measures are available.	Significant and Unavoidable
4.12 Public Service and Recreation			
Impact PUB-1		**Mitigation Measure PUB-1**	
The UCM 2020 Project would increase demand for law enforcement services and would require the construction of new facilities.	Less than Significant	Implement **Program Level Mitigation Measure PUB-1:** **Mitigation Measure PUB-1:** The Campus shall maintain a minimum ratio of 0.7 officer per 1,000 population.	Less than Significant
Impact PUB-2		**Mitigation Measure PUB-2**	
The Proposed Action would increase the use of Lake Yosemite Regional Park which could accelerate physical deterioration of park facilities.	Potentially Significant	Implement **Program Level Mitigation Measure PUB-6a through 6c:** **Mitigation Measure PUB-6a:** The University shall work with the County to develop a program for joint use of on-campus sports, recreational, and parking facilities. **Mitigation Measure PUB-6b:** The University shall work with the County to avoid physical deterioration of existing facilities at Lake Yosemite Regional Park, and/or improve park facilities within the existing park site as necessitated by the increased uses associated with development of the Campus.	Less than significant

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.12 Public Service and Recreation (continued)			
Impact PUB-2 (continued)		**Mitigation Measure PUB-2 (continued)**	
		Mitigation Measure PUB-6c: The University will pay its fair share of the cost of necessary improvements to the regional park The University's share of funding will be based on the percentage that on-campus residential population represents of the total population in eastern Merced County at the time that an improvement is implemented. **Mitigation Measure PUB-6d:** In recognition of the sensitive resources present on lands immediately adjacent to the regional park, all regional park improvement projects that are implemented by the County within 250 feet of the park's eastern boundary pursuant to **Mitigation Measures PUB-6b** and **PUB-6c** above, will implement mitigation measures to avoid and minimize indirect effects on biological resources. These measures shall be based on and as effective as the measures in the *Conservation Strategy* to control indirect impacts to biological resources.	

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.12 Public Service and Recreation (continued)			
Impact PUB-3		**Mitigation Measure PUB-3**	
Development under the UCM 2020 Project would increase enrollment in local public schools, which would require construction of new facilities, the construction of which could have environmental effects.	Less than Significant	No mitigation is required.	
4.13 Transportation and Traffic			
Impact TRANS -1		**Mitigation Measure TRANS -1**	
Implementation of the UCM 2020 Project would not result in an exceedance of the LOS threshold along local roadway segments under Existing Plus UCM 2020 Project conditions.	Less than Significant	No mitigation is required.	

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.13 Transportation and Traffic (continued)			
Impact TRANS -2		**Mitigation Measure TRANS -2**	
With the addition of project traffic, the LOS of three of the study intersections would deteriorate to unacceptable levels under Existing Plus UCM 2020 Project conditions.	Significant	Implement **Program Level Mitigation Measure TRANS-1:** **MM TRANS-1A-1**: Travel Demand Management. To reduce on- and off-campus vehicle trips and resulting impacts, the University will implement a range of Transportation Demand Management (TDM) strategies. TDM strategies will include measures to increase transit and shuttle use, encourage alternative transportation modes including bicycle transportation, implement parking polices that reduce demand, and implement other mechanisms that reduce vehicle trips to and from the campus and community. **MM TRANS-1A-2**: Transit Enhancement. To enhance transit systems serving the Campus and University Community, the University will work cooperatively with the City of Merced, County of Merced, Cat Tracks, The Bus, StaRT, YARTS, and other local agencies to coordinate service routes with existing and proposed shuttle and transit programs. **MM TRANS-1A-3**: Sustainability and Monitoring. The University shall review individual projects proposed under the 2009 LRDP for consistency with UC sustainable transportation policy and UCM Transportation Demand Management (TDM) strategies set forth in the 2009 LRDP to ensure that bicycle and pedestrian improvements, alternative fuel infrastructure, transit stops, and other project features that promote alternative transportation are incorporated to the extent feasible. The University shall monitor the performance of campus TDM strategies through annual surveys.	Significant and Unavoidable

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.13 Transportation and Traffic (continued)			
Impact TRANS -2 (continued)		**Mitigation Measure TRANS -2**	
		MM TRANS-1A-4: Campus Housing. The University will continue to pursue the implementation of affordable on-campus student housing to reduce peak-hour commuter trips to the campus. **MM TRANS-1A-5:** Campus Traffic Impact Monitoring. The University will monitor trip generation resulting from the campus development under the 2009 LRDP to track the actual trip generation relative to the projections in this EIS/EIR. The University will conduct traffic cordon counts of the campus with each 3,000 person increase in student population, measured by three-term average headcount enrollment increases with 2007-08 as the base year. If this monitoring determines that traffic attributable to the Campus contributes to a significant traffic impact at any of the roadway segments or intersections listed in **Tables 4.13-10** and **4.13-12**, respectively, the University will implement measures to reduce vehicle trips contributing to the impact or provide its proportional share of funding for improvements at the impacted intersections and/or roadway segments. **MM TRANS-1A-6**: Proportional Share Determination. At the time a significant impact is identified pursuant to the monitoring under **Mitigation Measure TRANS-1A-5**, the University's actual percent contribution to the total traffic volume at pertinent intersections and roadway segments will be calculated and used as the basis for determining the University's mitigation obligation, or proportional share of funding for the traffic improvements listed in the table. **Table 4.14-11** provides the projected percent contribution of the Campus to the total traffic volume on the roadway segment impact locations and at the intersection impact locations, respectively.	

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.13 Transportation and Traffic (continued)			
Impact TRANS -2 (continued)		**Mitigation Measure TRANS -2**	
		The tables also show the projected contribution from the Community North and Community South. A fourth column indicates the projected contribution of traffic on the roadway segments and at the intersections attributable to all other sources, which is not the responsibility of the CCTMP Participants to mitigate (This category includes existing traffic and growth from non-Campus, non Campus Community sources). In the future, the actual contributions of campus traffic to the affected intersections and roadway segments will be calculated. **MM TRANS-1A-7**: Mitigation Payments. The University's mitigation payments will be based on the University's proportional share of the affected jurisdiction's projected cost of implementing the relevant traffic improvement(s) as indicated in the affected jurisdiction's Capital Improvement Plan, and calculated by applying the University's proportional share determined in **Mitigation Measure TRANS-1A-6** to the cost of the improvement, after accounting for all other federal and state funding sources. Funding will be internally committed by the University at the time the traffic impact is triggered pursuant to results of monitoring under **Mitigation Measure TRANS-1A-6**. Payments will be made to the appropriate jurisdiction at the time that the improvements are programmed and the funding from other sources is committed. If improvements are programmed before the impact is triggered, the University will pay its proportional share at the time that the impact is triggered.	

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.13 Transportation and Traffic (continued)			
Impact TRANS -3		**Mitigation Measure TRANS -3**	
Implementation of the UCM 2020 Project would result in an exceedance of the LOS threshold along local roadway segments under 2020 Plus UCM 2020 Project conditions.	Significant	Implement **Program Level Mitigation Measure TRANS-1**.	Significant and Unavoidable
Impact TRANS -4		**Mitigation Measure TRANS -4**	
With the addition of project traffic, the LOS of the study intersections would not deteriorate to unacceptable levels under 2020 Plus UCM 2020 Project conditions.	Less than Significant	No mitigation is required.	
4.14 Utilities and Service Systems			
Impact UTILS-1		**Mitigation Measure UTILS-1**	
The UCM 2020 Project-related demand for potable water for indoor and outdoor uses would require the construction of new water supply and conveyance facilities, which would not result in significant impacts on the environment.	Less than Significant	No mitigation is required.	

Environmental Topic and Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
4.14 Utilities and Service Systems (continued)			
Impact UTILS-2		**Mitigation Measure UTILS-2**	
The UCM 2020 Project would generate wastewater flows that would not require construction of new conveyance or treatment facilities.	Less than Significant	No mitigation is required.	
4.15 Global Climate Change			
Impact GCC-1 (Program Level Impact)		**Mitigation Measure GCC-1**	
The Proposed Action, including the UCM 2020 Project, would impede or conflict with the emissions reduction targets and strategies prescribed in or developed to implement AB 32.	Significant	**MM GCC-1:** The local jurisdiction with land use authority over the University Community should prepare a Climate Action Plan (CAP) as a separate element of the General Plan or as a component of an existing General Plan Component. The CAP should inventory baseline GHG emissions, 1990 GHG emissions, and 2020 GHG emissions. The CAP should also set reduction targets in accordance with AB 32, other state laws, and applicable local or regional enactments addressing GHG emissions. It is anticipated that implementation of the CAP will help the local jurisdiction achieve a reduction in GHG emissions, as compared to a "business as usual" scenario. The local jurisdiction should require development within the University Community to comply with the requirements of the CAP for new development.	Significant and Unavoidable

3.0 PROJECT DESCRIPTION

3.1 PROJECT BACKGROUND

The UC Merced (UCM) 2020 Project is a project proposed by the University to develop the next phase of the UC Merced campus with the facilities needed to support an enrollment level of 10,000 full-time equivalent (FTE) students. The UCM 2020 Project represents a portion of the long-term development proposed under the UCM 2009 Long Range Development Plan (2009 LRDP). Volume 1 of this Draft EIS/EIR presents the 2009 LRDP, which is proposed by the University to guide the development of the UC Merced campus for an ultimate enrollment level of 25,000 FTE students. The relationship of the proposed UCM 2020 Project to the UC Merced 2009 LRDP is described in **Section 1.0** of **Volume 1**. The development phases of the Campus are described below to provide the context for the UCM 2020 Project.

3.2 PROJECT LOCATION

The UCM 2020 Project is located in the north-central portion of the 815-acre campus. The project site is shown on **Figure 3.0-1, Location of UCM 2020 Project,** and is adjacent to the main entry of the existing campus.

3.3 CAMPUS DEVELOPMENT PHASES

The 2009 LRDP envisions that the development of the 815-acre campus would occur in four phases. **Table 3.0-1, UC Merced Development Phases,** summarizes key data with respect to each phase of campus development. **Figure 3.0-2, Campus Development Phases**, presents the areas encompassed by each development phase for the entire Campus. A brief description of each phase follows the table.

Table 3.0-1
UC Merced Development Phases

Phase	Acres developed at Buildout of Phase (cumulative)	Enrollment Level at Buildout of Phase	Academic Space at Buildout of Phase (in million square feet)	Total Student Beds at Buildout of Phase	Approximate Year of Completion
1	162	5,000	1.25	2,500	2013
2	355	10,000	2.5	5,000	2020
3	740	20,000	5.0	10,000	2030
4	815	25,000	6.25	12,500	After 2030

3.3.1 UCM Phase 1

In 2002, in conjunction with the 2002 LRDP EIR, the University evaluated the environmental impacts from the development of Phase 1 Campus. The Phase 1 Campus as defined in the 2002 LRDP EIR consisted of a 104-acre portion of a 197-acre site that was at that time occupied by the Merced Hill Golf Course. The Phase 1 Campus was evaluated for an enrollment level of about 3,600 FTE students. Following the certification of the 2002 LRDP EIR, the University began construction of the first phase of the campus on the 104-acre site.

UCM Phase 1 as now defined under the 2009 LRDP encompasses 162 acres. UCM Phase 1 consists of two subphases: Phase 1.1, which is the 104-acre developed campus, and Phase 1.2, which is a 58-acre area to the north of Phase 1.1. **Figure 3.0-3, Campus 2020 Project Development Subphases**, depicts these subphases. Much of Phase 1.1 has been already built, and with the completion of some approved but not yet constructed projects, this portion of the campus will be fully developed. Full development of both subphases under the 2009 LRDP land use plan would provide adequate facilities for an enrollment level of 5,000 FTE students and would house up to 2,500 students on the campus. As shown in the table above, completion of this phase is projected to occur in 2013.

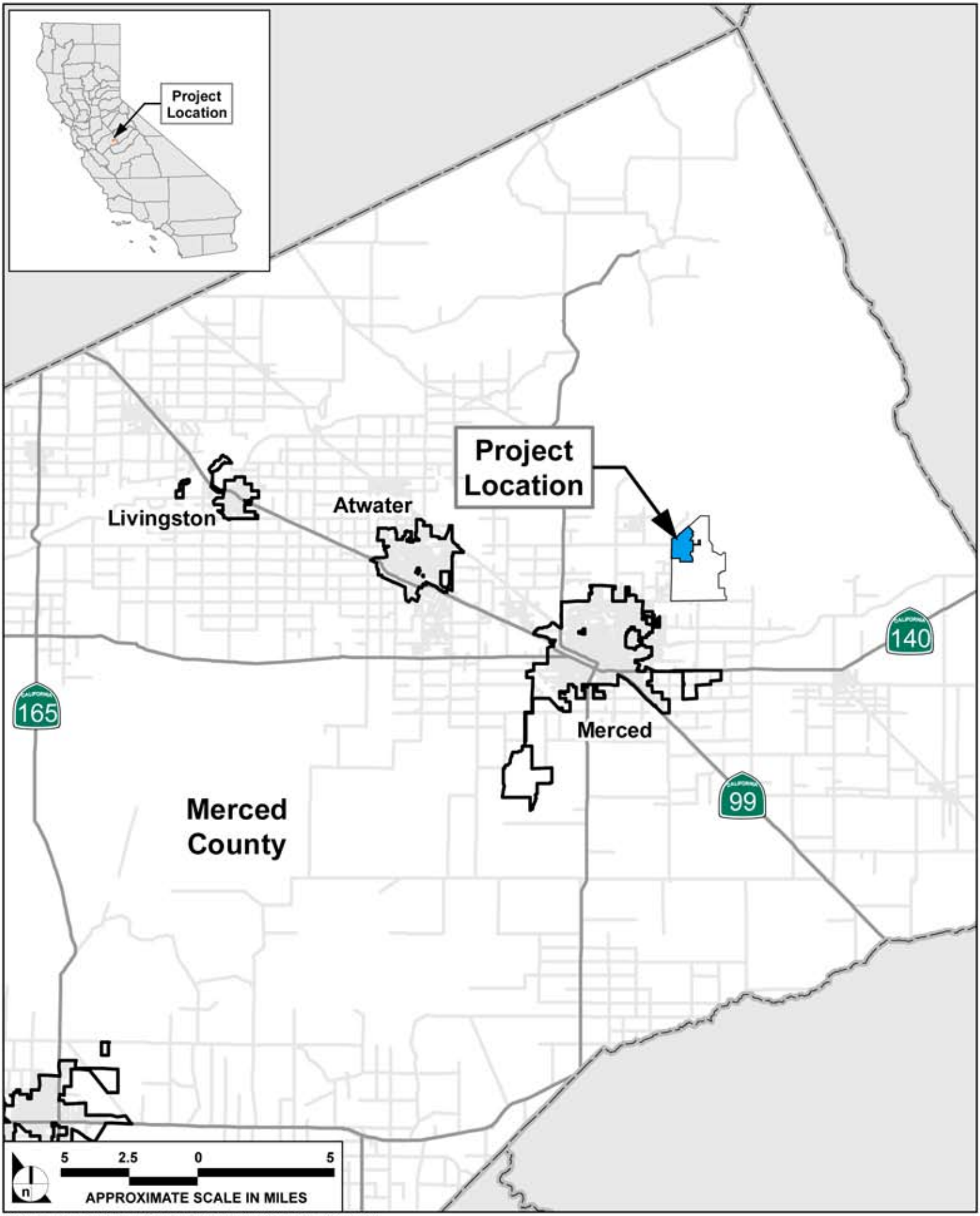
The 58-acre Phase 1.2 has not been previously evaluated at a project level, nor has it been approved. Phase 1.2 is an element of the UCM 2020 Project that is evaluated at a project level in this volume for its environmental impacts.

3.3.2 UCM Phase 2

This is the next major phase of campus development and encompasses approximately 193 acres of the land to the south and southeast of the Phase 1 Campus. As shown on **Figure 3.0-3**, this phase involves three subphases. When completed, the combined development within UCM Phases 1 and 2 would support an enrollment level of 10,000 FTE students. UCM Phase 2 has not been previously evaluated at a project level or approved by the University. UCM Phase 2 is an element of the UCM 2020 Project that is evaluated at a project level in this volume for its environmental impacts.

3.3.3 UCM Phase 3

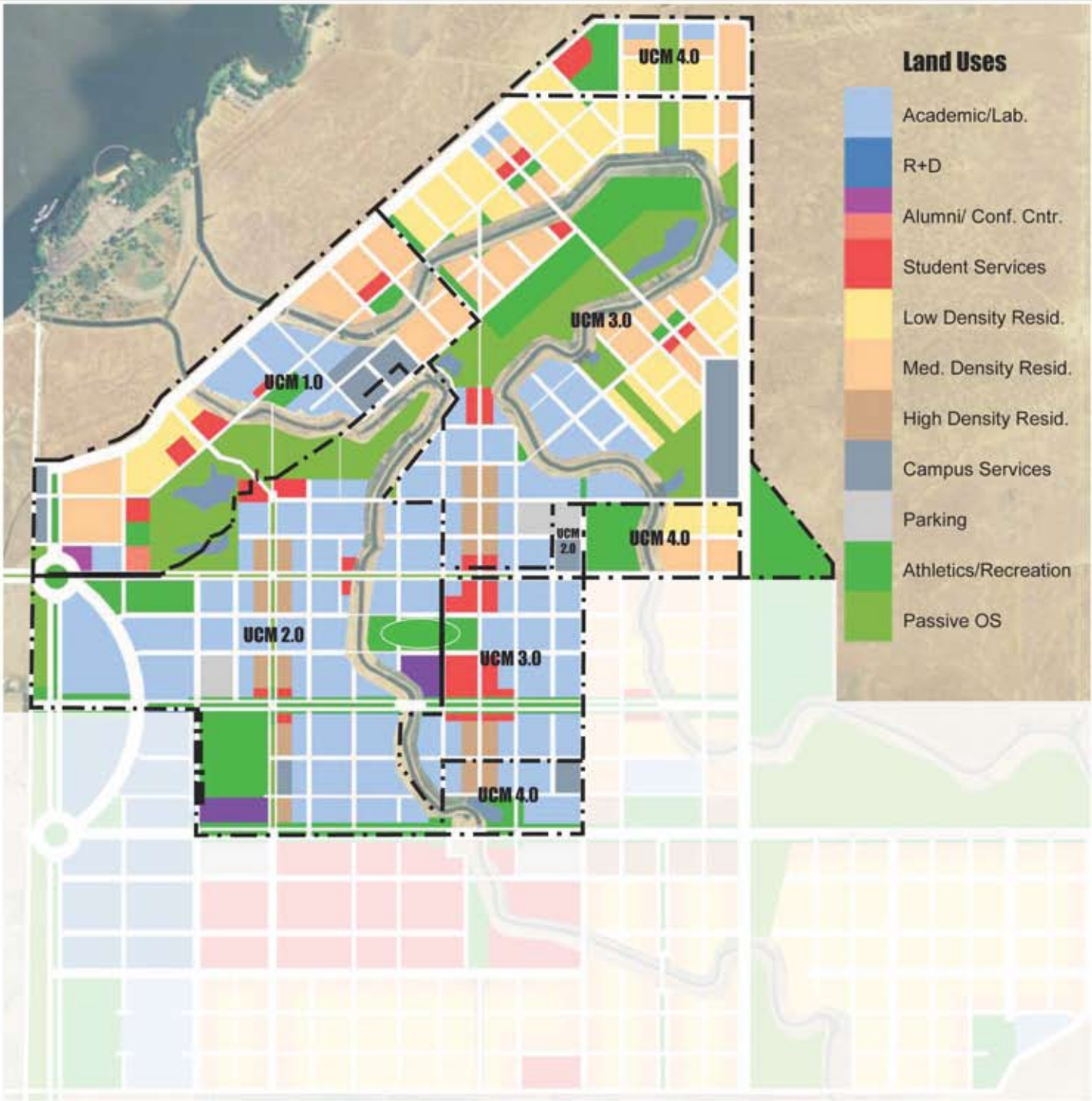
The third major phase of campus development involves the development of approximately 385 acres of campus land with facilities that, in conjunction with facilities developed under UCM Phases 1 and 2, would support an enrollment level of 20,000 FTE students and provide approximately 10,000 student beds on the campus. Completion of this phase is expected some time after 2020. UCM Phase 3 is not an element of the UCM 2020 Project that is evaluated in this volume. Impacts associated with this phase of UCM development, including cumulative impacts, are addressed in Volumes 1 and 2 of this Draft EIS/EIR.



SOURCE: UC Merced and UCP Administrative Draft EIS/EIR, Volume 3 – 2008

FIGURE **3.0-1**

Location of UCM 2020 Project



UC Merced
Framework Concepts

Land Use: Phasing (DRAFT)

Phase 1.0	162 acres	Phase 2.0	324 acres	Phase 3.0	648 acres	Phase 4.0	815 acres
5,000 Students		10,000 Students		20,000 Students		25,000 Students	
1.25 MSF Academic Core		2.50 MSF Academic Core		5.00 MSF Academic Core		6.25 MSF Academic Core	
2,500 Beds		5,000 Beds		10,000 Beds		12,500 Beds	

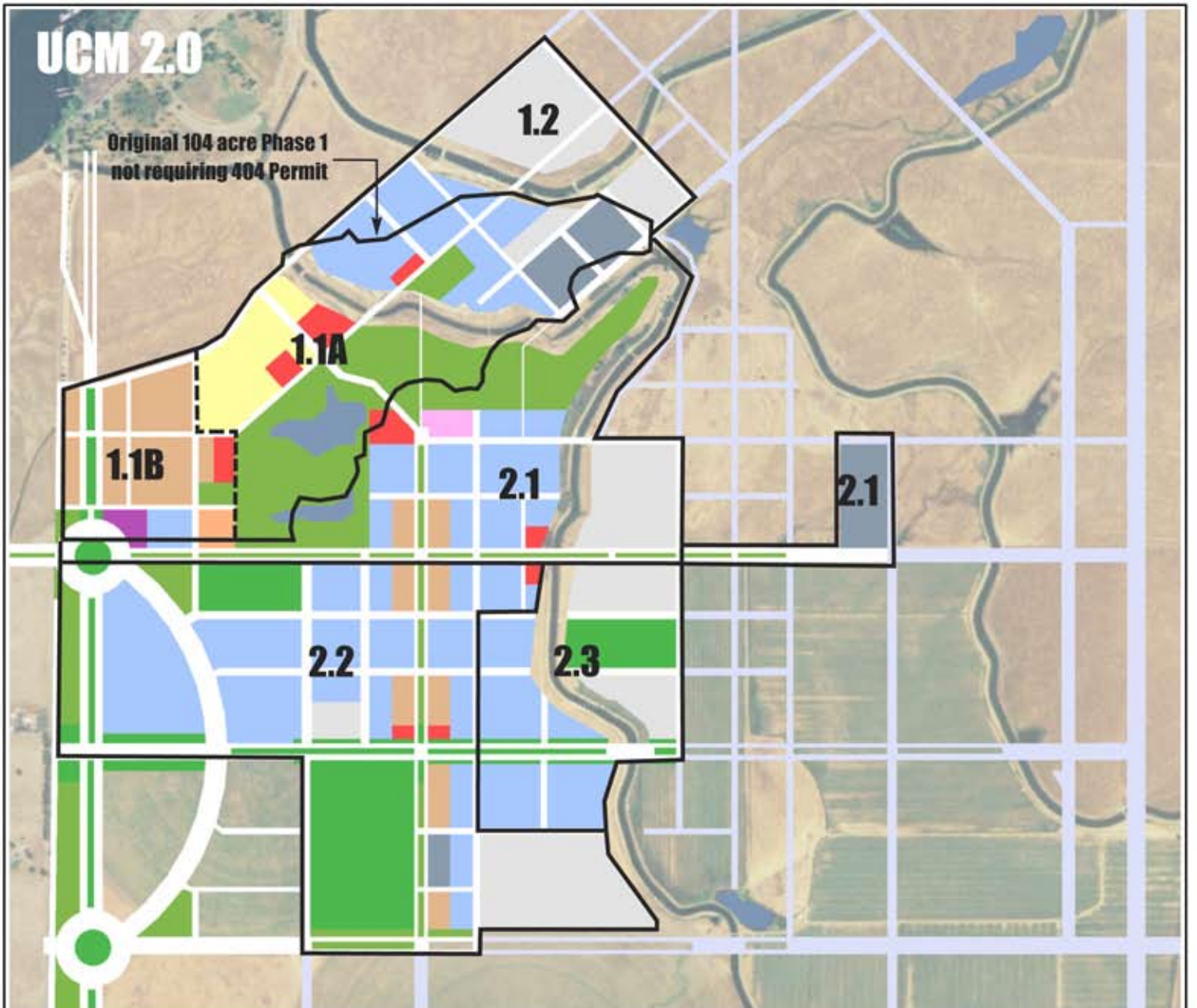
N NOT TO SCALE

SOURCE: UC Merced and UCP Administrative Draft EIS/EIR, Volume 3 – 2008

FIGURE 3.0-2

Campus Development Phases

974-001•10/08



PHASING KEY

- 1.1 Existing Campus and Host District: Lake View Neighborhood and Visitor Center
- 1.2 Parking and Academic Expansion
- 2.1 Central Campus, Student Services, Campus Services and Parking
- 2.2 Gateway R+D, Central Campus, Main Street Neighborhood, Stadium and Parking
- 2.3 Central Campus west of Canal and Parking

NOT TO SCALE

SOURCE: UC Merced and UCP Administrative Draft EIS/EIR, Volume 3 – 2008

FIGURE 3.0-3

Campus 2020 Development Subphases

3.3.4 UCM Phase 4

The last major phase of campus development under the 2009 LRDP encompasses the remaining 75 acres of campus land to be developed. With the completion of this phase, which would occur sometime after 2030, the campus would contain adequate facilities to support an enrollment level of 25,000 FTE students and house approximately 12,500 students on the campus. UCM Phase 4 is not an element of the UCM 2020 Project that is evaluated in this volume. Impacts associated with this phase of UCM development, including cumulative impacts, are addressed in Volumes 1and 2 of this Draft EIS/EIR.

In summary, the UCM 2020 Project includes the development of UCM Phase 1.2 and UCM Phase 2 areas.

3.4 PROJECT NEED AND OBJECTIVES

Section 1.0 of **Volume 1** describes the need for a new UC campus. The specific need for the UCM 2020 Project is to construct the next several buildings and other facilities to provide adequate space for envisioned programs and enrollment growth through academic year 2020–21. All of the objectives of the 2009 LRDP also apply to the UCM 2020 Project. Additionally, the specific objectives are to

- construct the next set of buildings that support the projected enrollment growth and new programs that are anticipated to be established on the campus in the next 10 years;
- construct buildings that are designed with enough flexibility to accommodate the growing university programs while providing state-of-the-art facilities for the growing campus population; and
- develop facilities in a manner that promotes a logical development pattern for later phases of campus development.

3.5 LAND USE DESIGNATIONS

Figure 3.0-3 shows the land use designations for the UCM 2020 Project. Acres of land designated for each land use are presented in **Table 3.0-2, UCM 2020 Project Land Use Designations,** below.

3.6 UCM 2020 PROJECT CHARACTERISTICS

3.6.1 Proposed Building Program

Figure 3.0-4, Conceptual View of the UCM 2020 Project, presents an oblique conceptual view of the UCM 2020 Project at buildout. **Table 3.0-3, Major Capital Improvement Projects Included in UCM 2020 Project**, shows the main building and infrastructure improvements associated with the UCM 2020 Project. **Figure 3.0-5, Campus Neighborhoods and Districts**, shows the boundaries of the North Campus, Central Campus West, Central Campus East, and Gateway District as well as the existing and proposed

student neighborhoods. Each facility that would be developed as part of the proposed project is described below by main subareas.

Table 3.0-2
UCM 2020 Project Land Use Designations

Land Use Designations	Existing Acres/beds	Future Acres at Buildout of 2020 Project	Building Space (in square feet unless noted otherwise)
Campus 2020 Project Land Uses			
Academic	18	112	2.5 million
Research	0	16	503,400
Student Services	0	12	132,500
Student Housing	9.5 (acres) 1,000 (beds)	43	5,150 (beds)
Campus Support Services	5	25	10,000
Athletics and Recreation	11	48	NA
Passive Open Space	0	43	NA
Parking	31	56	5,050 (spaces)
Total	**96**	**355**	

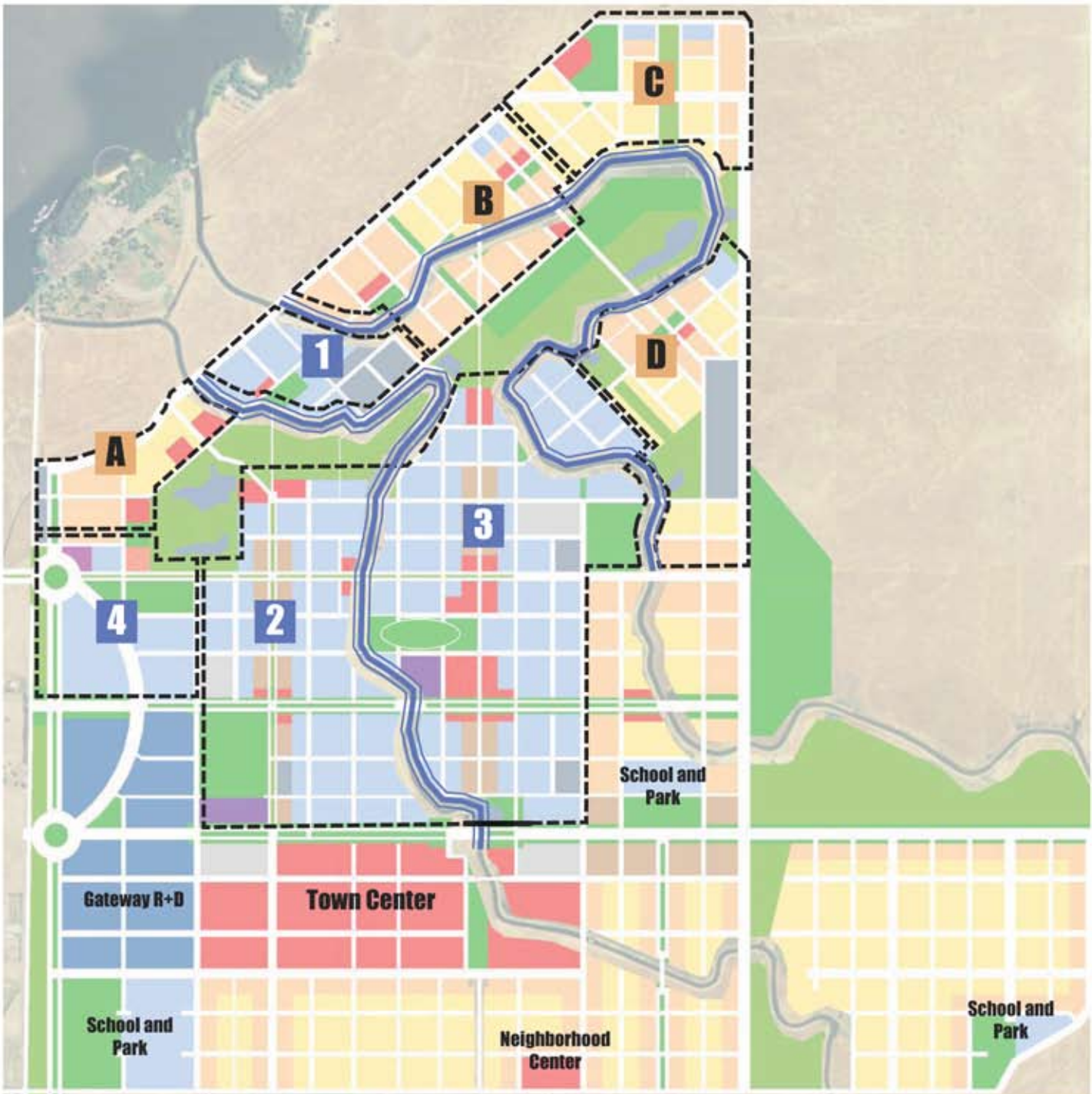
SOURCE: UC Merced and UCP Administrative Draft EIS/EIR, Volume 3 – 2008

FIGURE 3.0-4

Conceptual View of the UCM 2020 Project

974-001•10/08

progress draft 5-28-08 • RACESTUDIO • CLA • BPS • APC



UC Merced LRDP Draft 10-22-2008

Neighborhoods and Districts

Academic Campus

1. North Campus
2. Central Campus West
3. Central Campus East
4. Gateway District

Neighborhoods

A. Lake View
B. North Neighborhood
C. Sierra View
D. Valley View

NOT TO SCALE

SOURCE: UC Merced and UCP Administrative Draft EIS/EIR, Volume 3 – 2008

FIGURE **3.0-5**

Campus Neighborhoods and Districts

Table 3.0-3
Major Capital Improvement Projects Included in UCM 2020 Project

Facility Name	Planning Area/Location	Building Space (in gross square feet unless noted otherwise)
Campus Buildings and Facilities		
Science and Engineering Building #2 (Phase 1.1) [1]	North Campus	100,000
Social Sciences and Management Building (Phase 1.1) [1]	North Campus	62,000
Recreation and Wellness Center Expansion	North Campus	42,900
Interdisciplinary I&R Building #1	North Campus	165,000
Student Union and Affairs	North Campus	77,000
Welcome Center (Administration Building/ Alumni-Visitors Center)	Gateway District	58,000
Medical Research/Education	Gateway District	165,000
Student Academic Services/Auditorium	Central Campus West	42,650
Classroom and Instructional Technology Building	Central Campus West	61,500
Interdisciplinary I&R Building #2	Central Campus West	165,000
Graduate School of Education	Central Campus West	65,000
Organized Research Building	Central Campus West	80,000
School of Management	Central Campus West	77,000
Early Education and Child Care Facility #2	Central Campus West	12,850
Student Housing		
Phase 3	Central Campus West	84,100 300 (beds)
Phase 4	Central Campus West	84,100 350 (beds)
Phase 5	Central Campus West	155,000 600 (beds)
Phase 6	Central Campus West	155,000 600 (beds)
Phases 7 through 10	Central Campus West	500,000 2,300 (beds)
West Neighborhood Dining Facility	Central Campus West	16,000
Student Aquatics Center	Central Campus West	16,000
Soccer and Ball Fields	Central Campus West	NA
Multi-purpose Recreation Field	Campus South (Future Stadium Area)	7 (acres)
Central Plant Upgrades	North Campus	NA

Facility Name	Planning Area/Location	Building Space (in gross square feet unless noted otherwise)
Environmental Health and Safety Facility	Campus South	25,000
Public Safety and Services Facility	Campus South	35,000
Satellite Utility Plant	Campus South	50,000
Solar Power Generation Array	Central Campus East	8 (acres)
Passive Open Space	Central Campus East and West	43 (acres)
Parking Structure 1	Gateway District/Central Campus West	1,000 (spaces)
Parking Structure 2	Central Campus East	1,000 (spaces)
Surface/Interim Parking: Lots G/H/I	Central Campus West	652 (spaces)
Lot J	North Campus	750 (spaces)
Lot K	Central Campus East	500 (spaces)
Lot L	Central Campus East	570 (spaces)
Lot M	Central Campus	720 (spaces)
Campus Development and Infrastructure		
Site Development and Infrastructure: Phase 4	Central/North Campus	NA
Phase 5	Central/North Campus	NA
Phase 6	Central/East/South Campus	NA
Phase 7	Central/East/South Campus	NA
Medical Research/Education Infrastructure and Utilities	Central Campus West	NA
West Campus Site Development	Central Campus West	NA
East Campus Infrastructure	Central Campus East	NA
South Campus Infrastructure	South Campus	NA

[1] *These facilities are not part of the 2020 Project, but would be constructed in the same time frame.*

North Campus Subarea

This area includes the existing cluster of academic and student residence buildings that have already been developed within Phase 1.1 of the campus. Existing and planned academic buildings in this subarea are typically three to four stories (up to 65 feet) high, and additional student residences that are planned would be two to three stories high. UCM 2020 Project development planned for this area includes:

- **Joseph Edward Gallo Recreation and Wellness Center Expansion.** The existing Recreation and Wellness Center is one of the most heavily used facilities on campus, and demand exceeds capacity at

peak times during the day and evening. The expansion project would add approximately 42,900 gross square feet (GSF) and would provide additional sports instruction rooms, gymnasium space, a larger cardio/workout room, equipment storage, and a climbing wall. Additional office space would also be provided for recreation, outdoor programs, athletics, and health services professionals. No construction date has been set at this time; a planning study for expansion will commence during 2009–2010.

- **Student Union and Affairs Building.** An 8-acre site is designated for the development of a Student Union and Student Affairs building. The site is centrally located at the northern end of the central campus. This building would include approximately 77,000 GSF of space, as well as an outdoor area that could be used for campus programs and activities. The building would accommodate a variety of student programs and services, including: Office of Student Life; Student Government Offices; Learning Center; Bookstore; Convenience Store, food services (at least 5 vendors); meeting rooms and lounges; student spaces; copy center; ticket/events office; specialized computer lab; ballroom that could be divided; and a bank or credit union. The building would require a loading dock that could support the retail operations, bookstore, and large events. As with other 2020 Project academic/services buildings, the building would be four to six stories and 50 to 65 feet in height. The student union site would be located on a prominent site at the corner of a development zone, overlooking the central campus and lake. The building is intended to be distinct in character and form, with an exterior primarily of glass and with outdoor terraces to provide views. Completion is anticipated by 2013.

- **Interdisciplinary Instruction and Research (I&R) Building #1.** This building, with about 165,000 GSF of space, would support growing workload for the laboratory and teaching needs of the three UC Merced Schools (Social Sciences, Humanities and Arts, Engineering, and Natural Sciences). The interdisciplinary building would provide space for instruction and research laboratories, laboratory support, faculty offices, and academic/administrative space. The building is anticipated to be completed in 2016.

- **Central Plant Upgrades.** The existing Central Plant, located in the North Campus Subarea, would be upgraded with installation of new heating, chilling, electrical service/emergency power, and data/telecommunications equipment. New equipment would include new steam boilers, hot water boilers, and an additional emergency generator. The facility is anticipated to be completed in 2017–18.

Two previously evaluated academic buildings will be also constructed in this subarea: a Social Sciences and Management building with about 62,000 assignable square feet (ASF) of space, and a Science and Engineering #2 Building with about 56,400 ASF of space. Because these buildings have already been evaluated as part of the Phase 1 campus development in Volume 2 of the 2002 LRDP EIR and conditions have not changed significantly since then, they are not part of the UCM 2020 Project. However, these buildings would be developed during the 2020 Project time period.

Gateway District

This subarea is located near the main entrance to the campus adjacent to the intersection of Bellevue and Lake Roads. This area would ultimately be developed with interdisciplinary laboratories, academic

buildings, and research facilities, as well as the planned Welcome Center. Planned buildings in this subarea are typically one to four stories (up to 80 feet) high. Proposed 2020 Project buildings in this area include:

- **Welcome Center.** The Land Use Plan for the campus includes a 5-acre site south of the Lake View Student Housing area and adjacent to the Bellevue and Lake Road intersection which would be developed as a Welcome Center. This center would have approximately 58,000 GSF of space and would include an alumni and conference center and space for campus administration. The project will allow consolidation of off-campus leases and provision of new space for conferences, alumni, and visitors. Completion is anticipated for 2015–16.

- **Medical Research and Education Facility.** This 165,000-GSF research, instruction, and office facility would support new programs in medical research and the health sciences. The facility would include instruction and research laboratories and laboratory support space, faculty and staff offices, and related support space. Some specialized facilities for medical and telemedicine programs would be included. The facility is anticipated to be completed in 2016–17.

Central Campus West Subarea

This subarea is located south of the developed Phase 1.1 campus area and includes the central campus land on the west side of the Fairfield Canal. This subarea would be the academic core of the campus and would be developed with several interdisciplinary academic buildings, laboratories, and building space for administrative use. **Figure 3.0-6, Conceptual View of the Central Campus Academic Core**, shows typical academic and laboratory buildings that would be located in this area. Planned academic buildings in this subarea are typically three to four stories (up to 65 feet) high, and planned student residential buildings would be two to three stories high. Proposed academic and academic support buildings in this area include:

- **Student Academic Services and Instruction Building/Auditorium.** This building, with about 42,650 GSF of space, would house the Bursar's and financial aid offices and related functions, and provide academic and student service office and support space. The building would include a 550-seat auditorium, computer training rooms, conference rooms, multi-purpose space, student processing and advising areas, staff offices, and support space for academic and student service functions. The building is anticipated to be completed by summer 2014.

- **Classroom and Instructional Technology Building.** This building would provide about 61,500 GSF of space for multidisciplinary instructional uses for undergraduate and graduate students, including Teaching Assistants. Academic program space for instructional technology, academic support services, and special academic programs would also be provided. The building would serve three Schools (Social Sciences, Humanities, and Arts; Engineering; and Natural Sciences) by providing a new auditorium/lecture hall, classrooms, class laboratories and class laboratory support, faculty office, academic program administrative offices, office support, and scholarly activity space. The building is anticipated to be completed in 2017.

AC-1 Academic Core Block

AC-2 Academic Lab Block

NOT TO SCALE

SOURCE: UC Merced and UCP Administrative Draft EIS/EIR, Volume 3 – 2008

FIGURE 3.0-6

Conceptual View of the Central Campus Academic Core

- **Interdisciplinary Instruction and Research Building #2.** This building would support the growing workload for the laboratory and teaching needs of the three Schools (Social Sciences, Humanities and Arts; Engineering; and Natural Sciences). The interdisciplinary building would provide approximately 165,000 GSF for instruction and research laboratories, laboratory support, faculty offices, and academic/administrative space. The building would support new and expanding experimentalists who are laboratory based with their associated instructional programs. The building is anticipated to be completed in 2018.

- **Graduate School of Education.** This facility would provide approximately 65,000 GSF for education research and instruction. The building space would include a combination of faculty offices and research space, case study rooms, seminar rooms, computer laboratories, and support space. The facility is anticipated to be completed in 2018–19.

- **Organized Research Building.** This building would provide about 80,000 GSF to accommodate about 15 UC Merced full-time researchers engaged in organized research, such as bio-medical and systems biology organized research. The planned facility would include space for research laboratories, research lab support, core (shared) research laboratories, research offices (principal investigators, post docs, graduate students), and a small amount of space for a Director, administrative offices/office support, and a conference or colloquia room. The building is anticipated to be completed by 2013–14.

- **School of Management.** This research, instruction, and office facility would support new programs in the proposed School of Management. The facility would have approximately 77,000 GSF of space and would provide space for approximately 40 faculty, 20 to 25 graduate students (shared space), and 25 academic and administrative staff. The space program would allocate approximately 22,000 assignable square feet (ASF) to teaching and scholarly activity (auditorium, classrooms, case study rooms, seminar room, open class laboratories and classroom support space); 15,000 ASF to academic and administrative space (faculty, teaching assistant, graduate student, staff offices; and scholarly activity room); and 9,000 ASF to student services (career center, commons, student organizations and support space). The facility is anticipated to be completed in 2017.

- **Early Education and Child Care Facility #2.** The facility would accommodate 125 to 150 children (infants, toddlers, and preschool age). The project would include about 12,850 GSF of space containing classrooms, offices, observation and support space, and associated outdoor play space. Completion is anticipated in 2016.

Two areas within the Campus West subarea would be developed with additional student housing. The first area is the existing Lake View Student housing area on Phase 1.1 campus. Additional student housing would be built in this area on the parking lots adjacent to the already developed housing such that at buildout, this neighborhood would contain approximately 2,600 student beds. The second area where student housing would be built would be in the Main Street neighborhood in the west-central part of the campus. This area would be developed with high-density student housing and at buildout would contain approximately 2,400 student beds. **Figure 3.0-7, Conceptual View of Central Campus Residence Halls**, shows typical student residence buildings that would be located in this area. Proposed buildings in the student neighborhood areas include the following:

- **Housing Phase 3.** This phase would provide approximately 300 student bed spaces on a site near the first two student housing projects in the Campus West Neighborhood. The program includes dormitory-style buildings of up to four stories with approximately 58,000 GSF of space. In addition to residences, the buildings would provide space for study rooms, commons, a music practice room, an exercise room, open computer laboratories, and active storage. Development of this area of the campus would also require significant site development and infrastructure improvements. Completion is anticipated during 2010–11.

- **Housing Phase 4.** This phase would provide about 350 student bed spaces on a site near Student Housing Phase 3 in the Campus West Neighborhood. The program includes dormitory-style buildings of up to four stories with an area of approximately 84,100 GSF that would be used primarily for student residences. Completion is anticipated for fall 2013.

- **Housing Phase 5.** This phase would provide about 600 student bed spaces on a site near Student Housing Phase 3 in the Campus West Neighborhood. The program includes dormitory-style buildings of up to three stories with an area of approximately 155,000 GSF that would be used for student residences and related program space. Completion is anticipated for fall 2015.

- **Housing Phase 6.** This phase would provide about 600 student bed spaces on a site along the planned central north-south "Main Street" in the Campus West Neighborhood. The program includes dormitory-style buildings of up to three stories with an area of approximately 155,000 GSF that would be used for student residences and related program space. Completion is anticipated for fall 2015.

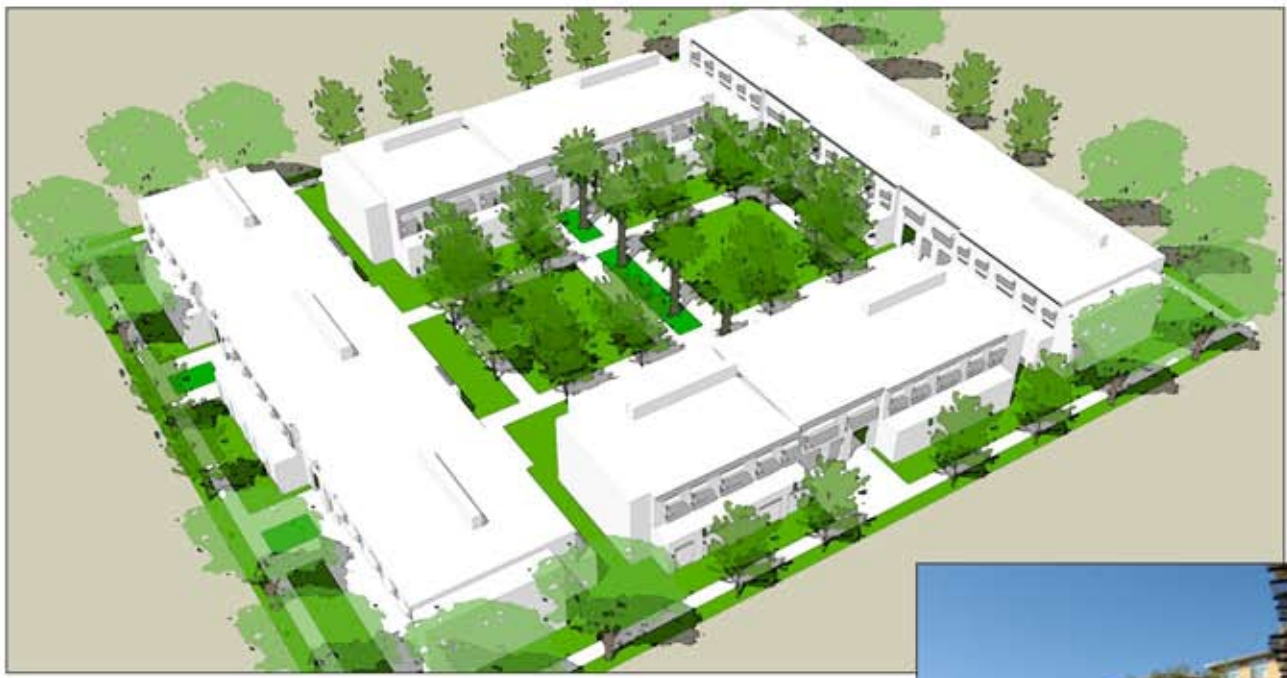
- **Housing Phases 7 through 10.** These phases would provide about 2,300 student bed spaces on sites along the planned central north-south "Main Street" in the Campus West Neighborhood. The program would be developed along a mixed-use street featuring student housing above campus functions. The Main Street area would link the North Campus and Central Campus to the University Community's Town Center. The student union and student affairs buildings would be located on the north end of this axis, with the sports complex and the west end of the proposed University Community "Town and Gown District" on the south. No completion date has been established yet, but the housing is anticipated to be completed by 2019–20.

- **West Neighborhood Dining Facility.** This new dining facility of approximately 16,000 GSF would provide new kitchen, serving, and dining areas to serve the 1,000 new resident students associated with Housing Phases 4, 5, and 6. The project would be located adjacent to Student Housing Phases 3 and 4 in the Campus West Neighborhood. The project may include a small amount of related student support space such as commons and private dining space. Completion is anticipated by 2013.

New athletics and recreation facilities would be located to the south and east of the Lake View Student Housing area within the Central Campus West subarea. Proposed buildings and facilities include:

- **Aquatics Center.** This 16,000-GSF project would accommodate swimming and other water activities for UC Merced students. The facility would include pools built for these aquatics activities, along with lockers, showers, toilets, administrative space, reception, team meeting area, and spectator seating. Completion is anticipated for 2011.

SN-3 Residence Hall Block



NOT TO SCALE

SOURCE: UC Merced and UCP Administrative Draft EIS/EIR, Volume 3 – 2008

FIGURE **3.0-7**

Conceptual View of the Central Campus Residence Halls

- **Soccer and Ball Fields.** These facilities would include bleachers, changing facilities, restrooms, and maintenance/storage areas. No date has been set for completion of these facilities.

Campus South Subarea

This subarea is located southeast of the Gateway District in the south-central portion of the campus, adjacent to the Community North area. Proposed UCM 2020 development in this area includes athletic facilities and campus support facilities:

- **Multi-purpose Sports Field.** A 7-acre site in the southern portion of the 2020 Project Campus area would be developed as a multi-purpose recreation field. The site would serve as a competition soccer field, and the project would include provision for artificial turf and associated site work and site utilities. The project would provide lighting, fencing, signage, and a drinking fountain. Restrooms, bleachers, a scoreboard, a public address system, a small sports equipment structure, and additional landscaping may be added later depending upon funding availability. Completion is anticipated by 2011.

- **Public Safety and Services Facility.** This new building would be built on a site in the Central Campus South subarea. This project would provide approximately 35,000 GSF of new space for public safety and services, such as police, fire, and other life safety functions, including a modern dispatch and emergency operations center. The facility would support a campus population of about 10,000 FTE students. The facility is anticipated to be completed by 2019–20.

- **Satellite Utility Plant.** This facility will be needed to serve the first developments on the expanding east and south portions of the campus. The new central utilities plant, with an area of about 50,000 GSF, would provide equipment and a new facility for electrical, emergency power, data/information technology, chilled and hot water, steam generation, natural gas, cooling/evaporative, thermal energy storage, associated pumps/piping/connections, and a control room. Equipment would include new steam boilers, hot water boilers, and an emergency generator. The facility would be located in the Central Campus South subarea. It is anticipated to be completed by 2020.

Central Campus East Subarea

This subarea is located south of the developed Phase 1.1 campus area and includes the central campus land on the east side of the Fairfield Canal. This subarea would ultimately be developed with academic, student housing, and administrative buildings. Proposed 2020 Project development in this area consists primarily of interim parking and infrastructure improvements. These are described in greater detail under the relevant subheadings below. Two new facilities would be built in this area as part of the UCM 2020 Project:

- **Solar Power Generation Array.** A solar photovoltaic system would be installed on a site with an area of approximately 8 acres, located in the Central Campus East subarea. The system would consist of an array of approximately 4,870 ground-mounted solar photovoltaic panels that would generate electricity for use on the UC Merced campus, together with supporting infrastructure such as electrical cabling and connections and safety lighting. The system would be designed to supply 2,100

MW of power to the campus through connections to the existing electrical system. The panels would be approximately 12 feet high. The site would be surrounded by landscaping that would partially screen the panels from view from surrounding areas. Safety lighting within and around the facility would be shielded in a manner that would avoid light spillage into surrounding areas. The facility is anticipated to be completed in late 2009.

- **Environmental Health and Safety Facility.** This building, with an area of about 25,000 GSF, would provide new space required for handling campus hazardous waste, including sufficient regulated storage space, appropriate laboratory facilities, and additional shipping and handling facilities. It would be located in the Central Campus East subarea. The facility would support a research program of over 1 million gross square feet. The facility is anticipated to be completed in 2019–20.

3.6.2 Passive Open Space Areas

The Land Use Plan for the 2020 Project Campus includes approximately 43 acres of open space for passive uses. The majority of this open space is located south of Fairfield Canal between the North Campus and the Central Campus subareas around the existing Little Lake and the storm water pond. An open space area is also provided south of Bellevue Road between Lake Road and the future alignment of Campus Parkway.

3.6.3 Parking

The UCM 2020 Project would include phased development of parking facilities to respond to growth in demand associated with development of the campus. The parking provision strategy includes installation of paved or gravel areas on the periphery of the developed campus area for use as interim parking. These parking areas would be replaced over time with new roadways and buildings as the campus expands. Planned parking areas include:

- **Campus Parking Lots G, H, and I.** The Campus would build several smaller parking lots in the Campus West Neighborhood, providing about 652 parking spaces designated for students, staff, faculty, and visitors. Landscaping and safety lights are part of the project scope. Completion is anticipated in 2008–09.

- **Campus Parking Lot J.** This new surface parking lot would be located in the North Campus area and would provide an additional 750 parking spaces designated for students, staff, faculty, and visitors. Landscaping and safety lights are part of the project scope. Completion is anticipated in 2009–10.

- **Campus Parking Lot K.** This new surface parking lot would be located in the Central Campus East area and would provide an additional 500 parking spaces designated for students, staff, faculty, and visitors. Landscaping and safety lights are part of the project scope. Completion is anticipated in 2010–11.

- **Campus Parking Lot L.** This new surface parking lot in the Central Campus East area would provide an additional 570 parking spaces designated for students, staff, faculty, and visitors. Landscaping and safety lights are part of the project scope. Completion is anticipated in 2012–13.

- **Campus Parking Lot M.** This new surface parking lot in the Central Campus area would provide an additional 720 parking spaces designated for students, staff, faculty, and visitors. Landscaping and safety lights are part of the project scope. Completion is anticipated in 2013–14.

The specific locations of all the surface parking areas have not been determined. While in the longer term, up to four permanent parking structures would be constructed on the campus, the 2020 Project includes two parking structures:

- **Parking Structure #1.** This new parking structure in the Central Campus West area would provide an additional 1,000 parking spaces designated for students, staff, faculty, and visitors. Landscaping and safety lights are part of the project scope. Completion is anticipated in 2015–16.

- **Parking Structure 2.** This new parking structure in the South Campus area would provide an additional 1,000 parking spaces designated for students, staff, faculty, and visitors. Landscaping and safety lights are part of the project scope. Completion is anticipated in 2017–18.

3.6.4 Campus Infrastructure and Utilities

New and expanded campus infrastructure and utilities would be built in several phases to support ongoing expansion and intensification of campus development. Planned improvements include:

- **Site Development and Infrastructure Phase 4.** This project would complete key elements of the initial buildout for the campus academic core, including (1) extension of buried utilities; (2) improving the campus storm water management system; (3) modifying existing equipment to improve operations at the Central Plant, Telecommunications Building and Pump Station; and (4) constructing a materials lay-down and handling area for Facilities Management. The project is anticipated to be completed in 2011–12.

- **Site Development and Infrastructure Phase 5.** This project would provide necessary completion of critical circulation elements and connections for the academic core, including extension of Scholars Lane and other major roadways into expanded areas of the campus associated with Phase 1 of campus development (5,000 FTE students). The project would provide the site infrastructure and site utilities for the existing Central Plant and Telecommunications Building in association with campus growth. The improvements are anticipated to be completed in 2014–15.

- **Site Development and Infrastructure Phase 6**. This project would provide initial infrastructure and utilities associated with Phase 2 of campus development approaching 6,500 FTE students. This project includes improvements that would provide access, basic infrastructure, utilities distribution, and connections to the existing central plant and data/telecommunications building for a new campus neighborhood. The infrastructure aspect would include bridges, major roadways, pedestrian walkways, lighting, hardscape, landscaping, and safety call boxes. The utilities distribution system would include expansion of the campus electrical distribution system and other major utilities such as sewer, potable water, natural gas, high temperature hot water, chilled water, and data/information technology either above ground or as buried utilities. The improvements are anticipated to be completed in 2014.

- **Site Development and Infrastructure Phase 7.** This project would provide the necessary backbone infrastructure, including rough grading, roadways and bridges, hardscape, landscaping, pedestrian and bicycle paths, lighting, emergency call boxes, drainage, large irrigation, and utilities distribution from major utilities in new neighborhoods of the campus not previously developed. Utilities distribution would include electrical, natural gas, domestic water, sewer, reclaimed water, data/information technology, pumps, and associated new utilities networks that will serve instruction and research facilities. The project is intended to support a campus population of approaching 8,000 FTE students. The improvements are anticipated to be completed in 2017.

- **West Campus Site Development Infrastructure.** These improvements are required to support new programs including housing, dining, parking, recreation and athletics, and early education and child care, as well as some administrative and institutional support functions such as conferences/special events, alumni events, and visitor relations. This project would complete the site development and buried utilities serving the west neighborhood, which is predominantly dedicated to these programs. The project scope includes rough and finish grading; drainage; provision of major roadways, pedestrian paths, and bicycle paths; hardscape and landscaping; lighting; and security boxes. Completion of utilities distribution and infrastructure includes work such as buried electrical; data/information technology; natural gas; domestic water and sewer; reclaimed water and irrigations systems; and pump/lift station(s). Completion is anticipated for 2011.

- **East Campus Site Development Infrastructure.** These improvements are required to support new programs including housing, dining, parking, recreation and athletics, and early education and child care. This project would build out a new district and the scope would include site development and buried utilities serving the east neighborhood, which is predominantly dedicated to these programs. The project scope includes rough and finish grading; drainage; provision of major roadways, pedestrian and bicycle paths; hardscape and landscaping; lighting; and safety call boxes. Completion of utilities distribution and infrastructure includes work such as buried electrical; data/information technology; natural gas; domestic water and sewer; reclaimed water and irrigations systems; and pump/lift station(s). Completion is anticipated for 2015.

- **South Campus Site Development Infrastructure.** These improvements are required to support new programs including housing, parking, and recreation and athletics. This project would build out a new district and the scope would include site development and buried utilities serving the southern part of the planned "Main Street" area. The project scope includes rough and finish grading; drainage; provision of major roadways, pedestrian and bicycle paths; hardscape and landscaping; lighting; and safety call boxes. Completion of utilities distribution and infrastructure includes work such as buried electrical; data/information technology; natural gas; domestic water and sewer; reclaimed water and irrigations systems; and pump/lift station(s). Completion is anticipated for 2017.

- **Medical Research/Education Infrastructure and Utilities.** This project would provide basic new site development, infrastructure, and site utilities, including equipment at the central plant, to serve a new neighborhood designated for the health sciences and medical research and education. The project is anticipated to be completed in 2015–16 and in advance of the new Medical Research/Education facilities in the Central Campus West subarea that are described above.

3.6.5 Population

As of fall 2008, the Campus has a student population of approximately 2,700 FTE and approximately 200 faculty and 925 staff. As described in **Section 3.0** of **Volume 1**, the Campus is projected to reach an enrollment level of approximately 10,000 FTE students by 2019–20, which is also the horizon year for the buildout of the UCM 2020 Project. In other words, the Campus' student population would increase by about 8,800 FTE students under the UCM 2020 Project.

The increase in student population would be accompanied by an increase in faculty and staff. By 2019-20, the total faculty and staff on the Campus would be 533 and 2,344 persons respectively.

Table 3.0-4, UC Merced On-Campus Population (2019–2020), presents the total on-campus population at the buildout of the UCM 2020 Project, and includes not only the population groups described above but also an estimated number of daily visitors to the campus.

Table 3.0-4
UC Merced On-Campus Population (2019–2020)

Population	Number (FTE)
Undergraduate Students	8,288
Graduate Students	2,042
Subtotal	*10,330*
Faculty	533
Post-docs	117
Staff	2,344
Subtotal	*2,994*
Visitors[1]	250
Total	**13,574**

[1] *Includes visitors, food service employees, and construction workers that may be present on the campus on a daily basis. Numbers estimated assuming this population is about 2.5 percent of the total enrollment. This population ranges from 2 to 3 percent of the campus student population at UC Davis and UC Santa Cruz respectively.*

3.6.6 Access, Roadway, and Parking Improvements

As described in **Section 3.0** of **Volume 1**, campus land uses have been planned in a grid pattern. The circulation system consists of a grid-pattern network of principal roads, connecting all major academic portions of the campus and campus periphery (see **Figure 3.0-8, Campus Circulation and Parking**). The main access to the campus is at Bellevue Avenue; this entry point is adjacent to the UCM 2020 Project

area and would be the primary access. Multiple entry points into the campus are planned to allow easy access to the campus as it develops in size and to accommodate the number of students, faculty, staff, and visitors that would come to the campus.

As shown on **Figure 3.0-8**, the traffic and circulation configuration would feature major entry points at Bellevue Road and at the planned Campus Loop Drive. The main collector roadway would run in a loop along the periphery of the UCM 2020 Project area, with secondary streets connecting the loop road to the interior of the campus and the Community North area. This option would include five bridges across the canals on site. Truck, service, and parking traffic would be largely restricted to the outer edges of the UCM 2020 Project area.

By 2020, approximately 56 acres would be used for parking lots and parking structures to provide a total of 5,050 parking spaces (see **Figure 3.0-8**). Parking would be provided in a combination of facilities located at the campus perimeter and within more proximate locations. Similar to other UC campuses, permits would be necessary to park in on-campus facilities.

It is anticipated that during the initial phases of UCM 2020 Project, parking would be provided on surface lots due to their low construction and maintenance costs. During early phases of the campus, interim parking land use may differ from the planned land use designation in some areas. As the campus is built out, parking structures would be constructed to centralize parking, conserve land, and be consistent with the 2009 LRDP land use designations. Over the long term, the interim parking lots would be redeveloped consistent with the 2009 LRDP designation of the land.

3.6.7 Landscaping

Landscaped areas throughout the UCM 2020 Project site would include commons, plazas, informal recreational areas, planted malls, buffer areas, and water features. Additionally, courtyards, lawns, landscaping, and other open space would be established in association with the campus buildings, based upon established floor area ratios for academic and residential areas. Neighborhood parks would be established in the northern and eastern student housing areas. Landscaped open space corridors, which would include pedestrian and bicycle routes, are proposed along Fairfield and Le Grand canals, extending from Lake Yosemite Regional Park through the center of the campus and to the southern border of the campus. Open space would also be provided along the campus streets.

Most landscaped areas would be planted with drought-resistant landscaping that would require minimal irrigation. Shade trees would be planted around buildings and along streets and walkways within the campus.

SOURCE: UC Merced and UCP Administrative Draft EIS/EIR, Volume 3 – 2008

FIGURE 3.0-8

Campus Circulation and Parking

974-001•10/08

3.6.8 Public Services

Public services would be provided to the campus as described below.

Fire Protection

The campus currently receives fire protection services from the County of Merced; service is provided from existing fire stations. The University plans to execute an agreement with the City to obtain fire protection services for the existing Phase 1.1 Campus as well as for the UCM 2020 Project.

Police Services

The Campus has already created its own police force to serve the Phase 1.1 Campus. As part of the UCM 2020 Project, a separate police/public safety facility will be built (see the discussion under "Campus South Subareas" in **Subsection 3.6.1** above).

Child Care Facilities

The 2009 LRDP allows for the siting of childcare facilities on campus in two land use areas: within the academic core and within the residential areas. A childcare facility is under construction on the Phase 1.1 campus. A second early education and childcare facility will be built as part of the UCM 2020 Project (see the discussion under "Central Campus West Subarea" in **Subsection 3.6.1** above).

3.6.9 Utilities

The UCM 2020 Project campus site is located in unincorporated Merced County. The campus site is largely undeveloped, except for the Phase 1.1 campus area, which is served by the full range of utilities. Water and wastewater service is provided to the Phase 1.1 campus by the City of Merced under an agreement that limits the service to the Phase 1.1 campus. In order for the City to provide sewer and water service to the developing campus, the area of the campus that is outside the City's current sphere of influence (SOI) must be annexed to the City or the City and the University must execute a special agreement for this purpose.

Table 3.0-5, Utility Demands of the Proposed Campus, presents the current (2007–08) utility demand estimates for the campus and the demand at full development of the campus through 2020. Water use estimates are based on high water conservation factors.

Table 3.0-5
Utility Demands of the Proposed Campus

Utility	*Demand*	
	2008	*2020*
Potable/Fire Water	159 acre-feet/year[1, 2]	648 acre-feet/year
Irrigation Water	-	360 acre-feet/year
Wastewater	209,700 gallons per day	470,000 gallons per day
Solid Waste	618 tons/year	3,817 tons/year
Electricity	1.7 megawatts[3]	18 megawatts[4]
Natural Gas	100 therms/hour	1,020 therms/hour[4]

Source: Stantec, 2008
Notes:
[1] *Includes Irrigation Water*
[2] *Water delivered by the City to the existing Campus is 69,151 hundred cubic feet or 51,728,000 gallons per year.*
[3] *Current electricity demand is approximately 1.7 megawatts during the peak window period and approximately 3 Kilowatts in the middle of the night.*
[4] *Predicted peak demand for full development of Campus.*

The utility infrastructure serving the existing campus is described in **Section 2.0**, **Project Description**, in **Volume 1**. A brief description of the major improvements planned as part of the UCM 2020 Project is provided below.

Potable Water

Potable water is provided to the campus by the City of Merced via its distribution system. The water is primarily supplied by a 16-inch water line that was constructed within the roadway alignment of Bellevue Road. A water supply well was constructed on the Phase 1.1 campus as part of the City's water distribution system. This design also assures that water supply to the campus would be uninterrupted in the event that the campus well is taken off line for any reason.

An on-campus distribution system has been developed to deliver potable water to each building within Phase 1.1 campus. This system will be expanded as part of the UCM 2020 Project, which includes infrastructure improvements and extension of utilities. Water mains would be placed under the secondary roads, with branch lines for fire hydrants and future building sites. Water mains would be sized to accommodate long-range development of the campus.

A large water storage tank has been constructed on the Phase 1.1 campus near the campus well. This tank may be relocated as needed to provide space for development of campus facilities. Additional water storage tanks would be constructed on campus support land as needed to serve the growing campus.

Irrigation Water

Approximately 137 acres of the 355-acre UCM 2020 Project site would require irrigation. Additional areas would be landscaped with drought-resistant landscaping that would not require irrigation. By 2020, the campus would require approximately 360 acre-feet per year of irrigation water. For the UCM 2020 Project site, water for irrigation would be obtained from the City of Merced or from MID canals through an out-of-service area agreement.

Stormwater

As part of the UCM 2020 Project infrastructure improvements, the stormwater collection and conveyance system installed on the Phase 1.1 campus would be expanded to cover additional areas of the campus as they are developed. Storm mains would be located within the primary and secondary road systems. Wherever possible, grassy swales, filter strips, and natural drainage paths would be used to reduce times of concentration and to improve stormwater quality. Stormwater runoff would also be directed to on-site retention and detention ponds. From the detention ponds, it would be discharged into Fairfield Canal if needed. The detention ponds would be designed to hold runoff from a 100-year, 24-hour storm. **Figure 3.0-6** shows the site drainage plan, including locations of future stormwater detention ponds within UCM 2020 Project site.

Wastewater

Wastewater Conveyance

The campus is currently connected to the City of Merced wastewater collection and treatment system. For campus growth up to 10,000 FTE students under the UCM 2020 Project, no off-site improvements to the wastewater collection system are needed as the sewer main in Bellevue Road is adequately sized to handle the flows from the campus at full development under the 2009 LRDP. The City sewer main in G Street is also adequate to handle wastewater flows from the campus up to an enrollment level of 10,000 FTE. Because of the elevation difference between campus development south of Bellevue Road and the sewer main in Bellevue Road, a pump station would be required that would pump wastewater to the sewer main in Bellevue Road. The pump station would be installed in the Central Campus West subarea as part of infrastructure improvements described above in **Subsection 3.6.4, Campus Infrastructure and Utilities**.

Wastewater Treatment

Wastewater generated on the Phase 1.1 campus is treated at the City of Merced wastewater treatment plant (WWTP). The City of Merced WWTP currently has a capacity for secondary treatment of 12 million gallons per day (mgd), but is only permitted to treat up to 10 mgd. The WWTP currently treats an average flow of 8 mgd. In 2006, the City certified an EIR (SCH# 2005101135) for the expansion of the WWTP to a design capacity of 20 mgd. The additional capacity would be installed in phases and would include several facility upgrades, such as tertiary filtration and solids dewatering and stabilization. With the completion of the first phase of upgrades (2010), the WWTP's permitted capacity will increase by 1.5 mgd to 11.5 mgd. This would be adequate to serve development through 2020, which is expected to generate 0.47 mgd of wastewater.

Solid Waste

In 2007, the campus generated approximately 618 tons of municipal solid waste, of which approximately 69 percent was recycled or otherwise diverted and about 31 percent was disposed of at the Merced County Highway 59 Landfill. At the completion of the UCM 2020 Project, the campus would generate approximately 3,817 tons of municipal solid waste per year, of which approximately 1,186 tons would be disposed of at the Highway 59 Landfill. In 2007, the University of California adopted the Policy on Sustainable Practices, which sets waste diversion goals of 75 percent by 2012 and zero waste by 2020.

Hazardous Waste

As a research campus, UC Merced would include various teaching and research programs that would involve the transport and use of hazardous materials similar in type and use to other existing research campuses. Some of the hazardous substances that could be involved include chemical reagents, radioisotopes, solvents, fuels, paints, cleaning chemicals, pesticides, and biohazardous substances. Inherent in some of the research activities is the generation of hazardous chemical, biological, and low-level radioactive wastes that require disposal in compliance with state and federal law. As part of the Phase 1.1 campus, an on-campus environmental safety facility is in development to facilitate the collection, analysis, and short-term storage of hazardous waste until it is shipped off site for disposal. This facility is adequate in size to serve the campus for 10 to 15 years, through buildout of the UCM 2020 Project. Development of a second facility is included in the UCM 2020 Project (see the discussion under "Central Campus East Subarea" in **Subsection 3.6.1** above). No on-site incineration or disposal of hazardous waste is proposed.

Telecommunications

AT&T is the telephone and communications provider in the Merced area. Duct banks have been installed within or adjacent to major roads on campus to carry fiber optic lines to individual buildings. The initial communications hub is located in the central plant node, allowing cabling distribution to the initial core buildings to run in the utility tunnel (see description below). Other buildings would be served by duct banks.

Electricity

The maximum electric demand at full development of the Campus (25,000 FTE students) is estimated at 18 MW. Because the Campus intends to comply with UC Policy on Sustainable Practices and a goal of the 2009 LRDP is to achieve zero net energy, additional power generation using renewable energy will be pursued. Power that will be needed by the campus will be generated on site using a number of renewable and alternative energy technologies, including wind turbines, fuel cells, and photovoltaic systems supplemented as needed by green power obtained from the grid. The UCM 2020 Project includes installation of a photovoltaics facility in the eastern portion of the campus (see the discussion under "Campus Service Subareas" in **Subsection 3.5.1** above).

Service from the grid would be maintained for redundancy and reliability and the grid would also be the source of electricity while on-site alternate energy sources are being developed. No improvements to the existing electrical grid to serve campus development under the UCM 2020 Project are required.

Natural Gas

The campus is connected to the regional natural gas distribution system via a pipeline aligned along Lake Road. In 2007, the annual campus demand for natural gas was 100 therms/hour. The maximum gas demand is projected to be approximately 400 therms/hour by 2020. No off-site improvements are needed to provide natural gas to the campus through 2020.

Heating, Cooling, and Process Steam Systems

Existing campus buildings are heated through the use of high-temperature hot water and cooled through the use of chilled water, both of which are supplied by the Campus central plant. The central plant is equipped with a boiler to produce high-temperature hot water, an electric chiller to cool water, and a thermal energy storage (TES) unit to store chilled water. Distribution lines have been installed within road right-of ways to deliver hot water and chilled water to the buildings associated with the central plant. Chilled water is produced during off-peak hours and managed with the thermal energy storage tank. The 2020 campus project includes expansion of these existing systems and development of an

additional central plant and associated infrastructure to serve the evolving needs of the growing campus. Based on projected demand, approximately 18 additional boilers would be needed to serve the Campus at buildout (25,000 FTE students).

3.7 SUSTAINABILITY AND ENVIRONMENTAL PROTECTION

The University has committed to implement numerous sustainability and environmental protection measures and plans to reduce the potential for impacts related to biological resources on and adjacent to the project site, as well as impacts related to use of resources such as energy and water. These are described in **Section 2.0** in **Volume 1** of this Draft EIS/EIR.

3.8 CONSTRUCTION SCHEDULE AND ACTIVITIES

All of the Phase 1.2 and Phase 2 Campus facilities described above would be constructed between 2009 and 2020. Expected year of completion of each facility is presented above. Based on the projected construction schedules, construction of several facilities and infrastructure improvements are expected to take place concurrently.

Nearly the entire Phase 1.1 and Phase 2 areas are undeveloped lands, and therefore project construction would not involve demolition of any existing structures. Typical construction activities would involve site clearance and grubbing, grading, installation of utilities and roadways, construction of building pads, construction of buildings and other structures, and the installation of hardscape and landscaping. Soil cuts and fills would be balanced on site, and no import or export of soil is expected to be required. With the exception of the Student Union, which would be a 4 to 6 story building, all proposed buildings would be less than 4 stories high. Therefore, no pile-driving or other special construction techniques or equipment would be involved in the construction of the facilities.

Special precautions will be implemented in order to avoid indirect impacts on vernal wetlands located adjacent to the Phase 1.2 and Phase 2 campus boundaries. These measures were developed during the construction of Phase 1.1 campus and were successfully implemented. These measures are described in detail in the *Resource Mitigation Plan for Federally Listed Species that May be Affected by the Establishment of the University of California, Merced* (Jones & Stokes 2002a), which was prepared in conjunction with the 2002 Supplemental BA (Jones & Stokes 2002b), and were incorporated into the successfully implemented Phase 1 Campus Construction Mitigation Plan (Jones & Stokes 2002c). The full text of the *Resource Mitigation Plan* is included in **Appendix 2.0-5** of this Draft EIS/EIR. The construction measures include the following elements:

- Incorporate species protection obligations into construction contracts

- Conduct environmental sensitivity training
- Implement best management practices (BMPs)
- Implement preconstruction surveys and avoidance and minimization measures to minimize take of species
- Fence project boundaries and sensitive resources
- Discourage introduction and establishment of invasive species
- Conduct Environmental Monitoring when necessary.

3.9 PERMITS AND APPROVALS

The Regents will review the analysis and conclusions with respect to the environmental impacts from the implementation of UCM 2020 Project in this volume and will determine whether or not to certify the EIS/EIR, including this volume.

A Section 404 permit to fill all wetlands within the 815-acre campus will be granted or denied by the USACE based on the impact analysis contained in Volumes 1 and 2. In the event that the permit is denied, the UCM 2020 Project will not be implemented.

For stationary sources of air emissions to be constructed as part of the UCM 2020 Project, an Authority to Construct and Permit to Operate would be needed from the San Joaquin Valley Air Pollution Control District.

The Campus will potentially require permits from the California Fish and Game Department (CDFG) for the incidental take of state-listed species for the entire campus. In addition, the University will be required to submit an application to the CDFG pursuant to Section 1602 of the California Fish and Game Code to determine whether a Streambed Alteration Permit will be required.

The Campus will require all construction contractors for the UCM 2020 Project to obtain coverage under the statewide National Pollutant Discharge Elimination System (NPDES) Permit for Stormwater Discharges associated with Construction Activities from the CVRWQCB.

4.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

4.0.1 INTRODUCTION

This section presents an analysis of each resource topic that was identified as having a potential to be affected by implementation of the UC Merced (UCM) 2020 Project. Each section describes the environmental setting as it relates to that specific resource topic; the effects that could result from implementation of the UCM 2020 Project; and mitigation measures that would avoid, reduce, or compensate for the significant adverse effects of the UCM 2020 Project. The subsections below summarize the approach to the impact analysis, including key assumptions and data used in the analysis, to assist the reader in better understanding the analyses contained in this volume of the Draft EIS/EIR.

4.0.2 SCOPE OF THIS VOLUME OF THE DRAFT EIS/EIR

The scope of the UC Merced and University Community Project Draft EIS/EIR is described in **Section 4.0** of **Volume 1**. The analysis presented in this volume generally follows the format and guidance contained in the *2008 California Environmental Quality Act (CEQA) Statutes and Guidelines*, including significance criteria listed in the CEQA Environmental Checklist (Appendix G), which is used by most lead agencies in the state to identify the specific categories of impacts that are evaluated and disclosed in an EIR.

Based on the input received during the scoping process, as described in **Section 1.0, Introduction**, as well as on information obtained during the preparation of the UC Merced and University Community Project Draft EIS/EIR, this volume addresses the following resource topics or categories of impact in detail:

- Aesthetics
- Agricultural Resources (including prime farmland)
- Air Quality
- Biological Resources (including wetlands, ecologically critical areas, endangered and threatened species)
- Cultural Resources (historical and archaeological resources)
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Population and Housing
- Public Services and Recreation (including parklands)
- Transportation and Traffic
- Utilities and Service Systems

The potential environmental impacts of the UC Merced and University Community Project, including the UCM 2020 Project, were examined at a program level of analysis in Volumes 1 and 2 of this Draft EIS/EIR. Some impacts were found to be less than significant for development of the Campus and Community as a whole, and would likewise be less than significant for the proposed UCM 2020 Project. These impacts are summarized in the relevant topical sections below. Topics for which significant impacts were identified in Volumes 1 and 2 were carried forward for evaluation at a project level of analysis in this volume. In addition, certain topics for which a greater level of detail is available regarding the UCM 2020 Project were also evaluated at a project level of analysis in this volume.

4.0.3 FORMAT OF RESOURCE TOPIC SECTIONS

Each resource topic discussion in this volume of the Draft EIS/EIR provides a brief description of existing conditions on the UCM 2020 Project site, identifies impacts adequately addressed level in Volumes 1 and 2 or not applicable to the UCM 2020 Project, describes the impacts of implementation of the UCM 2020 Project, identifies mitigation measures to avoid or reduce the impacts of the project, and describes whether the identified mitigation would be sufficient to reduce project impacts to a less than significant level.

4.1 AESTHETICS

4.1.1 ENVIRONMENTAL SETTING

Section 4.1, Aesthetics, in **Volume 1** of this Draft EIS/EIR presents the aesthetics setting for the entire Campus and the University Community, including the UCM 2020 Project site. This section of the EIR examines the visual and aesthetic effects of the UCM 2020 Project in greater detail.

4.1.1.1 Existing Conditions

As described in Volume 1 of the Draft EIS/EIR, the UC Merced Campus consists of three existing land uses: the developed Phase 1.1 Campus, grasslands used for seasonal grazing, and areas under irrigated pasture. The previously developed Phase 1.1 Campus includes three major academic buildings, a recreation and wellness building, 10 student housing structures, a recreational field, a central utilities plant and related structures, a water well and storage tank, and a number of paved or gravel parking lots. The buildings on the Phase 1.1 Campus are two to four stories high and have exterior earth tone colors, such as brown, beige, dark orange, and gray. Larger structures on site are accented with decorative metal siding and large windows. Landscaping is present throughout the Phase 1.1 Campus. The remainder of the Campus site surrounding the Phase 1.1 Campus area to the northeast, east, and south consists of undeveloped land that is covered with annual grasses or is under irrigated pasture use. **Section 4.1** in Volume 1 of this Draft EIS/EIR includes photographs of the project site and surroundings.

The adjacent University Community site, which is not a part of the UCM 2020 Project site, is rural in character, appearing as a large, mostly flat, expansive open area with a few farm-related structures located in the south-central portion of the site. Structures within the site include stables, two large barns, and three one-story single-family homes on the LWH Farms LLC property south of Cardella Road. The rest of the University Community site consists of cultivated agricultural land and grazing land with cattle present throughout the year.

Lake Yosemite Regional Park is located to the northwest of the Campus, and rolling grasslands occupy the lands to the north and east of the Campus and the University Community sites. South of the University Community, lands are under agricultural production, and to the west of the community adjacent to Lake Drive, the area is developed with rural residential land uses.

4.1.1.2 Scenic Vistas and Corridors

As described in Volume 1, the Merced County General Plan considers major scenic vistas to be views of the Coastal and Sierra mountain ranges. The Coastal mountain ranges are not visible from the UCM 2020

Project site, but the Sierra Nevada range to the east of the campus can be viewed from nearly all locations on the UCM 2020 Project site because the surrounding area is generally undeveloped. The City of Merced General Plan designates the portion of Lake Road from Yosemite Avenue to Lake Yosemite Regional Park, located within the UCM 2020 Project area, as a scenic corridor. No other County- or City-designated scenic corridors are located in the UCM 2020 Project area.

4.1.1.3 Proposed UCM 2020 Project Facilities

North Campus

Under the UCM 2020 Project, the North Campus portion of the site would be further developed with expansion of the existing Wellness Center and Central Plant and the construction of a new Student Union Building and an Interdisciplinary Instruction and Research Building. The Joseph Edward Gallo Recreation and Wellness Center Expansion would add approximately 42,900 GSF to the existing recreation and wellness building that was developed during Phase 1.1 of the campus and is located just south of the northwestern campus boundary. The Student Union would be unique in character, including glass facades and shaded outdoor terraces, offering vistas to the north.

Central Campus

Under the UCM 2020 Project, numerous academic, support, and student residential buildings would be constructed in this central portion of the Campus (referred to as the Academic Core of the campus). These include a Student Services Center, another Interdisciplinary Instruction and Research Building, a Classroom and Instructional Technology Building, a Graduate School of Education, an Organized Research Building, a School of Management, an Early Education and Child Care Facility 2, several Student Housing buildings, an Aquatics Center, a Sports Complex, an Environmental Health and Safety Facility, a Public Safety and Services Facility, and a Satellite Utility Plant (see **Table 3.0-4** for details of proposed buildings). Proposed buildings would be would be about three to four stories in height and an average size of 87,230 GSF.

Buildings would be densely clustered. Academic buildings would be designed around central open space areas and the surrounding walkways and parking lots would be landscaped, including trees surrounding the perimeter of the buildings. The proposed Sports Complex would have multi-use sports fields with artificial turf and would provide lighting, fencing, and signage. A small sports equipment structure and additional landscaping may be added to the complex in the future, depending upon funding availability.

Gateway District

Construction in the Gateway District under the UCM 2020 Project would include the development of a Medical Research/Education Building and a Welcome Center. Buildings proposed in the Gateway District would be from one to four stories high. Buildings would be constructed at a moderate average size of 69,095 GSF, with a typical business or research park style layout. Landscaping and open green spaces would be provided between structures and along walkways and parking areas. A two-story, 58,000-GSF Welcome Center of a similar business park style design is also proposed within this area.

Student Neighborhoods

Development through 2020 in the Student Neighborhoods, located to the west and south of the North Campus area, would consist of the construction of residence halls, townhouse-style and stacked flats, walk-up apartments, and the West Neighborhood Dining Facility. Construction in this area would include dormitory-style buildings of up to three stories and two-story apartment buildings with open space commons. Residence halls would consist of larger low-rise style apartment facilities with 80 apartments per net acre. These three-story buildings would have corridors, elevators, and common spaces on the ground floor and open space between buildings. Townhouses and stacked flats would be more traditional single-family style, two- and three-story residential structures with up to 27 apartments per net acre. Townhouses and stacked flats would also include a common courtyard between residences. The walk-up apartments would be two-story, smaller, and less densely concentrated buildings, with up to 35 apartments per net acre. A common core area would connect groups of eight apartments, and an open space commons would be provided between buildings. A 16,000-GSF, two-story Dining Facility is also proposed within this area; it would be a designed as a box-style structure similar to the residence halls.

4.1.2 IMPACTS AND MITIGATION MEASURES

4.1.2.1 Standards of Significance

Refer to **Section 4.1**, **Volume 1** for a discussion of applicable significance criteria.

4.1.2.2 Analytical Methodology

See **Section 4.1**, **Volume 1** for a description of the analytical methodology used to evaluate the visual impacts of the overall Campus and University Community development, including the impacts of the UCM 2020 Project.

4.1.2.3 Impacts Adequately Addressed at the Program Level or Not Applicable to the UCM 2020 Project

As identified in **Section 4.1**, **Volume 1**, development under the UC Merced and University Community Project would not adversely affect scenic resources (Impact AES-2). The campus site is not located near any state-designated scenic highways and there are no resources present on the site that would qualify as scenic resources. Therefore, there would be no impact to scenic resources as a result of the UCM 2020 Project and no additional project-level analysis of this issue is required.

4.1.2.4 Project Impacts and Mitigation Measures

UCM 2020 Impact AES-1: Development under the UCM 2020 Project would not affect scenic vistas. (*Potentially Significant; Less than Significant*)

Volume 1 states that the overall campus project site provides expansive views of open rangeland and agricultural fields in the foreground and middle ground, and rolling foothills and the Sierra Nevada range in the far background, as viewed from practically all locations on the project site or in its vicinity. With the construction of UCM 2020 Project facilities, it is likely that these views would be interrupted in some, although not all, locations. The loss of the view of the Sierra Nevada range from certain campus vantage points is, however, not considered a significant adverse impact because views would still be available from other campus vantage points.

Long-range views of the Sierra Nevada are currently available from locations on Lake Road west of the southern portion of the Campus and from Lake Yosemite Regional Park. Development of the UCM 2020 Project would not result in a loss of the views of scenic vistas from these locations because only a small portion of the development proposed as part of the project adjoins the portion of Lake Road south of Bellevue Road. Furthermore, there is a drop in elevation between Lake Road and where campus facilities would be located; therefore, a significant interruption of views of the Sierra Nevada due to campus development would not occur. In addition, the view blockage for persons traveling along Lake Road or using the bike path adjacent to it to access the regional park would be transitory. Therefore, the impact is considered less than significant. To further reduce this less than significant impact, **Mitigation Measure AES-1b** would be implemented.

The UCM and University Community Project, including the 2020 Project site, would be located to the southeast of Lake Yosemite Regional Park. The County-owned parcel between the park and the campus is no longer included in the proposed campus and would not be developed as part of the project. Therefore, although the developed UCM 2020 Campus would be visible from the nearby park, due to the distance between the park and the nearest campus facilities, the project would not result in the

obstruction of views of the Sierra Nevada Range from the park looking east or northeast. However, with the development of campus facilities in the middle ground, the scenic vistas as currently available from the regional park would be impaired. This is considered a potentially significant impact. **Mitigation Measure AES-1a** is proposed to address this impact.

UCM 2020 MM AES-1: Implement **Program Level Mitigation Measures AES-1a** and **-1b**.

Significance after Mitigation: Less than significant.

UCM 2020 Impact AES-2: Development under the UCM 2020 Project would substantially alter the visual quality and character of the site and its surroundings. (*Significant; Significant and Unavoidable*)

Under the UCM 2020 Project, the visual characteristics of the project site would change from largely undeveloped grasslands and irrigated pasture to a fully urbanized area, developed with buildings, sidewalks, paved parking lots, and landscaping. Proposed buildings for the UCM 2020 Project would be similar to those already present on the Phase 1.1 Campus site, and would be large and up to four stories high with the Student Union Building potentially up to six stories. Although the campus has been carefully designed with attention to placement of appropriate land uses at key campus entrances and all future facilities built on the campus would be required to comply with campus design guidelines, any development of the site would result in a visual landscape different from the existing character of the site. The proposed UCM 2020 Project would permanently and substantially alter the visual character of the Campus. This impact is considered significant.

UCM 2020 MM AES-2: Implement **Program Level Mitigation Measure AES-3**.

Significance after Mitigation: Implementation of **Program Level Mitigation Measure AES-3**, included in Volume 1, would help reduce this impact where possible, but the proposed UCM 2020 Project would significantly alter the character of the area even after mitigation. Therefore, this impact would remain significant and unavoidable.

UCM 2020 Impact AES-3: Development under the UCM 2020 Project would create a new source of light and glare in the vicinity. (*Potentially Significant; Significant and Unavoidable*)

Development for the UCM 2020 Project on the campus site would include roads and walkways with street lighting, and buildings with surfaces and windows that may reflect and cause glare. The proposed project includes a photovoltaic (PV) facility in the eastern portion of the UCM 2020 Project site. Due to its

distance from existing roads and because PV panels that would be installed do not produce excessive glare, the impact related to glare from the PV facility would be less than significant.

The nighttime lighting of buildings, parking lots, recreational fields, and other University-related facilities would illuminate the rural landscape, which is mostly dark at night, and possibly inhibit nighttime views of the sky. Since the only night lighting that exists is on the Phase 1.1 Campus, development of the Campus would create a comparatively substantial amount of nighttime light and glare.

In conjunction with the development of the Phase 1.1 Campus, UC Merced has developed and adopted Campus standards for site lighting, which are included in all applicable design and construction contracts. Those standards were used in installing all site lighting on the Phase 1.1 Campus and would be incorporated into the UCM 2020 Project. Implementation of these Campus standards would reduce the impact of site lighting for the UCM 2020 Project, but would not totally avoid the increase in nighttime lighting on the Campus site. The impact would be significant.

Mitigation Measure: No further mitigation is feasible.

Significance after Mitigation: Implementation of the Campus standards would help reduce impacts related to light spill and glare in the area, but would not fully eliminate impacts related to nighttime illumination of an area that would otherwise be dark. Therefore, this impact would remain significant and unavoidable.

4.2 AGRICULTURAL RESOURCES

4.2.1 ENVIRONMENTAL SETTING

Section 4.2, Agricultural Resources in **Volume 1** of this Draft EIS/EIR presents the agricultural resources setting for the entire Campus and the University Community, including the UCM 2020 Project site. This section summarizes the conditions and impacts relevant to the UCM 2020 Project.

4.2.1.1 Existing Agricultural Uses

As described in Volume 1 of the Draft EIS/EIR, about 104 acres of the 815-acre Campus site are developed with campus facilities (the Phase 1.1 Campus) on the former location of a golf course. This area is designated as Urban/Built-up land on FMMP mapping. The remainder of the proposed Campus site, including the proposed UCM 2020 Project site, consists of grasslands that are used for cattle grazing. A small portion of the proposed Campus site south of the intersection of Bellevue and Lake Roads is used as irrigated pasture. Existing development features include irrigation canals, a barn, a corral, stock ponds, and two irrigation pivots. As discussed in **Section 4.2, Agricultural Resources**, of **Volume 1** of this Draft EIS/EIR, agricultural uses within the adjacent proposed University Community site primarily cattle grazing and agricultural row crops.

Based on FMMP mapping, there are approximately 8.5 acres of Prime Farmland, 15.6 acres of Farmland of Statewide Importance, and 100.7 acres of Farmland of Local Importance on the proposed UCM 2020 Project site. No part of the proposed UCM 2020 Project site is under a Williamson Act contract.

Table 4.2-1
Farmland on UCM 2020 Project Site

FMMP Category	Acreage on Campus
Prime Farmland	8.51
Farmland of Statewide Importance	15.57
Unique Farmland	0.00
Farmland of Local Importance	100.68
Grazing Land	107.22
Urban and Built-up Land	70.67
Other Land	52.35
TOTAL	***335***

4.2.1.2 Surrounding Farmlands

To the north and east of the project site, grazing land comprises almost the entire area between the proposed Campus site and the Merced County line with Stanislaus and Mariposa counties. On the west, beyond Lake Yosemite, are a golf course and other urbanized land. Beginning about 1.5 to 2 miles west of the project site, active farmland is interspersed with rural residential uses. This farmland is cultivated with field crops (such as corn, watermelon, and alfalfa) and orchards, with almonds being the most common orchard tree. South of the 2020 Project site, the land is grazing land up to Cardella Road and under crops south of Cardella Road.

The Williamson Act contract areas nearest to the UCM 2020 Project site are located east of the proposed University Community area. There are several large parcels, totaling approximately 2,640 acres, currently enrolled in a Williamson Act contract. The County also designates the land south of Bellevue Road, including the University Community area, as Williamson Act Agricultural Preserve. However, this land use designation indicates the area where future Williamson Act contracts may be approved and does not indicate that the land is currently enrolled in Williamson Act contracts.

4.2.2 IMPACTS AND MITIGATION MEASURES

4.2.2.1 Standards of Significance

Refer to **Section 4.2** of **Volume 1** for a discussion of applicable significance criteria.

4.2.2.2 Analytical Methodology

See **Section 4.2** of **Volume 1** for a description of the analytical methodology used to evaluate the agricultural resources effects of the overall Campus and University Community development, including the effects of the UCM 2020 Project.

4.2.2.3 Impacts Adequately Addressed at the Program Level or Not Applicable to the UCM 2020 Project

The analysis conducted for the UC Merced Campus and University Community in **Section 4.2, Volume 1**, indicates that development of the proposed Campus and University Community would not substantially conflict with existing zoning for agricultural use or involve other changes that could result in the conversion of Important Farmland to non-agricultural uses (Impact AG-2).

Although the Campus site is zoned A-2, an agricultural zone, in the County General Plan, as a state-owned property, the Campus is not subject to local zoning. No portion of the Campus site is under a

Williamson Act contract. Therefore, development of the campus would not have impacts related to a conflict with agricultural zoning. The portions of the Campus (including the UCM 2020 Project site) that are adjacent to areas that would remain in agricultural use would be used primarily for open space and recreational purposes. Since the surrounding land uses would be compatible with these land uses on the proposed Campus, the campus population would not be exposed to agricultural nuisances that in turn could put pressure on agricultural practices on adjacent lands to be abandoned or for the land to convert to non-agricultural uses.

For the reasons presented above, development of the UCM 2020 Project would not result in a significant impact related to agricultural zoning, cancellation of Williamson Act contracts, or conflicts with adjacent agricultural land uses, nor would it result in significant adverse effects on adjacent land uses or lead indirectly to the conversion of adjacent off-site farmland to non-agricultural uses. Therefore, impacts associated with agricultural zoning and indirect impacts related to agriculture are considered less than significant. No additional project-level analysis of this issue is required for the UCM 2020 Project.

4.2.2.4 Project Impacts and Mitigation Measures

UCM 2020 Impact AG-1: **The UCM 2020 Project would result in the conversion of Important Farmland, including Prime Farmland, Unique Farmland, and Farmland of Statewide Importance. (*Less than Significant*)**

Although the UCM 2020 Project site is primarily used for grazing purposes, development of the site would convert Important Farmland, including 8.5 acres of Prime Farmland and 15.6 acres of Farmland of Statewide Importance, all of which are classified as Important Farmland. The conversion of Important Farmlands on the UCM 2020 Project site to urban uses is considered a potentially significant impact. However, because, as part of the University's environmental commitments, adequate acreage of important farmland has already been placed under conservation easements that allow farming to continue, this impact would be less than significant.

Mitigation Measure: No mitigation is required.

4.3 AIR QUALITY

4.3.1 ENVIRONMENTAL SETTING

Section 4.3, Air Quality, in **Volume 1** of this Draft EIS/EIR presents the existing regional air quality conditions in the northern San Joaquin Valley. The air quality characteristics of the campus site are included in Volume 1 and this section summarizes the conditions and impacts relevant to the UCM 2020 Project.

4.3.1.1 Regional Setting

Section 4.3, **Volume 1**, provides a description of the regional air quality setting**.** As described in that section, the Campus and University Community site, including the UCM 2020 Project site, is located in Merced County, which is located within the San Joaquin Valley Air Basin (SJVAB). The primary factors that determine air quality are the locations of air pollutant sources, the amount of pollutants emitted, and meteorological and topographical conditions affecting their dispersion. Atmospheric conditions, including wind speed, wind direction, and air temperature gradients, interact with the physical features of the landscape to determine the movement and dispersal of air pollutants. The following paragraphs briefly describe the existing environment as it relates to climate, meteorological conditions, and ambient air quality conditions of the SJVAB.

Regional Topography and Meteorology

As indicated in Volume 1, ozone and inhalable particulates (particulate matter 10 microns or less in diameter [PM_{10}] and particulate matter 2.5 microns or less in diameter [$PM_{2.5}$]) are classified as regional pollutants because they can be transported away from the emission source before concentrations peak. In contrast, local pollutants, such as carbon monoxide (CO), tend to have their highest concentrations near the source of emissions. The majority of the SJVAB is highly susceptible to pollutant accumulation over time. A description of the regional topography and meteorology characteristics of the SJVAB is provided in **Section 4.3, Volume 1**.

Ambient Air Quality Standards

Both the federal government and the State of California have established ambient air quality standards for several different pollutants. The US EPA sets National Ambient Air Quality Standards (NAAQS) for the following the seven "criteria" pollutants: CO, NO_2, O_3, SO_2, PM_{10}, $PM_{2.5}$, and lead. California Ambient Air Quality Standards (CAAQS) have been adopted for these pollutants, as well as for sulfates,

visibility-reducing particles, hydrogen sulfide, and vinyl chloride. California standards are generally stricter than national standards.

A summary of state and federal ambient air quality standards and their effects on health is shown in **Table 4.3-1, California and National Ambient Air Quality Standards**, in **Section 4.3**, **Volume 1**. The US EPA and CARB designate air basins as being in "attainment" or "nonattainment" for each of the criteria pollutants. Nonattainment air basins are ranked (marginal, moderate, serious, severe, or extreme) according to the degree of nonattainment. Areas that do not meet the standards are classified as nonattainment areas (see **Table 4.3-2, San Joaquin Valley Air Basin Attainment Status**, **Volume 1**). Attainment areas are those with air quality that is better than the standards. As shown in **Table 4.3-2** in **Section 4.3, Volume 1**, the SJVAB is in nonattainment for the federal standards for ozone (8 hour), PM_{10}, and $PM_{2.5}$. The air basin is in nonattainment for the state standards of ozone (1 hour), ozone (8 hour), PM_{10}, and $PM_{2.5}$.

Sensitive Receptors

Sensitive populations (sensitive receptors) are more susceptible to the effects of air pollution than is the population at large. The SJVAPCD defines sensitive receptors as "facilities that house or attract children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants;" hospitals, schools, convalescent facilities, and residential areas are examples of sensitive receptors (SJVAPCD 2002). Sensitive receptors that are near localized sources of toxic air contaminants and CO are of particular concern. The definition of sensitive receptors for the purposes of the impact assessment is provided in **Section 4.3, Volume 1**. The nearest sensitive receptors for the UCM 2020 Project are the existing childcare facility in the Central Campus area and the residents of homes on Lake Road.

Ambient Air Monitoring

CARB has established and maintains a network of sampling stations in conjunction with local air pollution control districts (APCDs) and air quality management districts (AQMDs), private contractors, and the National Park Service. Monitoring stations near the project site are described in **Section 4.3**, **Volume 1**.

Table 4.3-3, Ambient Pollutant Concentrations Registered Nearest to the Project Site, in **Section 4.3, Volume 1**, lists the measured ambient pollutant concentrations and the violations of state and federal standards that have occurred at the above-mentioned monitoring stations from 2003 through 2007, the most recent years for which data are available.

4.3.2 IMPACTS AND MITIGATION MEASURES

4.3.2.1 Standards of Significance

Refer to **Section 4.3**, **Volume 1,** for a discussion of applicable significance criteria.

4.3.2.2 Analytical Methodology

See **Section 4.3**, **Volume 1**, for a detailed description of the analytical methodology used to evaluate the air quality impacts associated with the overall Campus and University Community development, including the effects of the UCM 2020 Project.

4.3.2.3 Impacts Adequately Addressed at the Program Level or Not Applicable to the 2020 Project

Carbon Monoxide Concentrations

As stated in **Section 4.3**, **Volume 1**, implementation of the UC Merced and University Community Project would not expose sensitive receptors to substantial pollutant concentrations of carbon monoxide (CO) (Impact AQ-3). The UC Merced and University Community Project was evaluated for its potential to cause high levels of CO due to traffic associated with the Campus and the University Community, including the 2020 Project. The results of the CO concentration calculations associated with the UC Merced and University Community Project are presented in **Table 4.3-13, Alternative 1 – Campus and University Community Carbon Monoxide Concentrations**, in **Section 4.3, Volume 1**. As indicated in Volume 1, under worst-case conditions, future CO concentrations at each of these intersections worst affected by the traffic associated with the Campus and University Community at buildout would not exceed the state 1-hour and 8-hour standards. Therefore, no significant CO hotspot impacts would occur to sensitive receptors in the vicinity of these intersections. Because no significant impacts would occur based on the traffic associated with both the Campus and University Community, no significant CO impacts would occur based on the much smaller volume of traffic associated with the UCM 2020 Project, and a project-specific analysis of this topic is not needed.

Objectionable Odors

Section 4.3, **Volume 1**, notes that the Campus would not create objectionable odors affecting a substantial number of people (Impact AQ-6). Construction of the Campus would require the use of diesel-fueled equipment, architectural coatings, and asphalt, all of which produce associated odors. However, these odors are not pervasive enough to cause objectionable odors affecting a substantial number of people. Consequently, construction of the Campus would not cause or be affected by odors. The operation of the

Campus facilities are not considered to be a significant source of odors, and all research using odorous materials would take place inside buildings, so there would be no odorous emissions associated with research activities. In addition, the project would not be located near any significant odor sources. Consequently, the Campus, including the UCM 2020 Project, would not cause or be affected by odors. This impact is less than significant.

Conflict with Air Quality Plans

Section 4.3, Volume 1, found that the UC Merced and University Community Project would not conflict with or obstruct implementation of the applicable air quality plan (Impact AQ-5).

As discussed in **Section 4.9, Land Use and Planning**, **Volume 1**, Merced County adopted the University Community Plan (UCP) in 2002 and amended the General Plan to include a Multiple Use Urban Development land use designation for the UCP. Accordingly, the development of the University Community is included in the Merced County General Plan, the growth projections of which would be reflected in the SJVAPCD's air quality plans adopted in 2007. In addition, Merced County has recognized the Campus through its amendment of the Merced County General Plan in 1996 to designate a UC Merced Specific Urban Development Plan. The Campus was also included in the 2004 General Plan Amendment resulting from approval of the UCP. Accordingly, the development of the Campus and University Community, including land uses under the UCM 2020 Project, is included in the Merced County General Plan, the growth projections of which would be reflected in the SJVAPCD's air quality plans adopted in 2007. The UCM 2020 Project, as a subset of the growth included in the Merced County General Plan, would not conflict with or obstruct implementation of the applicable air quality plan. While the emissions associated with construction and operation of the UCM 2020 Project would result in a significant impact for the reasons set forth in the discussion of Impacts AQ-1 and AQ-2, the effect of the UCM 2020 Project with respect to the air quality management plan is itself less than significant.

4.3.2.4 Project Impacts and Mitigation Measures

UCM 2020 Impact AQ-1: **Development of the UCM 2020 Project would result in construction emissions that would violate an air quality standard or contribute substantially to an existing or projected air quality violation. (*Less than Significant*)**

Development of the campus under the UCM 2020 Project would require site preparation (i.e., clearing and grading); pavement and asphalt installation; and construction of academic buildings, campus support facilities, student housing, and streets. For purposes of this assessment, it is assumed that there would be ongoing construction on the UCM 2020 Project site between 2009 and 2020. During this period,

emissions would be generated by heavy-duty construction equipment, on-road trucks for material deliveries, and construction worker vehicles. ROG emissions would occur as a result of asphalt paving and architectural coatings. In addition, fugitive dust would be generated by grading and related activities.

In order to estimate the construction emissions using URBEMIS2007, a conservative approach was taken in which construction of UCM 2020 Project was assumed to occur over the following construction subphases of grading, paving, building construction and architectural coatings, within an overall time schedule from mid 2009, pending all relevant approvals, to late 2020. Details of the subphases are provided in **Section 4.3, Volume 1**.

Based on the schedules and assumptions described above and URBEMIS2007 default assumptions, the URBEMIS2007 model was used to estimate the construction emissions from 2009 to 2020, which are shown in **Table 4.3-1, Estimated Construction Emissions for the UCM 2020 Project**. **Table 4.3-1,** also shows the NO_X and PM_{10} reductions required for construction equipment exhaust under Rule 9510, which would apply to the construction of the Phase 2 Project.

Table 4.3-1
Estimated Construction Emissions for the UCM 2020 Project

Construction Year	Emissions in Tons per Year					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2009	0.41	3.04	1.73	0.00	6.13	1.41
2010	4.76	11.38	13.98	0.01	12.51	3.14
2011	7.45	10.62	13.09	0.01	12.43	3.09
2012	7.36	9.96	12.30	0.01	12.42	3.05
2013	7.25	9.29	11.50	0.01	12.37	3.00
2014	7.14	8.62	10.76	0.01	12.31	2.95
2015	7.04	7.92	10.10	0.01	12.27	2.91
2016	6.94	7.28	9.53	0.01	12.22	2.87
2017	6.83	6.66	8.99	0.01	12.13	2.82
2018	6.77	6.14	8.59	0.01	12.14	2.79
2019	6.70	5.64	8.20	0.01	12.10	2.76
2020	6.66	5.21	7.88	0.01	12.12	2.74

Construction Year	Emissions in Tons per Year					
	ROG	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Maximum Emissions in Any Year	7.45	11.38	13.98	0.01	12.51	3.14
Rule 9510 Emission Reductions	—	1.99	—	—	0.30	—
Net Maximum Emissions	7.45	9.39	13.98	0.01	12.21	3.14
SJVAPCD Threshold:	10	10	—	—	15	—
Exceeds Threshold?	NO	NO	—	—	NO	—

Source: Impact Sciences, Inc.
*Emissions calculations are provided in **Appendix 4.3**.*
Totals in the table may not appear to add exactly due to rounding in the computer model calculations.
[1] *PM_{10} and $PM_{2.5}$ emissions reflect compliance with SJVAPCD Regulation VIII.*

As shown in **Table 4.3-1**, the SJVAPCD significance thresholds would not be exceeded for ROG, NO_X, and PM_{10} due to construction of the UCM 2020 Project. Therefore, construction emissions would result in a less than significant impact on air quality.

Mitigation Measure: No mitigation is required.

UCM 2020 Impact AQ-2: **The UCM 2020 Project would result in operational emissions that would violate an air quality standard or contribute substantially to an existing or projected air quality violation. (*Potentially Significant; Significant and Unavoidable*)**

The UCM 2020 Project would result in the development of campus facilities that would accommodate approximately 10,000 FTE students and associated faculty and staff. Development of the UCM 2020 Project site would include approximately 2,500,000 square feet of building space, including academic, research, student and campus services, and student housing on the campus.

As in **Section 4.3, Volume 1**, trip generation rates used in URBEMIS2007 were obtained from the traffic study for the UCM 2020 Project. For the purposes of the URBEMIS2007 model, the 2020 Project consisted of the university land use type with a trip generation rate of 2.08 trips per student.

The anticipated mobile source emissions based upon buildout of all land uses associated with the UCM 2020 Project are reflected in **Table 4.3-2, Estimated Unmitigated UCM 2020 Project Operational Emissions**. Emissions resulting from area sources such as natural gas combustion for water and space heating, consumer products, landscape maintenance equipment, and periodic architectural coating activities were estimated using URBEMIS2007, and are also shown in **Table 4.3-2**. Operational emissions from existing and future central plant boilers and emergency generators were calculated using emission limits in current Permits to Operate for this equipment. The operational emissions from future boilers

were based on the SJVAPCD's BACT requirements for boilers with a maximum heat input rating of 20 MMBtu/hr and emission factors contained in US EPA's *Compilation of Air Pollutant Emission Factors* (US EPA 1998). It was estimated that an additional 39 MMBtu/hr would be needed, based on a ratio of the campus population at the completion of the UCM 2020 Project and at full buildout in 2030 or later. Emissions from emergency generators were calculated using emission standards for off-road diesel (compression-ignition) engines established by CARB and the US EPA (CARB 2000) and emission factors contained in AP 42 (US EPA 1996). Because the engines would likely have an output rating greater than 50 horsepower, these units must comply with CARB's Airborne Toxics Control Measure (ATCM) for stationary compression-ignition engines (CARB 2005). The ATCM requires that new emergency standby engines must comply with hydrocarbon, NO_x, and CO limits that are applicable to an off-road engine of the same model year and horsepower rating. The ATCM further limits the PM emissions from an emergency standby engine to either (1) 0.15 gram per horsepower-hour (g/hp-hr) (with a maximum operating limit of 50 hours per year for testing and maintenance) or 0.01 g/hp-hr (with a maximum operating limit of 100 hours per year for testing and maintenance), or (2) the emission limit for an off-road engine with the same maximum rated power, whichever is more stringent. For purposes of this analysis, and assuming a 2010 model year or later engine operating less than 20 hours per year (based on current testing of campus emergency generators), the 0.15 g/hp-hr limit is the applicable PM limit under California and federal standards for off-road engines. Since June 2006, the sulfur content of available CARB diesel fuel has been 15 ppm (0.0015 percent) by weight, and this concentration was used to estimate the SO_x emissions from the proposed engine. Although it was assumed that full buildout in 2030 would require an additional two 1,000-kilowatt emergency engines, it was conservatively assumed that the two 1,000-kilowatt emergency engines would be in place at the completion of the 2020 Project. The emissions associated with the operation of the emergency generators are included in the stationary source category in **Table 4.3-2**.

As shown in **Table 4.3-2**, the UCM 2020 Project at buildout and in full operation would generate annual emissions that exceed the SJVAPCD significance thresholds for ROG and NO_x. Therefore, operational emissions of ROG and NO_x generated by campus operations would be considered to have a significant air quality impact.

The following mitigation measures are proposed to reduce the UCM 2020 Project's operational air quality impact.

UCM 2020 MM AQ-2: Implement **Program Level Mitigation Measures AQ-2a** through **AQ-2c.**

Significance after Mitigation: Significant and unavoidable for ROG and NO_x.

Table 4.3-2
Estimated Unmitigated UCM 2020 Project Operational Emissions

Emissions Source	Emissions in Tons per Year					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2020 Project Emissions						
Operational (Mobile) Sources	21.04	26.30	165.89	0.27	22.82	5.26
Area Sources	1.11	1.62	1.50	0.00	0.00	0.00
Stationary Sources	2.78	0.45	9.11	0.34	0.67	0.67
Annual Emissions Total	24.93	28.37	176.50	0.61	23.49	5.93
Rule 9510 Emission Reduction	—	9.45	—	—	11.75	—
Net Annual Emissions Total	24.93	18.92	176.50	0.61	11.74	5.93
SJVAPCD Threshold	10	10	—	—	15	—
Exceeds Threshold?	**YES**	**YES**	—	—	NO	—

Source: Impact Sciences, Inc. Emissions calculations are provided in ***Appendix 4.3****.*
Totals in table may not appear to add exactly due to rounding in the computer model calculations.

UCM 2020 Impact AQ-3: **The UCM 2020 Project would result in a cumulatively considerable net increase of a criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors). (*Potentially Significant; Significant and Unavoidable*)**

According to the SJVAPCD's GAMAQI, "Any proposed project that would individually have a significant air quality impact…would also be considered to have a significant cumulative air quality impact" (SJVAPCD 2002). Accordingly, the UCM 2020 Project's construction and operational emissions will be discussed in comparison to the SJVAPCD significance thresholds.

As shown in **Table 4.3-1**, construction of the campus under the UCM 2020 Project, after accounting for the required reduction under Rule 9510, would result in maximum ROG emissions of 7.45 tpy, NO_X emissions of 9.39 tpy, and PM_{10} emissions of 12.21 tpy, which do not exceed the SJVAPCD significance thresholds. Operation of the campus under the UCM 2020 Project would generate on-road vehicle travel, which would result in mobile source emissions. The mobile source emissions would include emissions that contribute to violations of state and federal ozone and PM_{10} standards. Ozone precursors include ROG and NO_X. To a lesser extent, area and stationary sources would also result in emissions of ROG, NO_X, and PM_{10}. The total increase in the campus' operational emissions at buildout of the UCM 2020

Project, after accounting for the required reductions under Rule 9510, would be 24.93 tpy of ROG, 31.88 tpy of NO_X, and 19.74 tpy of PM_{10}, as shown in **Table 4.3-2**. These emissions of ROG and NO_X would exceed the SJVAPCD significance thresholds, and the impact is considered individually and cumulatively significant, particularly when viewed against the background of the serious nature of existing air quality problems in the SJVAB. The SJVAB is in nonattainment with state and federal ozone and particulate matter ambient air quality standards. Given the serious situation in the air basin, and as required under the California Environmental Quality Act (CEQA), all reasonable and feasible mitigation must be imposed on the UCM 2020 Project to minimize the emissions of ROG and NO_X. Although all feasible and reasonable mitigation as described above under UCM **2020 Mitigation Measures AQ-1** will be imposed, there would still be remaining contributions of ROG and NO_X. Thus, the construction and operation of the campus under the UCM 2020 Project would have a significant cumulative impact on air quality.

UCM 2020 MM AQ-3: **Program Level Mitigation Measures AQ-2** would apply to this impact. No further mitigation is available.

Significance after Mitigation: Operational air quality impacts of the UCM 2020 Project would remain significant and unavoidable after mitigation for ROG and NO_X.

4.4 BIOLOGICAL RESOURCES

4.4.1 ENVIRONMENTAL SETTING

Section 4.4, Biological Resources, in **Volume 1** of this Draft EIS/EIR presents the biological resources setting for the entire Campus and the University Community, including the UCM 2020 Project site.

As described in Volume 1 of the Draft EIS/EIR, habitat types typical of the region include annual grasslands, irrigated pasture and croplands, oak woodlands, vernal pool and swale complexes, seasonal seeps and marshes, ponds, riparian forest and scrub, perennial streams, and scattered areas of ruderal vegetation. The UCM 2020 Project is located entirely within the area proposed as part of the UC Merced Campus under the 2009 LRDP. Three existing land uses have been identified in the Campus area: the existing developed Phase 1.1 Campus, grasslands used for seasonal grazing, and areas under irrigated pasture. As described in **Section 4.4, Biological Resources,** in **Volume 1** of this Draft EIS/EIR, the topography of the project site is relatively level, with elevations ranging from approximately 200 to 300 feet above mean sea level, sloping gently from the northeast to southwest. Historically, portions of the campus site (including part of the UCM 2020 Project) were modified in conjunction with the construction and operation of the Merced Hills Golf Course, construction and operation of ponds in grazed annual grassland, grading of un-improved roadways, grading and land leveling associated with irrigated pasture, and construction and operation of canals, channels, and levees. Portions of the site contain mima mound topography (hummocking), which is associated with vernal pool complexes.

Canals and drainages that traverse the UCM 2020 project site include the Le Grand and Fairfield canals (see **Figure 4.4-3** in **Volume 1**). The Merced Hills Golf Course previously occupied the north-central portion of the proposed UC Merced and University Community Campus site; the former golf course area is now the existing Phase 1.1 Campus.

Land Cover Types within the UCM 2020 Project Site

As indicated in **Table 4.4.2** of **Volume 1**, the primary land cover types identified on the campus, which includes the UCM 2020 Project, are California annual grasslands, irrigated pasture, vernal pool ecosystems, vernal pool swales, seasonal wetlands, ponds, seasonal freshwater marsh, drainages, canals, and developed land. A discussion of these land cover types, and the wildlife associated with them, is provided in **Section 4.4, Biological Resources,** in **Volume 1** of this Draft EIS/EIR.

4.4.2 SPECIAL-STATUS SPECIES

Special-status Plants

As discussed in **Subsection 4.4.2.2,** in **Volume 1** of this Draft EIS/EIR, a total of 19 special-status plant species were identified as having potential to occur within the region of the project, of which 15 species have the potential to occur within the UC Merced and University Community Project location. The on-site habitats that could potentially support the 15 listed special-status species occur within the UCM 2020 Campus area. Three of the 15 species have been identified within the campus area, including the UCM 2020 Project area.

Special-status Wildlife

Section 4.4, **Volume 1**, concludes that there are 23 special-status wildlife species that are known to occur on the UC Merced and University Community Project site or have moderate to high potential to occur on the UCM and University Community project site or occur within the Project Conservation Lands. The on-site habitats discussed in **Section 4.4.2.2** of **Volume 1** occur within the UCM 2020 Project area.

Critical Habitat

Critical habitat present within the UC Merced and University Community project location include California tiger salamander critical habitat, which also occurs within the UCM 2020 Project site. Acreages of habitat losses and lands conserved for federally listed species in the campus location and adjacent Conserved Lands are provided below in **Table 4.4-8** in **Subsection 4.4.2.2,** in **Volume 1** of this Draft EIS/EIR.

4.4.2 IMPACTS AND MITIGATION MEASURES

4.4.2.1 Standards of Significance

Refer to **Section 4.4**, **Volume 1** for a discussion of applicable significance criteria.

4.4.2.2 Analytical Methodology

See **Section 4.4**, **Volume 1** for a description of the analytical methodology used to evaluate the biological resources and effects of the overall Campus development, which includes the UCM 2020 Project area.

4.4.2.3 Impacts Adequately Addressed at the Program Level or Not Applicable to the UCM 2020 Project

The UC Merced and University Community Project, including the UCM 2020 Project, would not result in a net loss of wetland area or functions through direct removal, filling, hydrological interruption, or other means because of the environmental commitments included in the Proposed Action, as described in **Section 4.4**, in **Volume 1** of this Draft EIS/EIR (Impact BIO-1). As discussed in **Section 4.4,** in **Volume 1** of this Draft EIS/EIR, not all wetlands on the campus can be avoided, and as a result, approximately 52.04 acres of wetlands within the campus would be directly impacted. Implementation of environmental commitments described in **Section 4.4,** in **Volume 1** for the Campus would compensate for the loss of wetland area and the loss of wetland functions, resulting in a less than significant impact. Therefore, this impact would be considered less than significant for the UCM 2020 Project as well.

The UC Merced and University Community Project, including the UCM 2020 Project, would result in less than significant impacts on special-status plant species with the implementation of **Mitigation Measure BIO-2**, as discussed in **Section 4.4** of **Volume 1 (**Impact BIO-2**)**. Development of the Campus, which includes the UCM 2020 Project, would result in both direct and indirect impacts on special-status plants. Campus development would result in the removal of eight vernal pools containing succulent owl's-clover. Five of these vernal pools are part of Occurrence 47, which was reported to contain an unknown number of plants in about 75 vernal pools (CNDDB 2008), most of which are present within the Campus Natural Reserve and would remain intact. Three of these vernal pools are part of Occurrence 90, which was reported to consist of about 80 plants (CNDDB 2008). Campus development would also result in the removal of dwarf downingia Occurrence 93, which consists of a single vernal pool containing an unreported number of plants (CNDDB 2008). Campus development would also result in the removal of stands of shining navarretia; however, stands of shining navarretia would also remain within the Campus Natural Reserve.

It should be noted that the Proposed Action (the UC Merced and University Community Project) was developed by reconfiguring the campus, which includes the UCM 2020 Project, to minimize impacts on threatened and endangered species, including the clay playa area located between the campus and Lake Yosemite. Six vernal pools, part of Occurrence 53, were avoided by this reconfiguration.

As discussed in **Section 4.4**, **Volume 1**, to minimize indirect impacts on habitat for special-status plant species adjacent to the project site, the *Conservation Strategy* and other environmental commitments will require the University to design, construct, and operate the UCM 2020 Project in a manner that avoids and minimizes indirect impacts. In addition to avoidance of direct impacts by the reconfiguration of the

project footprint and minimization of indirect effects by measures described in **Section 4.4**, **Volume 1**, the UCM 2020 Project includes Conservation Lands that would offset losses of plants that are unavoidable.

The environmental commitments included in the Proposed Action, which would also apply to the UCM 2020 Project, would mitigate impacts on special-status plants by preserving and maintaining populations of the affected species at a number of sites within the Tier 1 conservation lands and Tier 2 properties at ratios much greater than 1:1 (occurrences/acres lost: occurrences/acres preserved), which is the threshold set by *Conservation Strategy* that is discussed in **Section 4.4** of **Volume 1**. Additionally, the implementation of **Mitigation Measure BIO-2 (**see **Section 4.4** of **Volume 1)** would further mitigate for loss of special-status plants and habitat through additional off-site compensation. Therefore, the UCM 2020 Project's impacts on succulent owl's-clover, shining navarretia, and dwarf downingia would be less than significant.

The UC Merced and University Community Project, including the UCM 2020 Project, would not result in a substantial adverse impact on vernal pool species critical habitat (Impact BIO-3). As discussed in **Section 4.4** of **Volume 1**, the designated critical habitat boundary for vernal pool species is located adjacent to the campus site but does not overlap with the campus boundary, which includes the UCM 2020 Project site. Therefore, no critical habitat for vernal pool species would be directly impacted. Development activities associated with the UCM 2020 Project could indirectly affect habitat on adjacent lands through the mechanisms listed in **Subsection 4.4.5.2, Impact Types**, of **Volume 1**.

Environmental commitments included in the *Conservation Strategy* and *Management Plan for Conservation Lands* would avoid, minimize, and compensate for potential indirect impacts of the campus on adjacent designated critical habitat. Specific environmental commitments that apply to wetlands include Strategies 1-8 and 10-12 (See Chapter 5 of *Conservation Strategy* in **Appendix 2.0-3**). Specifically, Strategy 1 has resulted in project redesign to avoid indirect impacts to vernal pool critical habitat, and site specific design, construction, and operations and maintenance measures outlined in Strategy 2 will further reduce the potential for indirect impacts to vernal pool critical habitat adjacent to the Campus and Community North sites. Strategies 3-8 and 10-12 describe the University's commitments regarding the acquisition and management of conservation lands for listed species and habitats essential to their survival.

Implementation of the environmental commitments in the *Conservation Strategy* and *Management Plan for Conservation Lands* would avoid, minimize, and compensate for indirect impacts on critical habitat and ensure that critical habitat would not be diminished, thereby reducing this potential impact to a less-than-significant level.

The UC Merced and University Community Project, including the UCM 2020 Project, would not result in a substantial adverse impact on special-status invertebrate species due to the loss of vernal pool ecosystems (Impact BIO-4)**.** As described in **Section 4.4** of **Volume 1**, the development of the UCM 2020 Project would directly or indirectly disturb a small proportion known occupied habitat for the vernal pool fairy shrimp and vernal pool tadpole shrimp, which represents a small proportion of the known regional populations. The environmental commitments detailed in the *Conservation Strategy*, along with the acquisition of Conservation Lands, would reduce impacts to special-status vernal pool invertebrates to a less than significant level.

The UC Merced and University Community Project, including the UCM 2020 Project, would not result in a substantial adverse impact on special-status amphibians dependent on vernal pool ecosystems, annual grasslands, and stock ponds due to the loss of these habitats (Impact BIO-5). As described in **Section 4.4** of **Volume 1**, the impacts from the development of the UCM 2020 Project on the California tiger salamander and western spadefoot and their habitat, or on critical habitat for California tiger salamander species, would be less than significant given the incorporation of environmental commitments to avoid and minimize impacts to special-status amphibians. Furthermore, the acquisition of Conservation Lands that serve to offset occupied habitat losses through protection of a significant amount of habitat known to be occupied by these species in the project region would further reduce these impacts to a less than significant level.

The UC Merced and University Community Project, including the UCM 2020 Project, would not result in a substantial adverse impact on western pond turtle from the loss or disturbance of ponds and seasonal freshwater marsh communities (Impact BIO-6). As described in **Section 4.4** of **Volume 1**, development of the UCM 2020 Project would result in direct impacts to suitable western pond turtle aquatic habitat. However, through the incorporation of environmental commitments into the development plans for the UC Merced and University Community Project, including the UCM 2020 Project, which include site-specific avoidance, minimization measures, and conservation of lands with suitable pond turtle habitats, impacts of the UCM 2020 Project would be less than significant.

The UC Merced and University Community Project, including the UCM 2020 Project, would not result in a substantial adverse impact on Swainson's hawk from the loss of suitable foraging habitat (Impact BIO-7). As described in **Section 4.4** of **Volume 1**, development of the UCM 2020 Project would contribute to the combined loss of 2,614 acres of suitable foraging habitat for Swainson's hawk through the removal of irrigated grassland, annual grassland, and row and field crops. The combined impact of the development of the UCM 2020 Project and the entire UC Merced and University Community Project would be less than significant given the University's acquisition of Conservation Lands that contain

comparable habitat and environmental commitment toward management and monitoring of lands for grassland-dependent species, as identified in the *Conservation Strategy*.

The UC Merced and University Community Project, including the UCM 2020 Project, would not result in a substantial adverse impact on special-status avian species from the loss of foraging habitat (Impact BIO-8). As described in **Section 4.4** of **Volume 1**, development of the UCM 2020 Project would contribute to the combined loss of 2,614 acres of suitable foraging habitat for special-status birds. The combined effect of the development of the UCM 2020 Project and the entire UC Merced and University Community Project would be potentially significant but would be reduced to a less-than-significant level through the protection of comparable habitats within Conservation Lands and environmental commitments to prepare and implement management and monitoring plans for these lands, and through the County's implementation of UCP Policy PA 2.3.

The UC Merced and University Community Project, including the UCM 2020 Project, would result in less than significant adverse impacts on nesting special-status bird species and non-special-status migratory birds and raptors (Impact BIO-9). As described in **Section 4.4** of **Volume 1**, development of the UCM 2020 Project would result in the removal of occupied burrowing owl nesting habitat and suitable nesting habitat for other special-status and non-special-status migratory birds, including raptors through the removal of annual grassland, irrigated pasture, and seasonal freshwater marsh communities, and the removal of individual trees and shrubs. It would also result in the potential disturbance of active special-status and non-special-status migratory bird nests adjacent to the project site. The combined impacts of the development of the UCM 2020 Project and the entire UC Merced and University Community Project would be potentially significant but would be reduced to a less-than-significant level through the implementation of **Mitigation Measures BIO-9a and -9b**, described in **Section 4.4**, **Volume 1**.

The UC Merced and University Community Project, including the UCM 2020 Project, would not result in substantial adverse impacts to San Joaquin kit fox due to the loss of suitable residence and dispersal habitat (Impact BIO-10). As described in **Section 4.4** of **Volume 1**, development of the UCM 2020 Project would contribute to the combined loss of 823 acres of residence kit fox habitat, 1,621 acres of dispersal habitat, and as a result of indirect impacts an additional 531 acres of residence habitat and 341 acres of dispersal habitat on adjacent lands. This combined overall impact of the UCM 2020 Project and the entire UC Merced and University Community Project represents 0.7 percent of suitable residence habitat and 1.3 percent of dispersal habitat in eastern Merced County (see **Table 4.4-17, Section 4.4**, **Volume 1**). Compensation habitat as described in **Section 4.4** of **Volume 1** based on the *Conservation Strategy* will exceed the 3:1 minimum ratios identified in the 2002 BO for residence habitat (18:1) and total residence and dispersal (8:1) (see **Table 4.4-13, Section 4.4**, **Volume 1**). As described in **Section 4.4** of **Volume 1**, measures to avoid and minimize impacts during design, construction, and operations and maintenance

will reduce potential for impacts to individual kit foxes. The acquired Conservation Lands for the UC Merced and University Community Project would compensate for the loss of suitable habitat within the UCM 2020 Project site in accordance with the 2002 BO requirements and improve the quality of dispersal habitat for the kit fox east and north of the UCM 2020 Project site, which is consistent with the recovery objectives for the species.

4.4.2.4 Project Impacts and Mitigation Measures

All project-level impacts were adequately discussed at the program level, and appropriate mitigation was identified that would apply to development activities under the UCM 2020 Project. Moreover, through the incorporation of environmental commitments into the UC Merced and University Community Project, potential impacts would be reduced to a less than significant level. No further project-level analysis is required for the UCM 2020 Project.

4.5 CULTURAL RESOURCES

4.5.1 ENVIRONMENTAL SETTING

Section 4.5, Cultural Resources, in **Volume 1** of this Draft EIS/EIR presents the cultural setting for the entire Campus and the University Community, including the UCM 2020 Project site. This section of the Draft EIR examines the effects of the UCM 2020 Project on cultural resources.

As described in **Volume 1** of the Draft EIS/EIR, the UC Merced Campus is located in an area with a long history of human occupation, first by the aboriginal inhabitants of the area and subsequently by settlers of European origin. The campus site has been used for agricultural purposes (primarily as grazing land for cattle) since the 19th century and no potential historical archaeological remains or features associated with the Spanish or Mexican periods are known to exist within or immediately adjacent to the project area. A barn and a corral associated with 20th century farming operations are located to the east of the Phase 1.1 Campus. More recently, the Phase 1.1 Campus area and portions of the UCM 2020 Project site were used as a golf course. The existing campus was developed beginning in 2002.

The two irrigation canals, Le Grand Canal and Fairfield Canal, traverse the UCM 2020 Project site. Le Grand Canal, which provides irrigation water for crops, was built by MID some time between 1922 and 1927. The Crocker-Huffman Land & Water Company constructed the Fairfield Canal between 1903 and 1909. In the 1920s, Fairfield Canal was realigned to pass under Bear Creek in a siphon and to supply water to canals south and east of Merced.

No known paleontological resources occur within the project site or within its vicinity. Since paleontological resources most commonly are buried in the substrate, surface examination often cannot reveal whether the paleontological resources are present at a specific project location. Furthermore, the majority of the campus areas are overlain by vegetation and visual detection of fossils would be possible only in those areas where erosion has removed the grassland vegetation cover. A limited field survey of the campus site was conducted by a qualified paleontologist in 2001 in conjunction with the preparation of the UC Merced 2002 LRDP EIR. That survey found no paleontological deposits in the area surveyed.

4.5.2 IMPACTS AND MITIGATION MEASURES

4.5.2.1 Standards of Significance

Refer to **Section 4.5**, **Volume 1**, for a discussion of applicable significance criteria.

4.5.2.2 Analytical Methodology

See **Section 4.5**, **Volume 1,** for a description of the analytical methodology used to evaluate the cultural resources and paleontological effects of the overall Campus development, including the effects of the UCM 2020 Project.

4.5.2.3 Impacts Adequately Addressed at the Program Level or Not Applicable to the UCM 2020 Project

As discussed in **Section 4.5**, **Volume 1**, development of the UC Merced and University Community project would not damage or destroy significant historic resources located within the project footprint as none are present within the project impact area. The Fairfield and Le Grand Canals have been evaluated and recommended as not eligible for listing on the NRHP or the CRHR (Impact CUL-1). Volume 1 of this Draft EIS/EIR also concluded that development of the campus, including the UCM 2020 Project, could potentially inadvertently unearth and damage buried cultural resources that were not identified during pedestrian field surveys of the campus (Impact CUL-2). Ground-disturbing construction activities associated with the campus therefore could result in the demolition or substantial damage to significant cultural resources. However, mitigation measures identified in **Section 4.5**, **Volume 1**, would be required for any development proposed as part of the UCM 2020 Project. **Mitigation Measure CUL-2** would require that if buried cultural resources are inadvertently discovered during ground-disturbing activities on the campus, work must stop in that area and within 100 feet of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures. Implementation of this measure would reduce potential impacts to a less-than-significant level.

In addition, Volume 1 of this Draft EIS/EIR concluded that development of the UCM 2020 Project could potentially inadvertently unearth and damage buried human remains that were not identified during pedestrian field surveys of the campus (Impact CUL-3). These could suffer damage from the construction activities. However, mitigation measures identified in **Section 4.5**, **Volume 1**, would be required for any development proposed as part of the UCM 2020 Project. **Mitigation Measure CUL-3** would require that if human remains of Native American origin are discovered during ground-disturbing activities, the Campus will comply with state laws relating to the disposition of Native American burials, which falls within the jurisdiction of the California Native American Heritage Commission (Public Resources Code Section 5097). If human remains are discovered or recognized in any location other than a dedicated cemetery, there would be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until appropriate investigation and notification has been performed. Implementation of this measure would reduce potential impacts of the UCM 2020 Project to a less than significant level.

Section 4.5, **Volume 1**, also discussed potential effects on paleontological resources. There are no known paleontological resources within the campus site, and the closest known Pleistocene-age vertebrate locality is located approximately 3 miles from the campus site. The geologic formations underlying the campus, including the UCM 2020 Project site are judged to have a moderate or high potential to contain significant paleontological resources. Construction of roadways, buildings and structures, parking lots and structures, storm water detention basins, and utilities would have the potential to disturb or destroy paleontological resources that might be present in these formations. These direct impacts could also result in the loss of geologic context, which is also used to determine the age and significance of the resources. Indirect impacts of unauthorized collecting of significant fossils could occur or be increased by drawing attention to the presence and location of paleontological sites. While the potential impacts associated with construction activities could result in damage or destruction of undiscovered fossil deposits, their detection before and during the construction process would make these resources accessible until they are again covered over by the development project. The discovery and concomitant salvage of these fossils by professionals would add to paleontological knowledge and would represent a beneficial impact of construction. **Mitigation Measure CUL-4a** requires that construction personnel be informed of the potential for encountering significant paleontological resources and of the need to stop work in the vicinity of a potential discovery until a qualified paleontologist has been provided the opportunity to assess the significance of the find and implement appropriate measures to protect or scientifically remove the find. As required by **Mitigation Measure CUL-4b**, a qualified paleontologist will be intermittently present to inspect exposures of Merhten Formation, North Merced Gravels, and Riverbank Formation during construction operations to ensure that paleontological resources are not destroyed by project construction. The potential impact associated with potentially finding paleontological resources within the UCM 2020 Project site would be reduced to a less than significant level with implementation of these measures.

4.5.2.4 Project Impacts and Mitigation Measures

All project-level impacts were adequately discussed at the program level, and appropriate mitigation was identified that would apply to development activities under the UCM 2020 Project and would reduce potential impacts to a less than significant level. No further analysis is required.

4.6 GEOLOGY AND SOILS

4.6.1 ENVIRONMENTAL SETTING

Section 4.6, Geology and Soils in **Volume 1** of this Draft EIS/EIR presents the geology and soils setting for the entire Campus and the University Community. The geology and soil characteristics of the UCM 2020 Project site are included in Volume 1 and this section summarizes the conditions and impacts relevant to the UCM 2020 Project.

4.6.1.1 Geologic Overview

According to Volume 1 of the Draft EIS/EIR, the entire UC Merced Campus and University Community site has been described by the Soil Conservation Service as consisting of low to high terraces, with some areas in alluvial fans and floodplains. The topography of the UCM 2020 Project site consists of gently rolling flatland that rarely reaches 10 percent slopes. The geologic formations present on the UCM 2020 Project site include the Mehrten formation, Pliocene Laguna formation, North Merced Gravel formation, Riverbank formation, and Turlock Lake formation.

Soils within the UCM 2020 Project site are generally alluvial, forming a thin layer over bedrock units beneath. The soils generally consist of poorly sorted gravel, sand, silt, and clay. These soil types are generally gravelly and acidic, and have low fertility. The soils have a moderate shrink-swell potential, with a granular, clayey, and relatively consolidated and cemented nature.

4.6.1.2 Seismic Hazards

As identified in **Section 4.6** of **Volume 1**, the overall campus site, including the UCM 2020 Project site, is located in an area that has historically been characterized by low seismic activity. No active faults have been identified in the immediate vicinity of the UCM 2020 Project and the nearest active fault in Merced County is the Ortigalita fault, located in the western quarter of Merced County. The closest seismic source is the northwest-trending Foothills fault system, which terminates approximately 15 miles northeast of the campus. The faults associated with the Foothills fault system are inactive.

4.6.2 IMPACTS AND MITIGATION MEASURES

4.6.2.1 Standards of Significance

Refer to **Section 4.6**, **Volume 1**, for a discussion of applicable significance criteria.

4.6.2.2 Analytical Methodology

See **Section 4.6**, in **Volume 1,** for a description of the analytical methodology used to evaluate the geological, soils, and seismicity effects of the overall Campus and University Community development, including the effects of the UCM 2020 Project.

4.6.2.3 Impacts Adequately Addressed at the Program Level or Not Applicable to the UCM 2020 Project

As discussed in **Section 4.6**, in **Volume 1**, the development of the Campus and University Community would not expose people or structures to risk of injury or structural damage from fault rupture (Impact GEO-1). The Campus site is not subject to significant seismic hazards associated with active faults and all new facilities and structures, including those constructed as part of the UCM 2020 Project, would be constructed in compliance with the current CBSC standards and UC Seismic Policy, which establish requirements for the seismic and structural safety of all structures. Therefore, this impact is considered less than significant and no additional project-level analysis of this issue is required for the UCM 2020 Project.

The analysis in Volume 1 of this Draft EIS/EIR also concluded that potential impacts associated with landslides or other slope failure would be less than significant (Impact GEO-3). New facilities and structures within the proposed campus would be constructed according to current CBSC standards. Geotechnical investigations would ensure that subsurface soil characteristics are properly identified to safely design foundations and structures to reduce the potential impacts associated with slope failure. Therefore, this impact is considered less than significant and no additional project-level analysis of this issue is required for the UCM 2020 Project.

Additionally, the analysis in Volume 1 concluded that the potential for significant soil erosion or sedimentation due to construction on the campus would be less than significant (Impact GEO-4). All future construction projects on the campus that would disturb 1 acre or more would be required to comply with the NPDES requirements to control discharges from construction sites and would implement SWPPPs. Compliance with NPDES regulations for control of pollutant discharge during construction would reduce the potential for significant soil erosion or sedimentation due to construction on the Campus. Therefore, this impact is considered less than significant and no additional project-level analysis of this issue is required for the UCM 2020 Project.

According to Volume 1 of this Draft EIS/EIR, the soils present on the project site have a moderate to high shrink-swell potential (i.e., soil expansiveness). However, new facilities and structures within the campus, including the UCM 2020 Project facilities, would be constructed using the current CBSC

standards. The applicable codes and regulations establish requirements for the structural safety of all structures. Therefore, potential impacts associated with expansive soils would be less than significant (Impact GEO-5). No additional project-level analysis of this issue is required for the UCM 2020 Project.

The analysis in Volume 1 of this Draft EIS/EIR also noted that the campus would not include the use of septic tanks or alternative wastewater disposal systems that would require percolation of treated effluent (Impact GEO-**6**). There would, therefore, be no impact related to septic tanks or alternative wastewater disposal systems and no additional project-level analysis of this issue is required for the UCM 2020 Project.

4.6.2.4 Project Impacts and Mitigation Measures

UCM 2020 Impact GEO-1: **Development under the UCM 2020 Project could expose people or structures to increased risk related to ground shaking and seismically induced ground failure, including liquefaction. (*Potentially Significant; Less than Significant)***

Although construction of UCM 2020 Project facilities is generally not expected to expose people or structures to the risk of injury or structural damage from ground shaking and related hazards such as liquefaction, sites where unconsolidated sediments and a high water table coincide could be present within the UCM 2020 Project site. These areas would have the potential for liquefaction, slope stability issues, or other structural issues that could be aggravated during seismic events. Construction on such sites could expose structures or people to risk of damage or injury. This impact is considered potentially significant. However, **Program Level Mitigation Measure GEO-2** would be implemented and would reduce this impact to a less than significant level.

Another potential concern would be the possible adverse effects of seismic shaking on the Fairfield Canal that traverses the UCM 2020 Project site and Le Grand Canal that traverses the northerly portion of the UCM 2020 Project site. Because the canals are unlined, seismic shaking could potentially cause levee failure or other adverse effects, allowing water to leak out of the canals and seep into adjacent buildings. However, the soils surrounding the Fairfield and nearby Le Grand Canals are clay-like with some silt, whereas levee failure associated with seismic shaking generally occurs when the surrounding soil is sandy, rather than conglomerated. In addition, the site would be graded such that proposed buildings are higher than the canals, and subsurface drains would be installed on the outer side of the canal levees. Therefore, impacts associated with levee failure would be considered less than significant.

UCM 2020 MM GEO-1: Implement **Program Level Mitigation Measure GEO-2**.

Significance after Mitigation: Implementation of the **Program Level Mitigation Measure GEO-2** would ensure that potential impacts attributable to development on expansive soils for the UCM 2020 Project would be reduced to a less-than-significant level. No further mitigation is required.

4.7 HAZARDS AND HAZARDOUS MATERIALS

4.7.1 ENVIRONMENTAL SETTING

Section 4.7, Hazards and Hazardous Materials in **Volume 1** of this Draft EIS/EIR presents the hazards and the hazardous materials setting for the entire Campus and the University Community, including a description of applicable regulations and a discussion of potential hazardous materials used and hazardous waste generated by all proposed facilities. The current conditions relevant to hazards for the UCM 2020 Project site are included in Volume 1 and this section summarizes the conditions and impacts relevant to the UCM 2020 Project.

4.7.1.1 Existing Conditions

As described in **Volume 1** of the Draft EIS/EIR, with the exception of the Phase 1.1 area, the Campus and University Community site is undeveloped and in agricultural use (grazing land or crop land). The UCM 2020 Project site currently consists of approximately 201 acres of undeveloped land as well as approximately 104 acres of land currently containing academic buildings, student residences, and office and campus support facilities. Land uses surrounding the entire campus are either rural residential, open space, or agricultural in nature.

Within the UCM 2020 Project site, existing research and laboratory facilities currently generate about 4.1 tons of biohazardous and chemical waste per year. Current campus facilities also generate about 2.25 tons of other hazardous waste, including batteries, fluorescent bulbs, and electronics. Campus hazardous waste is centrally stored for pick up by a licensed hazardous waste contractor. Existing on-site fuel storage consists of 20,000 gallons of diesel fuel in an underground tank at the Central Plant, 600 gallons in tanks associated with two emergency generators, and a tank for an emergency generator at the pump station. Two additional tanks are planned at this time for the currently developed portion of the campus. There are no known areas with soil or groundwater contamination on the campus site. Additionally, the proposed UCM 2020 Project site is not located in a 100-year floodplain and would not be subject to on-site flooding.

4.7.1.2 Hazardous Materials Use in Proposed UCM 2020 Project Facilities

Proposed UCM 2020 Project facilities would include academic and research facilities, student services, student housing, campus support services, athletics and recreation facilities, open space, parking, and a solar photovoltaics facility. Some of the hazardous substances that could be involved in proposed UCM 2020 Project research facilities include chemical reagents, radioactive materials for medical research use, and biohazardous substances. Residential and recreational uses in the UCM 2020 Project would involve

small volumes of common hazardous materials, including oils (e.g., motor oil and hydraulic oil), fuels (e.g., gasoline and diesel), paints (both latex and oil-based), solvents (e.g., degreasers, paint thinners, and aerosol propellants), acids and bases (e.g., automobile battery fluids, swimming pool chemicals, and many cleaners), disinfectants, and metals (e.g., mercury in thermometers, batteries, and photography chemicals).

4.7.2 IMPACTS AND MITIGATION MEASURES

4.7.2.1 Standards of Significance

Refer to **Section 4.7**, **Volume 1**, for a discussion of applicable significance criteria.

4.7.2.2 Analytical Methodology

See **Section 4.7**, **Volume 1**, for a description of the analytical methodology used to evaluate the potential hazards and hazardous materials impacts of the overall Campus and University Community development, including the impacts of the UCM 2020 Project.

4.7.2.3 Impacts Adequately Addressed at the Program Level or Not Applicable to the UCM 2020 Project

As discussed in **Section 4.7**, **Volume 1**, the UC Merced and University Community Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials (Impact HAZ-1).

The proposed UCM 2020 Project involves the construction and operation of a few campus facilities that would include wet laboratories where some hazardous materials use would occur. Hazardous materials would be used in varying amounts during construction of the proposed UCM 2020 Project facilities. However, construction activities are required to comply with all applicable regulations and codes, including, but not limited to, Titles 8 and 22 of the Code of California Regulations, Uniform Fire Code, and Division 20 of the California Health and Safety Code. All transportation of hazardous materials to and from the site during construction activities must also comply with DOT and Caltrans regulations.

With respect to the operation of laboratories included in some of the proposed UCM 2020 Project facilities, the UC Merced policies and procedures would address the procurement, handling, and disposal of carcinogenic, controlled, volatile, flammable, and explosive substances. The Campus Environmental Health and Safety (EH&S) department would be responsible for implementing measures designed to ensure compliance with applicable laws and regulations and to impose additional, more stringent UC Merced policies to further reduce the potential for human harm. Research laboratories at UC Merced

would produce chemical and biohazardous waste. In accordance with the requirements of the California Medical Waste Management Act, most research-generated biohazardous waste would be rendered nonhazardous before disposal, and existing health and safety practices would minimize the potential for adverse health effects before disposal. In addition, applicable federal and state laws and UC Merced practice require that all generated wastes would be segregated, handled, labeled, stored, transported, and disposed of to minimize direct or indirect exposure of personnel.

Some radioactive substances may also be used on the Campus for research purposes. The Radiological Safety Division of EH&S at UC Merced has developed a radiation safety program to ensure the safe handling, transport, use, and disposal of radiological materials, lasers, and x-ray machines. Compliance with the radiation safety program would require the necessary protective measures to avoid exposing visitors, students, faculty, staff, and the community to any radioactive materials.

The use of research animals in UC Merced laboratories could also pose potential hazards to workers, students, and the neighboring community if contact between humans and animals were not properly managed. Before any research involving live vertebrate animals can be initiated on a UC campus, an animal care and use protocol for the activity must be prepared by the principal investigator and approved by the Campus Animal Care and Use Committee (IACUC). All proposed UCM 2020 Project facilities would, therefore, be required to comply with federal and state requirements as well as IACUC protocols. Controls intended to ensure the safety of animal care workers would also minimize opportunities for infectious agents to be spread from workers to individuals off site.

All movement and use of any hazardous materials on the project site would be conducted with proper controls. All faculty, staff, and researchers handling hazardous materials would be trained to safely use, label, and dispose of all hazardous materials to avoid any mishandling of hazardous materials. Applicable regulations would also require containment control measures against potential spills, such as filtering of air ducts, proper materials packaging, and sterilization of any apparatus that has contacted potentially hazardous animal tissue. These containment measures would minimize impacts resulting from a potential release. Furthermore, the proper labeling of all hazardous materials would ensure that any emergency response teams would be able to quickly identify and contain any potential release of hazardous materials. Therefore, full compliance with federal, state, and local standards and regulations would reduce the potential impacts on the public and environment through transport, use, or disposal of hazardous materials to a less-than-significant level and no additional project-level analysis of this issue is required for the UCM 2020 Project.

Volume 1 of this Draft EIS/EIR also concluded that potential impacts associated with reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the

environment would be less than significant (Impact HAZ-2). Because all incoming and outgoing hazardous material shipments would be packaged according to strict US DOT and USPS specifications, the likelihood of an accident involving hazardous materials in transport would be minimal. In addition, it is not anticipated the operation of the UCM 2020 facilities would require a substantial amount of hazardous waste movement. Therefore, due to the relatively small amount of hazardous materials involved and with compliance with applicable transport regulations, the UCM 2020 Project would not create a significant hazard to the public or environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials. No additional project-level analysis of this issue is required for the UCM 2020 Project.

Additionally, Volume 1 concluded that the Proposed Action would not involve hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school (Impact HAZ-3). The Campus and the University Community would not be located within 0.25 mile of any existing or proposed school. Furthermore, current Public Resources Code and Education Code require that an EIR not be certified if any reasonably foreseeable hazardous air emissions would occur within 0.25 mile of a school, unless consultation or notification has been conducted. Therefore, this impact is considered less than significant and no additional project-level analysis of this issue is required for the UCM 2020 Project.

Volume 1 of this Draft EIS/EIR also concluded that the Campus and University Community would not be located on a site that is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and therefore would not create a significant hazard to the public or the environment (Impact HAZ-4).

Volume 1 of this Draft EIS/EIR also noted that the proposed Campus or the University Community would not be located within an airport land use plan or within 2 miles of a public airport or public use airport (Impact HAZ-5). Therefore, no impact would occur with respect to this criterion and no additional project-level analysis of this issue is required for the UCM 2020 Project.

In addition, Volume 1 of this Draft EIS/EIR concluded that development of the Campus and University Community would not result in a safety hazard for people residing or working in the project area due to the project's proximity to a private airstrip (Impact HAZ-6). Although the Campus and the University Community would be located within 2 miles of the LWH Farms, LLC, private airstrip, all proposed development would be required to comply with applicable Federal Aviation Administration (FAA) and Caltrans Division of Aeronautics regulations and permits, such as adjacent building height restrictions and ratios, minimum distances from the runway to adjacent property lines, and airspace safety requirements. Compliance with these requirements would reduce the safety hazards associated with

airstrip operations to an acceptable level. The potential impact with respect to this criterion is, therefore, considered less than significant and no additional project-level analysis of this issue is required for the UCM 2020 Project.

Volume 1 of this Draft EIS/EIR determined that the development of the Campus and University Community would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan (Impact HAZ-7). Emergency response plans and emergency evacuation plans would be established for all proposed buildings on the campus. Emergency and evacuation plans would be coordinated between campus buildings to ensure proper procedures in the case of a massive emergency or evacuation. Therefore, the potential impact with respect to this criterion is considered less than significant and no additional project-level analysis of this issue is required for the UCM 2020 Project.

Lastly, Volume 1 of this Draft EIS/EIR concluded that the development of the Campus and University Community would not 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 (Impact HAZ-8). Proper control measures would be taken by UC Merced and within the adjacent University Community to minimize the potential for a wildland fire. Although implementation of the UC Merced and University Community Project would, by its nature, expose a greater number of people to wildland fire risk, development of the project would be complemented by sufficient fire control measures. In addition, proper emergency response emergency evacuation plans would be established to provide efficient and comprehensive support in the case of an emergency. Therefore, implementation of the UC Merced and University Community Project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires and no additional project-level analysis of this issue is required for the UCM 2020 Project.

4.7.2.4 Impacts and Mitigation Measures

UCM 2020 Impact HAZ-1: **Development under the UCM 2020 Project could be located on a site that potentially contains hazardous materials and could create a significant hazard to the public or the environment. (*Potentially Significant; Less than Significant*)**

A report completed by Environmental Data Resources identified multiple sites/businesses within the campus and adjacent areas within 1 mile of the campus perimeter that currently handle or previously handled hazardous materials. All of the known hazardous material sites identified were found to be free of recorded violations and would not be expected to create a significant hazard to the public or the

environment. However, it is possible that environmental conditions, such as non-permitted disposal sites, trash burn pits, wells, or other underground storage devices, may exist in the proposed UCM 2020 Project development area that have not been reported or identified. The presence of any of these types of sites or materials, either within or adjacent to the campus, could generate conditions that could be hazardous to public health and the environment; this could create a significant impact during construction of the campus.

In addition, because a portion of the UCM 2020 Project site has been historically used for agricultural purposes, there is the potential that soil and groundwater has been contaminated by the application of pesticides, herbicides, and other agricultural chemicals, or by illegal debris disposal in the past. These conditions could be hazardous to public health and the environment. Unreported hazardous materials may still be encountered in the UCM 2020 Project site that could generate conditions that would be a hazard to public health and the environment. Therefore, this impact would be considered potentially significant.

UCM 2020 MM HAZ-1: Implement **Program Level Mitigation Measure HAZ-4**.

Significance after Mitigation: Implementation of the **Program Level Mitigation Measure HAZ-4** would ensure that potential impacts attributable to development on previously contaminated land would be reduced to a less-than-significant level. No further mitigation is required.

4.8 HYDROLOGY AND WATER QUALITY

4.8.1 ENVIRONMENTAL SETTING

Section 4.8, Hydrology and Water Quality, in **Volume 2** of this Draft EIS/EIR presents the hydrologic setting for the entire Campus, including the UCM 2020 Project site. This section summarizes the conditions and impacts relevant to the UCM 2020 Project.

4.8.1.1 Surface Water Resources

As described in Volume 2 of the Draft EIS/EIR, the UCM 2020 Project site is located in the San Joaquin Valley, in an area characterized by gentle rolling hills and flatland primarily used for agriculture. The general gradient of this area, including the UCM 2020 Project site, is to the west and southwest. The UCM 2020 Project site is located to the southeast of Lake Yosemite on the eastern side of the San Joaquin Valley floor. The primary drainage features in the vicinity of the project site are Cottonwood Creek, Fahrens Creek, and Black Rascal Creek (via Rascal Creek Diversion Channel). These creeks are tributaries of Bear Creek, which ultimately flows into the San Joaquin River. Other drainages include numerous canals and ditches such as the Main Canal, Le Grand Canal, and the Fairfield Canal; the Le Grand and Fairfield canals cross the UCM 2020 Project site. These canals divert water from Lake Yosemite. Lake Yosemite is fed by water from the Main Canal, which receives its water from the Merced River. Water discharges from Lake Yosemite via the La Grand and Fairfield Canals. Lake Yosemite and its canals are used primarily for irrigation and secondarily, for flood control.

4.8.1.2 Regional Watershed

Merced County and the proposed project are located within the northern San Joaquin subbasin. In this area, surface water runoff is drained into the San Joaquin River where it flows into the Sacramento-San Joaquin Delta before it empties out into the Pacific Ocean. The project site is located in the Middle San Joaquin-Lower Chowchilla Watershed, as defined by the EPA. This watershed is defined by the EPA Unified Watershed Assessment (UWA) Program as a priority Category I watershed, indicating that the watershed needs restoration.

4.8.1.3 Flooding

None of the watercourses within the proposed project site are included in the 100-year floodplain as defined by FEMA. Areas that are adjacent to Black Rascal Creek and on the east side of Fairfield Canal (not within the proposed project site) are within the 100-year floodplain. All of the runoff water on the east side of Fairfield Canal is diverted to the diversion channel, which drains into Bear Creek. Bear Creek

is located to the south of the planning area and receives runoff flows from Fahrens and Black Rascal Creek. Bear Creek, Black Rascal Creek, and Fahrens Creek, all flow through the City of Merced, and are tributaries to the San Joaquin River. These creeks are part of the Merced County Streams Group. Lack of channel capacity and problems of erosion and sedimentation which further reduce channel capacity are responsible for flooding along all of the creeks in the Merced County Streams Group (County of Merced General Plan Chapter V).

The Le Grand and Fairfield canals traverse the northern and central portions of the campus. These canals are constructed with earthen embankments and are subject to erosion. The canals are owned and operated by MID. According to MID, the Campus and University Community areas could become flooded if the embankments failed or if the tops were over filled due to excess volume of water. In addition, the levees could also fail due to burrowing animals within the levees (County of Merced 2004). According to MID, the canals often need to be repaired due to erosion caused by seepage and animal burrowing (County of Merced 2004).

4.8.1.4 Surface Water Quality

The San Joaquin River is the major surface water receiving body in the project region. As described in Volume 2, the San Joaquin River is listed by the SWRCB for boron, chloropyrifos, diazinon, DDT, Group A pesticides, electromagnetic conductivity (EC), mercury, selenium, and unknown toxicity. The streams in eastern Merced County contain low amounts of total dissolved solids (TDS) originating from the Sierra Nevada. The stream flow from the Merced River in the northern part of the County is of very good quality, but gradually decreases south through the San Joaquin Valley due to the inflow of excess irrigation water and agricultural runoff (Merced County Planning Department 1989 and County of Merced 2004). Surface water quality within the campus area is unknown.

4.8.1.5 Groundwater Resources

See **Section 4.8** in **Volume 2** of this Draft EIS/EIR for a discussion of groundwater resources in the project vicinity.

4.8.1.6 Groundwater Quality

See **Section 4.8** in **Volume 2** of this Draft EIS/EIR for a discussion of groundwater quality in the project vicinity.

4.8.1.7 Water Supply

As described in **Section 4.8** in **Volume 2**, the City of Merced supplies water to the existing Phase 1.1 Campus from an on-site well. The campus' current annual water use is about 158 acre-feet (af). The groundwater well is located on the Phase 1.1 Campus and has a capacity to produce approximately 1,790 af/year of potable water. A second well associated with the former golf course that occupied the Phase 1.1 campus site before it was developed is also located on the campus.

Groundwater extracted from on-site wells is used for irrigation within the UCM 2020 Project site. **Table 4.8-1** in **Volume 2** shows existing water use on the entire UCM site, including the UCM 2020 Project site. The Flying M ranch, which consists of land immediately south of the Phase 1.1 Campus and would be developed with facilities associated with the UCM 2020 Project, currently operates two groundwater wells used for irrigation purposes. The wells have the capability of extracting 1,350 to 1,860 gallons per minute (gpm). There is no information available regarding the depth to water in this part of the planning area. The wells are only used during the irrigation months and extracted about 754 af of groundwater in 2000 (County of Merced 2004).

4.8.3 IMPACTS AND MITIGATION MEASURES

4.8.3.1 Standards of Significance

Refer to **Section 4.8**, **Volume 2,** for a discussion of applicable significance criteria

4.8.3.2 Analytical Methodology

See **Section 4.8**, in **Volume 2**, for a description of the analytical methodology used to evaluate the impacts of the overall Campus and University Community development, including the impacts of the UCM 2020 Project, on hydrology and water quality.

4.8.3.3 Impacts Adequately Addressed at the Program Level or Not Applicable to the UCM 2020 Project

As discussed in **Section 4.8**, in **Volume 2**, dewatering activities performed during construction of the Campus, including the UCM 2020 Project site, would not result in the discharge of sediments or pollutants into receiving waters, potentially affecting water quality (Impact HYD-2). As with all projects that are expected to discharge dewatered effluent or water extracted from well pump tests, the construction contractor would be required to obtain a National Pollutant Discharge Elimination System Permit (NPDES) No. CAS000002 and Waste Discharge Requirements (WDRs) from the CVRWQCB. Control measures to meet discharge limits would be required as part of the permit conditions. As a

performance standard, these measures would be selected to achieve maximum sediment removal and represent the best available technology (BAT) that is economically achievable. Permit issuance and compliance with measures required by the permits would reduce project impacts associated with the release of contaminants to surface water or groundwater and the potentially significant impacts on surface water quality. Therefore, this impact is considered less than significant and no additional project-level analysis of this issue is required for the UCM 2020 Project.

As discussed above, the groundwater well on the Phase 1.1 Campus has a capacity to produce approximately 1,790 af/year of potable water. The campus' total water demand at buildout of the UCM 2020 Project is estimated to be 648 af/year, which is well within the pumping capacity of the existing well. Furthermore, the campus is connected by a pipeline to the City's water distribution system. Therefore, there would not be a need to add another well on the campus to serve the growth under the UCM 2020 Project. With respect to the effect of increased groundwater pumping on groundwater levels in the vicinity of the campus, as discussed in **Section 4.8**, in **Volume 2**, the development of the entire campus, including the UCM 2020 Project, would not substantially deplete groundwater supplies such that the production of existing nearby wells would drop to levels that would not support the planned uses (Impact HYD-3). Site-specific studies conducted in 2004 showed that groundwater interference could affect the ability of some of the local wells to supply water at the existing rates. However, the potential long-term drawdown of the shallow and deep aquifers in the vicinity of the Campus and University Community would not have any environmental effect other than lowering the groundwater table by 25 to 35 feet in the area of the rural residences west of Lake Road. This could affect nearby residential wells that are screened at these depths and such wells would need to be deepened. This impact is considered less than significant and no additional project-level analysis of this issue is required for the UCM 2020 Project.

As discussed in **Section 4.8**, in **Volume 2**, new impervious surfaces added by the development of the campus, including the UCM 2020 Project, would not substantially interfere with groundwater recharge such that there would be a net deficit in aquifer volume (Impact HYD-4). The campus is located in an area that is known to have soil types with recharge potential ranging from low to moderate. There are substantial amounts of clay in the campus site soils, which restrict the ability of surface water to migrate down to the shallow groundwater aquifer, and a clay hard pan present near the ground surface further inhibits the potential of surface water to infiltrate down to the groundwater aquifer. Based on these known soil characteristics of the campus site, development within this area would not have a substantial impact on the infiltration of surface water to subsurface groundwater aquifers. Furthermore, the Campus' 2009 LRDP contains policies to develop the campus in a sustainable manner (LRDP Policies SUST-1 and SUST-2) which would maximize percolation and infiltration of precipitation into underlying

groundwater by using LID methods, developing bioswales, single project or multi-project detention or retention basins, and preservation and use of natural drainage areas, to the extent feasible. These policies would apply to all development under the UCM 2020 Project. Therefore, this impact is considered less than significant and no additional project-level analysis of this issue is required for the UCM 2020 Project.

As discussed in **Section 4.8**, in **Volume 2**, development of the campus, including the UCM 2020 Project, would not substantially increase the amount of sediment and urban pollutants in the site runoff and therefore would not result in water quality degradation (Impact HYD-6). NPDES regulations require the project to develop and implement a Storm Water Management Program (SWMP) that includes Best Management Practices (BMPs) aimed at addressing urban runoff pollutants. The SWMP would include urban runoff management programs that the University would implement to control pollutants before they enter the waterways. Furthermore, in compliance with the Campus' sustainability goals, all future development within the campus will be designed to be low impact development (LID) and would also include bioswales and detention basins, which would provide treatment to site runoff before discharge into Fairfield Canal or Cottonwood Creek. As discussed below under UCM 2020 Impact HYD-2, similar to the current practice for runoff from the Phase 1.1 Campus, storm water generated in the new areas of the campus as they are developed would be detained in detention basins before discharge into Fairfield Canal. The detention of stormwater and its slow release into the canal would ensure that sediments in the stormwater would settle out and the quality of water would be appropriate for discharge into Bear Creek, which is the final discharge point for Fairfield Canal. Continuation of current practices and compliance with Phase II NPDES requirements would reduce the potential for campus runoff to result in impacts on surface water quality. Therefore, this impact is considered less than significant and no additional project-level analysis of this issue is required for the UCM 2020 Project.

For reasons presented in **Section 4.8**, in **Volume 2**, the UCM 2020 Project would not expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam (Impact HYD-7). The project site is outside the inundation area of Lake Yosemite Dam, and therefore there is no risk to people or structures on the project site from inundation due to dam failure.

The Fairfield and Le Grand Canals are used for primarily for irrigation water to serve the agriculture uses in the area. In winter months when agriculture is not using irrigation water, the canals are used as flood control channels. Only the Fairfield Canal would be used for conveying stormwater runoff from the project site with concurrence from MID. As part of the UCM 2020 Project, detention basins will be designed and incorporated into the drainage infrastructure to hold back the runoff from the storm events until water levels recede in the canal. Sensors will be placed into the canal to determine when the canal is at capacity, and discharges will only occur when the canal has room to handle the additional runoff. This

will prevent the canal from overtopping or taking on more storm water runoff than it can handle. Based on these factors, this impact is considered less than significant and no additional project-level analysis of this issue is required for the UCM 2020 Project.

4.8.3.4 Project Impacts and Mitigation Measures

UCM 2020 Impact HYD-1: Construction-related earth disturbing activities under the 2020 Project would result in soil erosion and sedimentation, but water quality would not be adversely affected. (*Less than Significant*)

Construction of the UCM 2020 Project would require grading and excavation activities that could cause erosion and sedimentation that could degrade the receiving water quality. Construction site runoff, as well as dust generated from construction activities, could enter the receiving waters. Spills or leaks from heavy equipment and machinery (petroleum products and other heavy metals), staging areas, and building sites could also adversely affect receiving water quality.

However, to reduce or eliminate construction-related water quality effects and to comply with the requirements of the Clean Water Act, before onset of any construction activities, as required by law, UC Merced or its contractor(s) will obtain coverage under the State NPDES General Construction Permit. The UC Merced Campus will be responsible to ensure that construction activities comply with the conditions in this permit, which requires development of a SWPPP, implementation of BMPs identified in the SWPPP, and monitoring to ensure that effects on water quality are avoided or minimized. NPDES regulations require the preparation and implementation of a SWPPP for any project that would disturb 1 acre or more of land.

As part of this process, UC Merced will implement multiple erosion and sediment control BMPs in areas with potential to drain to surface water. These BMPs will be selected to achieve maximum sediment removal and represent the Best Available Technology (BAT) that is economically achievable. BMPs to be implemented as part of this permit may include, but are not limited to, temporary erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover). Drainage facilities in downstream off-site areas will be protected from sediment using BMPs identified in the SWPPP. Grass or other vegetative cover will be established on the disturbed areas as soon as possible after disturbance. Final selection of BMPs will be subject to review by UC Merced. The Campus will verify that an NOI and a SWPPP have been filed before allowing construction to begin. The Campus or its agent will perform routine inspections of the construction area to verify that the BMPs specified in the SWPPP are properly

implemented and maintained. The Campus will notify its contractors immediately if there is a noncompliance issue and will require compliance.

UC Merced or its contractors will use standard containment and handling protocols to ensure that construction vehicles and equipment do not leak any material that might harm the quality of local surface or groundwater. In addition, improper use and storage of fuels, oils, and other construction-related hazardous materials, may also pose a threat to surface or groundwater quality. The Campus or its contractor will develop and implement a spill prevention, control, and countermeasure program (SPCCP) to minimize the potential for, and effects from, spills of hazardous, toxic, or petroleum substances during construction activities. The program shall be completed before any construction activities begin. Implementation of this program would comply with state and federal water quality regulations and reduce the impact to a less-than-significant level. The Campus will review and approve the SPCCP before onset of construction activities. The Campus will routinely inspect the construction area to verify that the measures specified in the SPCCP are properly implemented and maintained. The Campus will notify its contractors immediately if there is a noncompliance issue and will require compliance.

The federal reportable spill quantity for petroleum products, as defined in the EPA's CFR (40 CFR 110) is any oil spill that (1) violates applicable water quality standards, (2) causes a film or sheen upon or discoloration of the water surface or adjoining shoreline, or (3) causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines. If a spill is reportable, the contractor's superintendent would notify the Campus and the Campus will need to take action to contact the appropriate safety and clean-up crews to ensure the spill prevention plan is followed. A written description of reportable releases must be submitted to the RWQCB. This submittal must include a description of the release, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred, and a description of the steps taken to prevent and control future releases. The releases would be documented on a spill report form.

If an appreciable spill has occurred and results determine that project activities have adversely affected surface or groundwater quality, a detailed analysis will be performed by a Registered Environmental Assessor to identify the likely cause of contamination. This analysis will conform to American Society for Testing and Materials (ASTM) standards, and will include recommendations for reducing or eliminating the source or mechanisms of contamination. Based on this analysis, the Campus and its contractors will select and implement measures to control contamination, with a performance standard that groundwater quality must be returned to baseline conditions. These measures will be subject to approval by the Campus. Compliance with these provisions of the law would result in a less than significant impact on receiving waters from construction activities on the UCM 2020 Project site.

Mitigation Measure: No mitigation is required.

UCM 2020 Impact HYD-2: **The UCM 2020 Project could increase the amount of storm runoff and alter existing drainage patterns, increasing the risk of flooding downstream and flooding to Cottonwood Creek and Fairfield Canal. (*Less than Significant)***

New construction associated with the development of the UCM 2020 Project would include new impervious surfaces that would generate more stormwater runoff than the volume that is generated under existing conditions, although as discussed above, because of the low permeability of project site soils, the increase in runoff would not be large. However, there would be increase in the rate and amount of runoff and if discharged uncontrolled to surface waters could result in or exacerbate flooding in downstream areas. In addition, existing drainage patterns would be altered by the construction of facilities.

Currently, with the exception of Phase 1.1 Campus where runoff is captured and directed to two on-site ponds before discharge into Fairfield Canal, all other areas of the Campus, including the UCM 2020 Project site, are undeveloped and not served by a storm drain system. Stormwater within the western portion of the UCM 2020 Project site that does not percolate runs in a southerly to southwesterly direction into Cottonwood Creek, which continues south-southeasterly direction on the east side of Lake Road, crosses under Lake Road in a culvert near Cardella Road, and continues east to its confluence with Fahrens Creek. Ponding occurs on the east side of Lake Road due to a capacity constraint in the culvert under Lake Road. The runoff from the east side of the UCM 2020 Project site generally sheet-flows in a southeasterly direction onto adjacent lands where it evaporates or percolates. The two on-site canals, the Fairfield and Le Grand Canals, interrupt the flow of stormwater runoff in various locations, causing stormwater to pond on the upgradient side of the canal levees. Occasionally, the stormwater tops and enters the canals. A substantial amount seeps underneath the canals and continues to flow in a downgradient direction.

The Le Grand and Fairfield canals are used to release water from Lake Yosemite for irrigation during spring and summer and are not used for irrigation in fall and winter. Both canals are used in the wet season to drain excess floodwater from Lake Yosemite.

With the development of the UCM 2020 Project, this drainage pattern would be altered and additional runoff that is generated would be collected by the storm drainage system, detained, and then discharged into Fairfield Canal at a discharge rate established by MID. Under normal conditions, because the canal is not used during fall and winter to convey irrigation water, Fairfield Canal would have capacity to handle

the stormwater discharged by the UCM 2020 Project development. To ensure that stormwater beyond the capacity of the canal is not discharged into the canal, MID would install water elevation detectors in the canal which would determine when releases to the canal would be allowed. MID has been monitoring and coordinating its canal discharges to Bear Creek with discharges from other facilities, including the USACE facilities at Bear Creek and Burns reservoirs. This coordination ensures that releases from major sources do not exceed the capacity of Bear Creek and result in downstream flooding. MID would continue its practice. Therefore, stormwater runoff from the UCM 2020 Project would not result in or exacerbate flooding in Bear Creek.

MID has indicated that in the event that the entire capacity of Fairfield Canal is needed to convey floodwaters from Lake Yosemite, the Campus must be designed to hold runoff from large storm events until such time that capacity in the canal becomes available to receive campus or community runoff. Therefore, the UCM 2020 Project has been designed to detain stormwater flows that would result from a 100-year, 24-hour storm event. Based on the amount of impervious area to be added as part of the UCM 2020 Project, the estimated runoff from a 100-year, 24-hour storm event is reported 37.1 acre-feet. Based on a preliminary evaluation, adequate land is available to site detention facilities within the UCM 2020 Project site. **UCM 2020 Water Detention Diagram**, in **Volume 1** shows the locations of proposed detention basins and channels. The total area of detention facilities would be approximately 24.7 acres, with a depth of approximately 1.5 feet, thus providing the required 37.1 acre/feet of detention capacity. These detention facilities would also help address the flooding that occurs within Cottonwood Creek on the east side of Lake Road by detaining and slowly releasing stormwater.

The provision of detention basins as part of new development complies with and exceeds the County of Merced Drainage Standards, which require new developments to be designed to handle the 10-year, 24-hour storm event, and the requirement that new developments shall not result in the increase of natural drainage flow beyond the predevelopment 100-year, 24-hour storm event. The stormwater detention facilities included in the UCM 2020 Project would control stormwater runoff before discharge into Fairfield Canal and Cottonwood Creek, and therefore there would be no project-related flooding impacts in downstream areas. The impact would be less than significant.

Mitigation Measure: No mitigation is required.

4.9 LAND USE AND PLANNING

4.9.1 ENVIRONMENTAL SETTING

Section 4.9, Land Use and Planning in **Volume 2** of this Draft EIS/EIR presents the existing land uses in the project site and its vicinity. This section also describes the relevant land use plans, policies, and regulations governing the project area. The land use and planning characteristics of the UC Merced and University Community Project, including the UCM 2020 Project site, are included in Volume 2 and this section summarizes the conditions and impacts relevant to the UCM 2020 Project.

4.9.1.1 Existing Land Uses and Designations

As described in Volume 2 of this Draft EIS/EIR, the entire UC Merced Campus and University Community are located in unincorporated Merced County. The Merced County General Plan designates a UC Merced/UCP Campus Specific Urban Development Plan (SUDP) that incorporates the entire campus site. The County also certified an EIR for the University Community Plan General Plan Amendment for land south of the UC Merced SUDP and adopted the UCP.

4.9.1.2 UCM 2020 Project Campus

The campus consists of three existing uses: the developed Phase 1.1 Campus, grasslands used for seasonal grazing, and land under irrigated pasture. The Phase 1.1 Campus site is surrounded by irrigated pasture land.

The northern portion of the UCM 2020 Project site above the Bellevue Road alignment is designated Campus in the County General Plan, whereas the southern portion is designated Multiple Use Urban Development (MUUD) in the County General Plan.

The northern portion of the UCM 2020 Project site, above the Bellevue Road alignment, is within the City of Merced's current Sphere of Influence (SOI) while the remainder of the site is outside the City's SOI. As noted in **Section 4.9** in **Volume 2**, the City plans to revise its SOI to include the entire Campus and University Community.

4.9.1.3 Existing and Planned Surrounding Land Uses

The Community North site, adjacent to the south of the UCM 2020 Project, is currently undeveloped pasturelands. The University Community site consists of land within the UC Merced/UCP SUDP that is mostly designated for Multiple Use Urban Development in the County's general plan, except for 222 acres of land in the eastern portion of Community North. The current County zoning for the University Community is agricultural land. According to the previously adopted UCP, in order to preclude premature conversion or cessation of agricultural activities, the zoning is to remain agricultural land until such time that plans for the development of the land are advanced.

As identified in **Section 4.9** of **Volume 2**, the overall Campus and University Community site, including the UCM 2020 Project site, is located adjacent to large open spaces comprising grazing lands with scattered rural residences, a planned residential community, agricultural lands, and a rural residential area. Lake Yosemite Regional Park and a large residential area with a golf course lie to the northwest of the Campus site. The area south and west of the intersection of Bellevue Road and Lake Road, west of the campus, is designated Rural Residential Center (RRC) in the Merced County General Plan. There are several approved projects in the City and County of Merced that would develop residences and commercial and public uses in the vicinity of the Campus and University Community.

4.9.2 IMPACTS AND MITIGATION MEASURES

4.9.2.1 Standards of Significance

Refer to **Section 4.9**, in **Volume 2**, for a discussion of applicable significance criteria.

4.9.2.2 Analytical Methodology

See **Section 4.9**, in **Volume 2,** for a description of the analytical methodology used to evaluate the land use and planning impacts associated with the overall Campus and University Community development, including the effects of the UCM 2020 Project.

4.9.2.3 Impacts Adequately Addressed at the Program Level or Not Applicable to the UCM 2020 Project

As identified in **Section 4.9**, in **Volume 2**, there are no habitat conservation plans or natural community conservation plans that are applicable to the UC Merced and University Community Project site, including the UCM 2020 Project site. Therefore, development of the UC Merced and University Community Project, including the UCM 2020 Project, would not conflict with any applicable habitat

conservation plan or natural community conservation plan and no additional project analysis of this issue is required for the UCM 2020 Project.

Since the Campus and University Community site, including the UCM 2020 Project, is located on the periphery of existing development and is surrounded by grazing lands, development of the Campus and University Community would not physically divide an established community. For this reason, the analysis in **Section 4.9**, in **Volume 2**, concluded that no related impact on an existing community would occur (Impact LU-1). No additional project analysis of this issue is needed for the UCM 2020 Project.

4.9.2.4 Project Impacts and Mitigation Measures

UCM 2020 Impact LU-1: The UCM 2020 Project would not conflict with the 2000 Merced County General Plan. (*Less than Significant*)

Volume 2 of this Draft EIS/EIR found that implementation of the UC Merced and University Community Project would not conflict with the 2000 Merced County General Plan (Impact LU-2). Regarding the campus, because the University is a state entity, there is no municipal jurisdiction over the campus. Furthermore, the County's general plan identifies the majority of campus site, including the UCM 2020 Project site, as part of the UC Merced SUDP. Although a portion of the campus (all of which is part of the UCM 2020 Project) is currently not designated Campus in the County General Plan and are instead designated MUUD, the change in land use designation would not result in any land development impacts that would be different from those previously evaluated by the County in the UCP EIR for the development of the University Community on that land. Therefore, the development of the UCM 2020 Project would not be in conflict with the provisions of the general plan. The impact would be less than significant.

Mitigation Measure: No mitigation measure is required.

UCM 2020 Impact LU-2: The UCM 2020 Project would not conflict with the City of Merced General Plan. (*Less than Significant*)

Section 4.9, **Volume 2,** of this Draft EIS/EIR found that implementation of the UC Merced and University Community Project would not conflict with the City of Merced General Plan (Impact LU-3). As discussed under UCM 2020 Impact LU-2 above, the University is a state entity and for this reason the Campus is not subject to municipal jurisdiction or plans, including the City of Merced 2015 Vision General Plan. Nevertheless, as stated in **Section 4.9**, **Volume 2**, the City of Merced's Vision 2015 General Plan states that the future of Merced includes the 10th University of California campus. Therefore, the UCM 2020 Project

as a component of the overall UC Merced campus would not conflict with the City's General Plan. The impact would be less than significant.

Mitigation Measure: No mitigation measure is required.

4.10 NOISE

4.10.1 ENVIRONMENTAL SETTING

Section 4.10, Noise, in **Volume 2** of this Draft EIS/EIR presents the existing noise environment in the project vicinity and documents changes in the baseline conditions that would occur as a result of the UC Merced and University Community Project in the project vicinity, including the UCM 2020 Project site. This section summarizes the conditions and impacts relevant to the UCM 2020 Project. The primary concerns related to noise include exposure of existing and proposed noise-sensitive land uses to construction noise and increases in traffic noise along the roadway network from project-related changes in traffic patterns.

4.10.1.1 Fundamentals of Environmental Noise

See **Section 4.10**, **Volume 2**, for a detailed description of the fundamentals of environmental noise.

4.10.1.2 Existing Noise Environment

As described in Volume 2 of the Draft EIS/EIR, other than the Phase 1.1 Campus development, the Campus and University Community project site is largely undeveloped and no major fixed noise sources exist on the site. Noise sources include traffic on local roadways and noise from agricultural equipment. Noise-sensitive receptors in the vicinity of the site include a few residences located along Lake Road to the east and Yosemite Avenue to the south of the project site. In addition, Lake Yosemite Regional Park is located to the north of the Phase 1.1 Campus.

Roadways and Freeways

No heavily traveled roads or freeways are within the area of the UCM 2020 Project. State Route (SR) 99, SR 59, and SR 140 are all located about 2.5 miles or further from the site and do not affect noise levels in the project area. Nearby roadways tend to be lightly traveled, with moderate vehicle speeds, and do not handle large volumes of heavy-duty trucks or buses. While motor vehicle traffic elevates noise levels within the project vicinity, and tends to be the primary noise source at locations adjacent to traveled roadways, the resulting noise levels are not excessive.

Railroad Traffic

The Burlington Northern/Santa Fe (BNSF) Railroad main line passes through the City of Merced and is approximately 2.5 miles to the south of the UCM 2020 Project. This rail line carries frequent north-south

freight train traffic and daily Amtrak passenger trains. Because of the railroad's distance from the project area, noise from railroad traffic does not affect ambient noise levels at the project site.

Aircraft Overflights

The Merced Municipal Airport is approximately 5 miles to the southwest of the UCM 2020 Project, and Castle Airport (the former Castle Air Force Base) is approximately 6 miles to the west. While noise from aircraft overflights is occasionally perceptible within the project area, it does not substantially affect the noise environment. A review of the County's Noise Element indicates that the 65 dBA L_{dn} noise contours from the airports in the region would not encompass or include any portion of the project site.

A private airstrip is located over 1 mile southeast of the project site. The airstrip is used by planes involved in agriculture operations (e.g., fertilizing, seeding, and baiting).

Stationary Sources

Stationary noise sources include common building or home mechanical equipment, such as air conditioners, ventilation systems, and pool pumps, and industrial or agricultural operations. These noise sources become a concern when they are in close proximity to land uses where people would be sensitive to noise. No industrial or manufacturing facilities are located in the project area; however, some agricultural-related operations and land maintenance activities cause occasional, daytime noise within the southern portion of the UCM 2020 Project site (e.g., noise from farm equipment, crop dusting, etc.). To the northwest of the project site, the Lake Yosemite facilities provide recreational boating opportunities that generate noise primarily during the daytime hours of the warmer months.

Ambient Noise Levels

As discussed in Volume 2, an ambient noise monitoring survey was conducted on May 30 and 31, 2001 in the Merced area and in the vicinity of the Proposed Action site for the UC Merced 2002 LRDP EIR. Short-term measurements (15 minutes in duration) were taken at 12 locations and unattended long-term (24 hours in duration) measurements were taken at two locations. The measurement locations are shown in **Figure 4.10-1, Noise Measurement Locations,** in **Volume 2**. The measurement locations were selected to be representative of noise-sensitive receptors, consisting of residential, recreational, educational, and church land uses. Details about these measurements are provided in **Section 4.10**, in **Volume 2**.

4.10.2 IMPACTS AND MITIGATION MEASURES

4.10.2.1 Standards of Significance

Refer to **Section 4.10** in **Volume 2**, for a discussion of applicable significance criteria.

4.10.2.2 Analytical Methodology

See **Section 4.10** in **Volume 2**, for a detailed description of the analytical methodology used to evaluate noise impacts associated with the overall Campus and University Community development, including the effects of the UCM 2020 Project.

4.10.2.3 Impacts Adequately Addressed at the Program Level or Not Applicable to the UCM 2020 Project

Daily Operations and Special Events Noise

As stated in **Section 4.10, Volume 2**, daily operations within the Campus and University Community and special events at the campus could expose existing off-site and future on-site noise-sensitive receptors to elevated noise levels. Daily noise generating activities on the campus would include student gatherings and conversations, athletic and recreational activities, social events, landscaping and maintenance activities, on-site traffic, and mechanical equipment noise. Noise generated by daily campus activities is not expected to exceed the noise standard of 60 dBA L_{dn} exterior and 45 dBA L_{dn} interior at off-site residential locations or 70 dBA L_{dn} at parks because the noise levels generated by these activities are generally low at the source and would be further attenuated by the distance between the campus facilities and the nearest off-site receptors, including the regional park. As identified in **Section 4.10**, **Volume 2**, the land use plans for the Campus and Community North have been designed to avoid the location of sensitive land uses near potential loud noise sources. Furthermore, noise levels associated with typical commercial grade HVAC systems can be reduced to below the noise standard for residences and parks at a distance of less than 50 feet from the source with the use of standard attenuation barriers. For these reasons, the UC Merced and University Community Project, including the UCM 2020 Project, would not expose receptors to noise levels from daily operations in excess of the standards for noise-sensitive uses, and therefore would not create a significant impact. No further analysis is required for the UCM 2020 Project.

The UC Merced and University Community Project would result in a significant and unavoidable impact from special event venue noise. Implementation of **Mitigation Measures NOI-2a** and **NOI-2b** would require a design level study to define reasonable and feasible noise mitigation to reduce noise levels to

comply with noise standards. However, a stadium or a major outdoor venue for special events is not included as part of the UCM 2020 Project. For these reasons, the UCM 2020 Project would not expose receptors to noise levels from special events in excess of the standards for noise-sensitive uses, and therefore would not create a significant impact. No further analysis is required for the UCM 2020 Project.

4.10.2.4 Project Impacts and Mitigation Measures

UCM 2020 Impact NOI-1: **Implementation of the UCM 2020 Project would result in increased vehicular traffic on the regional road network, which would increase ambient traffic noise levels at existing off-site noise-sensitive uses. (*Less than Significant*)**

Development of the UCM 2020 Project would increase traffic volumes on the local roadway network, which would result in increased traffic noise levels at noise-sensitive receptors located along these roadways. Project-generated noise increases of the UC Merced and University Community Project were calculated by comparing project traffic conditions to no-project traffic conditions within the same time frame (i.e., 2030 No Build vs. 2030 Proposed Action). **Table 4.10-3, Predicted Traffic Noise Levels and Increases at a Distance of 100 feet from the Center of the Roadway,** in Volume 2, summarizes the calculated L_{dn} noise levels at a distance of 100 feet from roadway links on the surrounding road network under 2008 Existing, 2030 No Build, and 2030 Proposed Action traffic conditions. The calculated traffic-generated noise increases, including the increase of 2030 No Build and 2030 Proposed Action over 2008 Existing conditions and the project-generated increase resulting from project traffic conditions under the same time period (i.e., 2030 No Build vs. 2030 Proposed Action), are also summarized.

In general, doubling the traffic volume increases ambient noise levels by 3 dBA. As described in **Section 4.13, Transportation and Traffic,** the UCM 2020 Project would contribute approximately 20,800 trips to regional and local roadways. This represents about 10 percent of the total trips anticipated by the UC Merced and University Community Project with buildout of the Campus and University Community. According to **Section 4.10, Volume 2**, implementation of the Campus and University Community would result in traffic noise increases of 3 dBA or greater along six roadway segments, including Campus Parkway south of Bellevue, Yosemite Avenue west of Lake Road, Cardella Avenue east of G Street, Kibby Road to the north and south of Yosemite Avenue, and Bellevue Avenue west of Lake Road. The UC Merced and University Community project would result in significant noise impacts along Kibby Road, south of Yosemite Avenue, and Cardella Avenue east of G Street. Therefore, these road segments are analyzed at a project level for the UCM 2020 Project and are summarized below:

- Noise levels along Yosemite Avenue west of Lake Road and along Bellevue Avenue west of Lake Road would increase by 3 decibels due to the full development of the UC Merced and University

Community Project, including the UCM 2020 Project, but this increase combined with the increase in noise due to other traffic would not cause the ambient noise levels to exceed the 60 dBA L_{dn} residential threshold. If only UCM 2020 Project-generated traffic were added to the background traffic, the noise levels would not increase by more than 3 decibels above ambient levels. Therefore, the impact along these road segments would not be significant.

- Noise levels along Kibby Road, south of Yosemite Avenue would not exceed the 60 dBA L_{dn} residential threshold with buildout of the Campus and University Community; however, development of the UC Merced and University Community Project would result in a noise level increase of 5 decibels at these residences. Since the UCM 2020 Project would contribute substantially fewer trips to the local roadways (less than half), it is anticipated that the UCM 2020 Project would result in noise level increase of less than 3 decibels at these residences. This increase is not considered substantial and would constitute a less-than-significant impact for development of the UCM 2020 Project.

- Noise levels along Cardella Avenue east of G Street are predicted to exceed the 60 dBA L_{dn} residential threshold at a distance of 100 feet from the center of the roadway under 2030 conditions for the UC Merced and University Community Project, and the traffic associated with the UC Merced and University Community Project is estimated to contribute between 4 and 5 decibels of noise that results in this exceedance. The UCM 2020 Project would generate approximately 7 percent of the total trips anticipated at full development of the Campus and University Community. Given this, the UCM 2020 Project would result in an increase in noise levels of less than 3 dBA L_{dn} along Cardella Avenue east of G Street. This increase is not considered substantial and would constitute a less-than-significant impact for development of the UCM 2020 Project.

- As discussed above, residences on Lake Road south of Bellevue Road are located about 325 feet from the center of the Campus Parkway alignment and about 100 feet from the center of Lake Road. As indicated in **Table 4.10-3, Volume 2**, although noise levels along Campus Parkway are predicted to increase by 4 dBA as a result of the UC Merced and University Community Project, the overall traffic noise level resulting from traffic at residences along both Lake Road and Campus Parkway is predicted to increase by only 2 dBA as a result of the UC Merced and University Community Project. Therefore, this impact would be less than significant for the Campus and University Community, including the UCM 2020 Project.

As described above, while the UCM 2020 Project would contribute trips to the study area street segments, the trips added by the UCM 2020 Project would not result in substantial noise impacts.

Mitigation Measure: No mitigation measure is required.

UCM 2020 Impact NOI-2: **Construction of the UCM 2020 Project could expose existing off-site and future on-site noise-sensitive receptors to elevated noise levels and groundborne vibration. (*Potentially Significant; Less than Significant)***

Construction Noise

The construction activities proposed as part of the UCM 2020 Project could expose existing off-site and future on-site noise-sensitive receptors to elevated noise levels. Construction activities for the UCM 2020 Project would include ground clearing, earthmoving, foundations, erection of structures and finishing. Noise impacts resulting from construction depend on the noise generated by various pieces of construction equipment, the timing and duration of noise-generating activities, and the distance and shielding between construction noise sources and noise-sensitive areas. As discussed in **Section 4.10** in **Volume 2**, individual types of construction equipment are expected to generate noise levels ranging from 74 to 89 dBA at a distance of 50 feet.

Section 4.10, Volume 2, found that on- and off-site construction activities occurring between the hours of 8:00 PM and 7:00 AM would result in significant noise impacts. Although daytime construction activities would not result in significant noise impacts as defined by the noise thresholds, because of the longer durations and higher noise levels that potentially could be involved in the construction of facilities within the campus, standard noise reduction techniques are recommended in **Mitigation Measure NOI-3** to reduce noise exposure of nearby noise-sensitive receptors to construction noise. Implementation of **Mitigation Measure NOI-3,** as presented in Volume 2, would reduce the noise impact from nighttime construction and would minimize the less-than-significant impact from daytime construction.

Groundborne Vibration

As stated in **Section 4.10, Volume 2**, vibration levels generated by construction activities would vary depending on project conditions such as soil conditions, construction methods, and equipment used. Typical project construction activities would not generate substantial levels of vibration. Pile driving is not anticipated for the UCM 2020 Project due to the geology that is typical for Merced County. However, in the event that pile driving is required during construction, it could produce groundborne vibration levels that might be perceptible to nearby sensitive receptors. In addition, at a few future campus facilities, such as laboratories, additional precautions may be needed to prevent adverse effects from vibration. Implementation of program-level **Mitigation Measures NOI-4a** and **NOI-4b** would limit groundborne vibration to construction activities to 0.2 inch/sec ppv, and would require additional measures for construction activities adjacent to highly sensitive use. Therefore, vibration impacts associated with pile driving activities on the Campus and University Community, including the proposed UCM 2020 Project, would be less than significant.

UCM 2020 MM NOI-2a: Implement **Program Level Mitigation Measures NOI-3, NOI-4a**, and **NOI-4b**.

Significance after Mitigation: Implementation of the program level mitigation measures would reduce the impact to a less-than-significant level. No further mitigation is required.

UCM 2020 Impact NOI-3: Implementation of the UCM 2020 Project would not expose new on-site noise-sensitive land uses, such as residences, to noise levels exceeding noise thresholds. (*Less than Significant*)

With construction of the UC Merced and University Community Project, including the UCM 2020 Project, noise-sensitive uses could be developed adjacent to existing noise-generating uses, including traffic along Lake Road and Yosemite Avenue, recreational activities at Lake Yosemite Regional Park, agricultural operations, and the private airstrip located adjacent to Community South. As described in **Section 4.10, Volume 2**, although along most roadways the noise generated by project traffic would not exceed the thresholds for residential and school uses, along Campus Parkway between Yosemite Avenue and Bellevue Road, the noise levels would exceed the threshold for residential uses within a distance of about 280 feet from the center of the roadway. However, the UCM 2020 Project does not include residential or other noise-sensitive uses in the area adjacent to Campus Parkway; this area is planned for development of research and academic buildings. Therefore, the UCM 2020 Project would not expose sensitive receptors to noise levels exceeding noise thresholds. The impact would be less than significant.

Mitigation Measure: No mitigation measure is required.

4.11 POPULATION AND HOUSING

4.11.1 ENVIRONMENTAL SETTING

Section 4.12, **Socioeconomics/Environmental Justice** in **Volume 2** of the Draft EIS/EIR presents the socioeconomic conditions for the entire Campus, including the projected increase in population that would result from the UCM 2020 Project. The population, housing, and employment effects of the UC Merced and University Community Project, including the UCM 2020 Project, were analyzed in **Volume 2**; this section summarizes the conditions and impacts relevant to the UCM 2020 Project.

4.11.1.1 Population

As described in **Volume 2**, the current (2008) population of Merced County is 225,250 residents, of which 87,001 individuals reside in unincorporated areas. The remainder of the County population resides in the City of Merced (80,608), the City of Atwater (27,571), and Dos Palos, Gustine, Livingston, and Los Banos (60,070, combined). According to MCAG growth projections, the population of the City of Merced is expected to approach 97,700 persons by 2020, and 116,800 by 2030. The City of Merced is projecting that the City's residential population will increase to approximately 280,666 persons by 2030.

4.11.1.2 Housing

As described in **Volume 2**, as of January 1, 2008, there are 84,631 dwelling units within Merced County, of which 28,424 are located in unincorporated areas. According to the 2007 Regional Transportation Plan for Merced County, the County is projecting growth of up to 131,725 housing units by 2030.

As this time, the City of Merced has 28,066 units, Atwater has 9,529 units, and the remaining cities have 18,612 units. The City of Merced is projecting future housing growth and has acknowledged in its adopted General Plan that in order to accommodate growth within the City's SUDP, approximately 47,000 total housing units would be needed. According to the City's proposed General Plan Update, the number is now projected to increase to 69,704 dwelling units by 2030.

4.11.2 IMPACTS AND MITIGATION MEASURES

4.11.2.1 Standards of Significance

Refer to **Section 4.12**, **Volume 2**, for a discussion of applicable significance criteria.

4.11.2.2 Analytical Methodology

See **Section 4.12**, **Volume 2**, for a description of the analytical methodology used to evaluate the population and housing effects of the overall campus, including the effects of the UCM 2020 Project.

4.11.2.3 Impacts Adequately Addressed at the Program Level or Not Applicable to the Project

As identified in **Section 4.12**, **Volume 2**, UC Merced and University Community Project would not displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere (Impact SOC-2). With the exception of student housing on the Phase 1.1 Campus, no dwelling units are currently situated on the campus site. Since no existing housing would be displaced, there would be no impacts related to construction of replacement housing on the campus. No additional project-level analysis of this issue is required for the UCM 2020 Project.

Volume 2 of the EIR also concluded that the UC Merced and University Community Project would not displace substantial numbers of people, necessitating the construction of replacement housing elsewhere (Impact SOC-3). With the exception of student housing on the Phase 1.1 Campus, no existing population is currently situated on the campus site. UCM 2020 Project development would not displace existing Phase 1.1 students. No additional project-level analysis of this issue is required for the UCM 2020 Project.

4.11.2.4 Impacts and Mitigation Measures

UCM 2020 Impact POP-1: **Development under the UCM 2020 Project would induce substantial population growth in the City of Merced and Merced County. (*Significant and Unavoidable*)**

At buildout of the UCM 2020 Project in 2019–2020, campus enrollment is anticipated to increase to approximately 10,000 students from a current enrollment level of about 2,700 students (an increase of approximately 7,300). Based on the assumption that 90 percent of the students enrolled at the campus would be from outside Merced County, the population of the City of Merced[1] and County of Merced would increase by about 6,570 student residents. This represents an 8 percent increase in the current (2008) population of the City of Merced and 3 percent increase in the current population of Merced County. However, it is anticipated that the student population would decrease during the summer months when the University is not in session.

---

1 Because the Campus and the University Community are expected to be annexed into the City of Merced, the increase in population due to the project is discussed relative to the population of Merced County as well as the City of Merced

The student population relocating from outside Merced County (about 6,570 students) would be accompanied by a certain number of dependents. It is assumed that 10 percent of the relocating students (about 657) would have families, with an average of 1.5 dependents each. Therefore, a population of about 986 dependents would accompany the students relocating to Merced County, and a total combined population of 7,556 students and dependents is anticipated to relocate to Merced County as a result of development of the UCM 2020 Project.

As of fall 2008, UC Merced employs 117 faculty and 613 staff for a total of 730 employees. At full development of the UCM 2020 Project, employment is anticipated to increase by 533 faculty, 117 postdoctoral researchers, and 2,344 staff, for a total of 2,994 additional employees. Faculty and staff could originate from the City of Merced, greater Merced County, and other parts of the state and country. Based on the assumption that all faculty and postdoctoral researchers and 40 percent of the staff would relocate from outside Merced County, the population of the City of Merced and County of Merced would increase by 1,588 residents (533 faculty, 117 postdoctoral researchers, and 938 staff) at buildout of the UCM 2020 Project. Based on an average of 1.5 dependents per employee, employees relocating to the project area would be expected to have 2,382 dependents. A combined population of 3,970 employees and their dependents are anticipated to relocate to the project area. This represents a 5 percent increase in the current population of the City of Merced and a nearly 2 percent increase in the current population of Merced County.

Based on the above calculations for the UCM 2020 Project, a total of 11,526 students, faculty, and staff and the dependents of each group would be drawn to the City of Merced and Merced County from other locations. This represents a 14 percent increase in the current population of the City of Merced and a 5 percent increase in the current population of Merced County. The population of the City of Merced would increase to 92,134 residents and Merced County would increase to 236,776 residents as a direct result of the UCM 2020 Project. The MCAG projects that the City of Merced population will grow to 97,700 residents by 2020 and that the Merced County population will grow to 340,800 residents. While the population increase due to full development of the UCM 2020 Project and overall Campus is already accounted for in the MCAG projections for the City and the County and, based on the numbers above, would not exceed the growth projections, the population increase due to the UCM 2020 Project would be substantial. The Campus-related population would represent 67 percent of the projected population increase between 2008 and 2020 in the City of Merced, and 10 percent of the projected population increase between 2008 and 2020 in Merced County. Since the increase would be considered substantial when compared to MCAG population projections, the direct population growth generated by the UCM 2020 Project would be significant and unavoidable.

Although the population growth due to UCM 2020 Project buildout is considered substantial, a significant proportion of Campus growth would be accommodated within the campus. The UCM 2020 Project would add approximately 4,170 beds to the existing student housing (about 1,000 beds), reducing the number of students needing off-campus housing to 2,400. It is assumed that all student dependents would live in the community, not on campus. The number of new residents (students, employees, and dependents) who would need housing off-campus in the City of Merced and Merced County would therefore be approximately 7,356 persons.

Assuming 2.5 single students per dwelling unit for a total of 697 dwelling units, one student family per dwelling unit for a total of 657 units, and 1.1 employees (and their families) per dwelling unit for a total of 1,444 units, campus-related population would require approximately 2,798 dwelling units at buildout of the UCM 2020 Project. The University Community, if approved and built, would provide up to 11,616 housing units at buildout. In order to provide conservative analysis, it is assumed that the University Community would not be built in time to accommodate any UCM 2020 Project-generated new residents, and that all of the 7,356 new residents would need to find housing in the local community. However, the rise in student and employee population would be gradual over the buildout period of the UCM 2020 Project, and housing supply in the local area currently exceeds demand. Based on these factors, it is expected that the local community would be able to accommodate the short-term demand for housing caused by the increased population. No significant impact is anticipated with regard to housing demand.

Mitigation Measure: No feasible mitigation measures are available.

Significance after mitigation: Population growth impacts from the UCM 2020 Project would remain significant and unavoidable.

4.12 PUBLIC SERVICES AND RECREATION

4.12.1 ENVIRONMENTAL SETTING

Section 4.11, Public Services and Recreation in **Volume 2** of this Draft EIS/EIR describes the existing public services and recreational resources, including fire protection, law enforcement, schools, hospitals, libraries, and parks, that serve the project site and its vicinity. The public services characteristics of the UC Merced and University Community Project area, including the UCM 2020 Project site, are included in **Volume 2**; this section summarizes the conditions and impacts relevant to the UCM 2020 Project.

As described in **Volume 2** of this Draft EIS/EIR, the UC Merced Campus and University Community are located within unincorporated Merced County. Therefore, under existing conditions, with the exception of law enforcement services for the UCM 2020 Project site, which are provided by the Campus Police Department, all services to the UCM 2020 Project site are provided by the County. As described in **Volume 2**, the Campus, including the UCM 2020 Project site, would likely be annexed to the City of Merced in the future in order to receive City services. In the event that annexation does not take place or annexation is delayed, similar to the agreement for Phase 1.1 Campus, the University plans to enter into an agreement with the City for the provision of water and sewer service to the UCM 2020 Project site, as well as fire service.

4.12.1.1 Law Enforcement Services

Section 4.11, **Volume 2**, provides a description of law enforcement services currently available to the Campus. The UC Merced Police Department would provide law enforcement services to the Campus. The UC Merced Police Department has established a staffed police station on the Phase 1.1 Campus that serves the campus and associated university properties.

4.12.1.2 Fire Protection and Emergency Medical Services

Section 4.11, **Volume 2**, provides a description of fire protection and emergency medical services currently available to the campus, including the proposed UCM 2020 Project site. As noted in Volume 2, under existing conditions, the project site is located within the service area of the Merced County Fire Department. As noted above, for campus development through 2020, the Campus will likely obtain fire protection services from the City under a services agreement. Upon annexation, the City of Merced Fire Department would provide fire protection and emergency medical services to the campus.

4.12.1.3 Schools

Section 4.11, **Volume 2**, provides a description of public schools in the vicinity of the Campus. The UCM 2020 Project site is located within the boundaries of the Merced City School District (MCSD) and the Merced Union High School District (MUHSD). The MCSD provides education for kindergarten through eighth grade. The MUHSD serves students in grades 9 through 12.

4.12.1.4 Public Libraries

Section 4.11, **Volume 2**, provides a description of public libraries in the vicinity of the campus, including the proposed UCM 2020 Project site. The Merced County Library system has a main branch in Merced and regional branches in Atwater, Dos Palos, Gustine, Livingston, and Los Banos. The Campus Library has already been constructed on the Phase 1.1 Campus.

4.12.1.5 Parks and Recreational Facilities

County-owned recreational facilities are managed by the Merced County Parks and Recreation Office. County recreational facilities near the project site include Lake Yosemite Regional Park and bike paths. These facilities are described in detail in **Section 4.11**, **Volume 2**.

The City of Merced Parks and Community Services Department maintains park and recreational facilities in the City. These facilities are also described in **Section 4.11**, **Volume 2**.

4.12.2 IMPACTS AND MITIGATION MEASURES

4.12.2.1 Standards of Significance

Refer to **Section 4.11**, **Volume 2,** for a discussion of applicable significance criteria

4.12.2.2 Analytical Methodology

See **Section 4.11**, **Volume 2**, for a description of the analytical methodology used to evaluate the public services and recreation impacts of the overall campus, including the effects of the UCM 2020 Project.

4.12.2.3 Impacts Adequately Addressed at the Program Level or Not Applicable to the UCM 2020 Project

As described above, following the execution of a pre-annexation agreement with the City or upon the completion of the annexation process, the UC Merced Campus and University Community, including the UCM 2020 Project site, would be served by the City of Merced Fire Department. The nearest City Fire

Station is Station 55, which currently has three fire fighters to staff its engine service. In order to serve population growth anticipated in northern Merced, including the UCM 2020 Project, the City has indicated that an additional engine staff of three fire fighters and a truck staff of four fire fighters would be needed at Station 55. As described in **Section 4.11, Volume 1**, the City has indicated that Station 55 cannot be expanded to house another engine company. The City further indicated that either a new fire station would be constructed in Community North to serve the Campus and University Community, or a new facility would be constructed somewhere in the Bellevue and G Street area to serve the site as well as northern Merced growth. Therefore, the impact related to fire protection services would be less than significant. Because a site for this fire station has not been selected, and the fire station would be built in response to the general northern Merced growth and not solely to serve the UCM 2020 Project, the environmental impacts of this future project will be evaluated and mitigated by the City of Merced in conjunction with the approval of the new fire station's development (or a fire station combined with a police station). Further evaluation of this issue is not required.

The analysis conducted for the UC Merced Campus in **Section 4.11, Volume 2**, indicates that development of the proposed Campus would not substantially increase demand for library services in Merced County. The proposed campus would meet the need for library services for the campus population. Therefore, impacts on the Merced County library system associated with development of the Campus, including the UCM 2020 Project, would be less than significant.

The analysis in **Section 4.11, Volume 2**, concluded that the development of the campus would result in a less than significant impact associated with the construction of new recreational facilities off site. Given that the Campus would allocate 244 acres to athletics, recreation and open space uses land uses, the campus population at full development would be adequately served. The UC Merced Campus, including the UCM 2020 Project, would not result in demand for off-site recreational facilities. The UC Merced Campus also would not trigger the construction of new parks or expansion of existing parks in areas outside the Campus and University Community lands because the University Community has been designed to absorb the growth associated with the campus and includes an adequate amount of park acreage to serve the population that would reside in the community. Therefore, the Campus, including the UCM 2020 Project, would result in less than significant impacts related to park demand and the construction of new parks or expansion of existing parks off site.

4.12.2.4 Project Impacts and Mitigation Measures

UCM 2020 Impact PUB-1: **The UCM 2020 Project would increase demand for law enforcement services and would require the construction of new facilities. (*Less than Significant*)**

As described in **Section 4.11, Volume 2**, the UC Merced Campus, including the UCM 2020 Project site, would require an expansion of UC Merced Police Department services and facilities. The Campus land use plan includes adequate land for the expansion of the Campus police facility as needed. The environmental consequences of developing campus facilities, including additional police facilities, are evaluated and mitigated to the extent feasible in the UC Merced and University Community Project Draft EIS/EIR.

Based on the experience at other UC campuses, adequate staff will be provided on the Campus portion of the UCM 2020 Project site, and the impact would be less than significant. However, UCM **2020 Mitigation Measure PUB-1** would be implemented to ensure that the impact remains less than significant.

UCM 2020 MM PUB-1: Implement **Program Level Mitigation Measure PUB-1**.

Significance after Mitigation: The mitigation measure proposed above would ensure that the impact remains less than significant.

UCM 2020 Impact PUB-2: **The UCM 2020 Project would increase the use of Lake Yosemite Regional Park, which could accelerate physical deterioration of park facilities. (*Potentially Significant; Less than Significant*)**

As discussed above, adequate land for parks and recreational facilities is included in both the Campus and the University Community land use plans to serve the on-campus residential population as well as the campus-related households that would reside in the University Community. Therefore, the UCM 2020 Project is not expected to result in the excessive use of off-site recreational facilities. However, due to the proximity of Lake Yosemite Regional Park to the UCM 2020 Project and the range of unique water-related recreational amenities offered at the regional park that would not be available in the Campus or University Community, it is anticipated that new campus-affiliated households would use the regional park. As stated in the UC Merced 2002 LRDP EIR, there is no measure available to estimate the level of use that would represent overuse and would result in a corresponding deterioration of the park facilities. It is anticipated that most of the increase in park facility use associated with the campus portion of the UCM 2020 Project site (i.e., during periods in which the school is in session, from fall until late spring)

would not coincide with the current peak park use. However, because the park is currently at capacity during summer months, this EIR conservatively assumes that use of the park by campus-related population, including the population associated with UCM 2020 Project, could accelerate the physical deterioration of the park facilities and contribute to the need for new park facilities. The impact would be potentially significant. **UCM 2020 Mitigation Measure PUB-2** is proposed to reduce this impact to a less than significant level.

UCM 2020 MM PUB-2: Implement **Program Level Mitigation Measures PUB-6a** through **PUB-6d.**

Significance after Mitigation: Implementation of the mitigation measure listed above would reduce the impact to a less than significant level.

UCM 2020 Impact PUB-3: **The UCM 2020 Project would increase enrollment in local public schools, which would require construction of new facilities, the construction of which could have environmental effects. (*Less than Significant)***

As noted in **Section 4.11**, **Volume 2**, in the long-term development of the Campus would not increase enrollment in local public schools that would require construction of new facilities, the construction of which could have environmental effects. This is because the University Community has been designed to absorb the growth associated with the campus and includes an adequate amount of land acreage for schools to serve the population that would reside in the community.

In the short term however, until such time that the schools are developed within the University Community, development of the campus under the UCM 2020 Project would result in an increased demand for primary and secondary educational facilities in the campus vicinity. This demand would be related primarily to employee households and the small number of student families that may move into the Merced area as a result of the UCM 2020 Project. No student family housing would be developed on the campus as part of the UCM 2020 Project and no employee housing is proposed for the campus. Therefore, on-campus housing would not cause an increase in school-age children in the Merced area.

As discussed in **Section 4.11**, **Volume 1**, the student generation rates for MCSD are 0.526 student per dwelling unit for single-family residences and 0.215 student per multifamily apartment. The student generation rates for MUHSD are 0.23 student per single-family residence and 0.1 student per multifamily apartment. Based on the assumptions presented in **Section 4.11** above, approximately 2,245 new employee households and student families would relocate into Merced as a result of the UCM 2020 Project. Conservatively assuming that these households would all be accommodated in single-family dwelling units, the UCM 2020 Project at buildout would generate up to 1,181 K–8 students and 516 high-

school students, for a total of 1,697 new students who would require school services in Merced area schools.

The Campus has been in consultation with MCSD and the district has indicated that it will work with the University and UCLC to establish schools within the proposed University Community to serve campus-related households. If the University Community is developed, all needed school capacity to serve campus-related households would be provided by the schools that are planned within the University Community. Adequate land has been assigned within the University Community for the construction of a high school and up to four K–8 schools. The environmental impacts from developing the school sites are addressed in other sections of the Draft EIS/EIR and mitigated to the extent feasible by the mitigation measures included in the Draft EIS/EIR. Furthermore, pursuant to SB 50, developers will be required to pay school impact fees for any residential and non-residential development proposed within the University Community. School impact fees are considered full and complete mitigation for school impacts.

In the event that the University Community is not built, the demand for school facilities would require the construction of new schools or expanded facilities at existing schools in the City. Because the sites of these future schools are not currently known, the environmental impacts from their development cannot be determined or evaluated. However, it is anticipated that when new schools are proposed, the school districts will evaluate the environmental impacts resulting from new construction. Furthermore, full mitigation of school impacts will be provided via the collection of school impact fees from new housing developed in the region. Therefore, under either scenario, the impact related to schools would be less than significant.

Mitigation Measure: No mitigation measure is required.

4.13 TRANSPORTATION AND TRAFFIC

4.13.1 ENVIRONMENTAL SETTING

Section 4.13, Transportation and Traffic, in **Volume 2** of this Draft EIS/EIR presents the existing transportation for UC Merced and University Community Project, including the UCM 2020 Project. This section documents changes in the baseline conditions that would occur as a result of implementing the UCM 2020 Project. The transportation and traffic characteristics related to transit, pedestrian, bicycle and parking facilities of the UCM 2020 Project site are included in **Volume 2** and this section summarizes the conditions and impacts relevant to the UCM 2020 Project.

4.13.1.1 Roadway Network, Study Intersections and Roadway Segments

The roadway network in the project vicinity is shown in **Figure 4-13-1, Future 2030 Project Study Area**, in **Volume 2**. This figure also shows the study intersections, and **Figure 4.13-2, Roadway Study Segments**, in **Volume 2** shows the roadway segments. The area surrounding the site of the UC Merced and University Community Project, including the UCM 2020 Project, is largely undeveloped with the exception of the Phase 1.1 Campus and rural residences in the surrounding areas. Limited roadway infrastructure is in place. The site can be accessed by three two-lane rural roads, namely Bellevue Road, Lake Road, and Yosemite Avenue. Descriptions of the local and regional roadways in the vicinity of the UCM 2020 Project site are provided in **Section 4.13, Volume 2**.

Study intersection operations were evaluated during the weekday morning (AM) and evening (PM) peak periods. Thirty-four intersections within the study area were analyzed for both existing and future conditions, as shown in **Figure 4.13-1** and in **Section 4.13, Volume 2**.

4.13.1.2 Traffic Analysis Methodology

As described in **Section 4.13, Volume 2**, the operations of roadway facilities are described with the term "level of service" (LOS). LOS is a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels of service are defined ranging from LOS A (i.e., best operating conditions) to LOS F (worst operating conditions). LOS E corresponds to operations "at capacity." When volumes exceed capacity, stop-and-go conditions result and operations are designated as LOS F.

Different criteria and methods were used to assess operating conditions for the various types of facilities analyzed in the traffic study, including roadway segments, and signalized and unsignalized intersections. The Level of Service criteria and methods for each of the roadway facilities of study are described in

Section 4.13, Volume 2. The daily per-lane capacities for each roadway type under existing conditions are presented in **Table 4.13-1, Per-Lane Roadway Segment Capacities**, **Volume 2**. The relationship between average control delay per vehicle and LOS for signalized intersections is summarized in **Table 4.13-2, Signalized Intersection Level of Service Criteria**. **Table 4.13-3, Unsignalized Intersection Level of Service Criteria**, summarizes the relationship between delay and LOS for unsignalized intersections.

4.13.1.3 Existing Levels of Service

Roadway segment levels of service were calculated based on existing traffic volumes and segment capacity presented in **Section 4.13, Volume 2**. The existing volumes and corresponding LOS are shown in **Table 4.13-4, Existing Roadway Segment Level of Service, Volume 2**. Weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak period intersection turning movement counts were conducted at the study intersections on clear days with area schools in normal session in April, 2007 and April, 2008. The existing traffic counts are provided in **Appendix 4.13**. For each intersection, the single hour with the highest traffic volumes during the two count periods was identified. The peak hour volumes, intersection lane configuration, and control type are presented in **Figures 4.13-3** to **4.13-5, Intersection Geometry and Volume Existing Conditions, Volume 2**.

Table 4.13-5, Existing Intersection Levels of Service, Volume 2, provides the existing operations for the existing study intersections. The existing traffic volumes were used with the existing lane configurations and signal phasing/timing as inputs into the LOS calculations. Detailed intersection LOS calculation worksheets are presented in **Appendix 4.13**.

To assess the need for signalization of stop-controlled intersections, the Manual of Uniform Traffic Control (Federal Highway Administration 2000) presents eight signal warrants. Detailed signal warrant calculations are provided in **Appendix 4.13**. **Section 4.13, Volume 2**, lists the unsignalized intersections at which the peak hour volume traffic signal warrant is satisfied.

The project site is accessible by transit both locally and regionally. A list of existing transit options in the project vicinity is provided in **Section 4.13, Volume 2**. Pedestrian and bicycle facilities are also described. **Figure 4.13-7, Existing Bikeways, Volume 2**, shows the existing bicycle facilities in Merced.

4.13.2 IMPACTS AND MITIGATION MEASURES

4.13.2.1 Standards of Significance

Refer to **Section 4.13, Volume 2** for a discussion of applicable significance criteria.

4.13.2.2 Analytical Methodology

See **Section 4.13, Volume 2**, for a description of the analytical methodology used to evaluate the transportation and traffic impacts of the overall Campus (and University Community) development, including the effects of the UCM 2020 Project. That section includes a description of traffic forecast methodology, future roadway capacity assumptions, and project trip generation for the UC Merced and University Community Project. Methodologies for determining trip distribution and assignment, and future levels of service on roadway segments and intersections are also described.

The impact analysis presented below includes two development scenarios: Existing Plus UCM 2020 Project, and 2020 Conditions Plus UCM 2020 Project. The first scenario is included because the California Environmental Quality Act (CEQA) requires a comparison of project effects to existing conditions; the second compares project impacts to conditions at the anticipated buildout year of the UCM 2020 Project. Because the project would not be developed all at once, the Existing Plus UCM 2020 Project analysis represents a conservative or "worst-case" assessment of project impacts. The 2020 Conditions Plus UCM 2020 Project analysis assumes that the associated contiguous University Community would not be built, and that therefore all project-generated trips would be distributed to the wider region, thus resulting in greater impacts to the local and regional roadway network than if the University Community were present. For this reason, the 2020 Conditions Plus UCM 2020 Project analysis also represents a conservative scenario with regard to the severity of impacts.

4.13.2.3 Impacts Adequately Addressed at the Program Level or Not Applicable to the UCM 2020 Project

Transit Facilities Impacts

The analysis conducted for the UC Merced Campus in **Section 4.13, Volume 2**, indicates that the proposed Campus would not substantially increase demand for regional and local transit services. The 2009 LRDP policies provide for a campus street system designed to meet the travel time and maneuvering requirements or transit vehicles, including appropriately sized travel lanes, bus stops and pull-outs, and connectivity to key destinations. LRDP policies provide for high transit levels of service and operating efficiency, integration of regional campus transit services, and a broad-based user-fee program for the campus that has been demonstrated effective in other university environments. The campus already provides bus service connecting the campus to downtown Merced, Merced College, and the Castle research facilities. In addition, transit service to the campus is envisioned in the most recent Short-Range Transit Plan by Merced County Transit. Therefore, impacts on the transit system associated with the campus, including the UCM 2020 Project, would be less than significant.

Pedestrian and Bicycle Impacts

As noted in **Section 4.13, Volume 2**, development of the proposed campus would generate pedestrian and bicycle travel in higher concentrations and amounts than found in other parts of the county. LRDP policies provide for ongoing coordination with neighboring jurisdictions and regional agencies to manage traffic growth and coordinate timely implementation of bicycle and pedestrian systems and services. The policies contained in the Merced County Regional Commuter Bicycle Plan and in the Merced and Atwater Bicycle Plan also support the improvement of bikeway connections to the Campus and University Community. With implementation of policies in the 2009 LRDP, the Merced County Regional Commuter Bicycle Plan and the Merced and Atwater Bicycle Plan, the impact of campus development, including the UCM 2020 Project, would be less than significant.

Parking Impacts

Section 4.13, Volume 2, notes that development of the Campus could generate off-site "spill-over" parking demand if parking supply is not provided at a pace commensurate with student, faculty, and staff growth. The 2009 LRDP envisions providing a parking supply to meet campus demand for a targeted 90 percent peak occupancy level. The actual timing of the construction of new parking as the campus develops beyond its current size will depend on careful monitoring of actual parking occupancy levels and corresponding demand estimates. LRDP policies provide for development of a parking supply/demand Master Plan for the campus, and for effective management of parking supply to meet changing demand. Other LRDP policies define parking enforcement to prevent unacceptable impacts of major generators on sensitive adjoining uses and define parking demand management measures. Policies also offer alternative mode incentives and provide options to reduce driving and parking. As concluded in **Section 4.13, Volume 2**, with implementation of the 2009 LRDP policies, impacts of campus development, including the UCM 2020 Project, related to parking would be less than significant.

4.13.2.4 Project Impacts and Mitigation Measures

Existing Plus UCM 2020 Project

The following analysis measures the effects of development of the UCM 2020 Project relative to existing conditions, i.e., without any other traffic growth from other development in the study area. The traffic analysis for the Existing Plus UCM 2020 Project case assumes only existing roadway facilities are in place.

It is important to note that the Existing Plus UCM 2020 Project case is an artificial scenario that is presented to highlight the impacts of project traffic alone, without any roadway improvements or non-project traffic growth that would be expected by the year 2020. However, since this scenario would not

actually occur, for purposes of significance determination and mitigation development, the 2020 Plus UCM 2020 Project analysis, presented in the next section, is used. Thus, the impacts identified below for the Existing Plus UCM 2020 Project scenario are presented for information only.

Trip generation rates for UCM 2020 Project are presented in **Table 4.13-1, Trip Generation – UCM 2020 Project**, below. This trip generation takes into account the fact that 50 percent of the students would be living on campus by 2020. All net new campus trips are assumed to be regional trips traveling externally to the campus.

Table 4.13-1
Trip Generation – UCM 2020 Project

	Unit (students)	Trip Rate	Trip Generation	Regional		Local	
				Prod	Attr	Prod	Attr
Campus	10,000	2.08/Student	20,800	10,400	10,400	0	0
Trip Generation			20,800	10,400	10,400	0	0

Source: Fehr & Peers, October 2008

UCM 2020 Impact TRANS-1: Implementation of the UCM 2020 Project would not result in an exceedance of the LOS threshold along local roadway segments under Existing Plus UCM 2020 Project conditions. (*Less than Significant*)

Table 4.13-2, Roadway Level of Service – Existing and Near Term Conditions, presented at the end of this section, shows the roadway capacity assumptions and LOS results for the Existing, Existing Plus UCM 2020 Project, 2020 No Project, and 2020 Plus UCM 2020 Project scenarios. No roadway segments are projected to be over capacity in 2008 with the addition of project traffic. The project does have impacts on several roadway segments under 2020 conditions, as described in the next section.

Mitigation Measure: No mitigation is required.

UCM 2020 Impact TRANS-2: With the addition of project traffic, the LOS of three of the study intersections would deteriorate to unacceptable levels under Existing Plus UCM 2020 Project conditions. (*Significant; Significant and Unavoidable*)

Table 4.13-3, Intersection LOS – Existing and Near Term Conditions, presented at the end of this section, shows the intersection LOS results for the Existing, Existing Plus UCM 2020 Project, 2020 No

Project, and 2020 Plus UCM 2020 Project scenarios. As indicated by shaded entries in the table, the addition of project traffic would cause the three signalized intersections listed below to operate poorly under existing plus project conditions:

Intersection 11, Lake Road and Yosemite Avenue. As shown in **Table 4.13-3**, the addition of traffic from the UCM 2020 Project would cause the operation of the intersection of Lake Road and Yosemite Avenue to deteriorate from LOS B to LOS F in both the AM and PM peak hours. This is considered a significant impact.

Intersection 14, R Street and Olive Avenue. As shown in **Table 4.13-3**, the addition of traffic from the UCM 2020 Project would cause the operation of the intersection of R Street and Olive Avenue to deteriorate from LOS D in the PM peak hour to LOS E. This is considered a significant impact.

Intersection 30, Martin Luther King Jr. Way and SR-99 Northbound Ramps. As shown in **Table 4.13-3**, the addition of traffic from the UCM 2020 Project would cause the operation of the intersection of Martin Luther King Jr. Way and SR-99 Northbound Ramps to deteriorate from LOS D to LOS E in the PM peak hour. This is considered a significant impact.

As discussed above, the UCM 2020 Project would be constructed over a period of several years rather than developed all at one time. An analysis based on the addition of all project traffic to existing (2008) conditions, although required by CEQA, therefore represents a worst-case scenario rather than a realistic assessment of project impacts. Moreover, the increase in traffic resulting from the UCM 2020 Project would not be expected to reach its maximum level until 2020. A scenario that represents project development and impacts as they would actually occur is presented in the discussion under Impacts TRANS-3 and TRANS-4 below.

The physical improvements necessary to reduce impacts under the Existing Plus UCM 2020 Project scenario to a less than significant level are shown in **Table 4.13-4, Intersection Impacts, Mitigation Measures, and Percent Contribution to Traffic Growth for the UCM 2020 Project**. As shown in **Table 4.13-5, Intersection LOS – UCM 2020 Project Impacts With and Without Mitigation**, these improvements would restore the intersection operations to acceptable levels. However, a program of planned improvements will be made to local roadways during the period when the UCM 2020 Project would be developed that would allow all of the affected intersections to operate at acceptable levels of service. These improvements would mitigate long-term impacts to both roadway segments and intersection levels of service. To address the impacts of campus development under the 2009 LRDP, including the UCM 2020 Project, the Campus will implement the following mitigation measure.

UCM 2020 MM TRANS-2: The Campus shall implement **Program Level Mitigation Measure TRANS-1**, pursuant to which it will monitor traffic growth related to the campus and pay its proportional share of the cost of the required improvement.

Significance after Mitigation: Although payment of proportional share of the cost of these improvements would mitigate the impact of the proposed project, because the improvements are the responsibility of others, there is no assurance that they would be built. The impact is therefore concluded to be significant and unavoidable.

2020 Conditions Plus UCM 2020 Project

The following analysis measures the effects of development of the UCM 2020 Project relative to conditions that would exist in 2020, i.e., project traffic added to traffic growth from other development in the study area.

UCM 2020 Impact TRANS-3: Implementation of the UCM 2020 Project would result in an exceedance of the LOS threshold along local roadway segments under 2020 Plus UCM 2020 Project conditions. (*Significant; Significant and Unavoidable*)

Table 4.13-2, Roadway Level of Service – Existing and Near Term, presented at the end of this section, shows the roadway capacity assumptions and LOS results for the Existing, Existing Plus UCM 2020 Project, 2020 No Project, and 2020 Plus UCM 2020 Project scenarios. For the 2020 scenario, no roadway segments are predicted to operate above capacity.

However, the UCM 2020 Project would add 1 percent or more to the total future traffic projected on several roadway segments for which there are planned improvements, as indicated by the shaded cells in **Table 4.13-2**. Impacts at these locations would be significant. The percentage of campus traffic added to those roadway segments is shown in **Table 4.13-6, Project Contribution to Improved Segments with Planned Improvement Projects**.

UCM 2020 MM TRANS-3: The Campus shall implement **Program Level Mitigation Measure TRANS-1A**, pursuant to which it will monitor traffic growth related to the campus and pay its proportional share of the cost of the above listed improvement.

Significance after Mitigation: Although payment of proportional share of the cost of these improvements would mitigate the impact of the proposed project, because the improvements are the responsibility of others, there is no assurance that they would be built. The impact is therefore concluded to be significant and unavoidable.

UCM 2020 Impact TRANS-4: With the addition of project traffic, the LOS of the study intersections would not deteriorate to unacceptable levels under 2020 Plus UCM 2020 Project conditions. (*Less than Significant*)

The analysis of the 2020 Plus UCM 2020 Project scenario assumes that intersections on roadway segments with planned improvements would receive associated capacity improvements; in addition, the analysis assumes that all signals would be optimized to respond to the future traffic volumes, which is standard traffic engineering and traffic management practice. (The Existing Plus UCM 2020 Project scenario does not assume re-optimization). With these assumptions, the study intersections are all projected to operate at acceptable levels of service. **Table 4.13-4** shows the intersection LOS results for the Existing, Existing Plus UCM 2020 Project, 2020 No Project, and 2020 Plus UCM 2020 Project scenarios. As indicated in the table, the 2020 Plus UCM 2020 Project scenario would not result in any significant impacts.

Mitigation Measure: No mitigation measure is required.

Table 4.13-2
Roadway Level of Service – Existing and Near Term Conditions (2020)

No.	Roadway Segment	Location	Existing							2020						
			Facility Type	Capacity	# Lanes	Existing No Project		Existing + UCM 2020 Project		Facility Type	Capacity	# Lanes	2020 No Project		2020 + UCM 2020 Project	
						Volume	LOS	Volume	LOS				Volume	LOS	Volume	LOS
1	Lake Road	Cardella to Bellevue	Collector	12,000	2	2,450	A	6,800	A	Collector	12,000	2	4,650	A	5,900	A
1A	Campus Parkway	Cardella to Bellevue	DOES NOT EXIST													
2	Lake Road	Yosemite to Cardella	Collector	12,000	2	2,500	A	10,300	D	Collector	12,000	2	8,400	B	9,350	B
2A	Campus Parkway	Yosemite to Cardella	DOES NOT EXIST													
3	McKee Road	South of Yosemite Ave.	Arterial	18,000	2	5,250	A	7,000	A	Arterial	18,000	2	8,500	A	9,900	A
4	McKee Road	South of Olive Ave.	Arterial	18,000	2	8,250	A	8,700	A	Arterial	18,000	2	11,350	B	12,500	B
5	W. Yosemite Avenue	SR-59 to G St.	Arterial	36,000	4	12,150	A	12,500	A	Arterial	36,000	4	12,050	A	12,100	A
6	E. Yosemite Ave.	G St. to N. Parsons	Arterial	18,000	2	15,100	C	17,400	D	Arterial	36,000	4	18,100	A	18,100	A
7	E. Yosemite Ave.	N. Parsons to Lake Rd.	Collector	12,000	2	4,850	A	10,900	D	Arterial	24,000	4	4,750	A	12,900	A
8	E. Yosemite Ave.	Lake Rd. to Kibby Rd.	County Road	21,600	2	2,450	A	3,300	A	County Road	21,600	2	850	A	950	A
9	E. Yosemite Ave.	East of Kibby Rd.	County Road	21,600	2	2,150	A	2,800	A	County Road	21,600	2	1,050	A	1,150	A
10	Yosemite Parkway	West of Santa Fe Ave.	Arterial	18,000	2	10,400	A	10,400	A	Arterial	36,000	4	6,100	A	6,150	A
11	Yosemite Parkway	East of Santa Fe Ave.	Highway	43,200	2	7,550	A	7,600	A	Highway	86,400	4	6,850	A	7,050	A
12	W. Olive Avenue	East of SR 59	Arterial	54,000	6	32,250	A	32,300	B	Arterial	54,000	6	38,250	B	38,300	B
13	W. Olive Avenue	West of G St.	Arterial	54,000	6	26,600	A	27,100	A	Arterial	54,000	6	29,550	A	28,950	A
14	E. Olive Ave.	East of G St.	Arterial	36,000	4	18,500	A	19,500	A	Arterial	36,000	4	22,500	B	22,850	B
15	G Street	Cardella to Bellevue	Arterial	18,000	2	6,350	A	9,300	A	Arterial	36,000	4	14,850	A	15,950	A
16	G Street	Yosemite to Cardella	Arterial	18,000	2	6,650	A	8,700	A	Arterial	36,000	4	12,950	A	14,550	A
17	G Street	E. Olive Ave to Yosemite Ave	Arterial	36,000	4	15,000	A	16,200	A	Arterial	36,000	4	21,500	A	21,700	B
18	G Street	South of Olive Ave.	Arterial	36,000	4	25,950	B	26,800	B	Arterial	36,000	4	30,050	C	30,050	C
19	M Street	North of 23rd St.	Arterial	36,000	4	18,350	A	18,400	A	Arterial	36,000	4	16,800	A	17,200	A
20	M Street	South of 23rd St.	Arterial	36,000	4	17,500	A	17,500	A	Arterial	36,000	4	15,750	A	15,750	A
21	SR-59	South of Bellevue	Arterial	18,000	2	6,000	A	7,200	A	Arterial	18,000	2	8,300	A	8,600	A
22	SR-59	South of Cardella	Arterial	18,000	2	8,100	A	9,700	A	Arterial	18,000	2	11,650	B	12,400	B
23	SR-59	South of W. Yosemite	Arterial	18,000	2	12,750	B	13,000	B	Arterial	18,000	2	18,000	D	18,000	D
24	SR-59	16th St. to W. Olive	Arterial	18,000	2	16,600	D	16,600	D	Arterial	36,000	4	32,650	D	32,650	D
25	Cardella Road	SR 59 to M St.	Collector	36,000	4	250	A	300	A	Arterial	36,000	4	950	A	1,300	A
26	Cardella Road	G St. to Lake Rd.	Collector	36,000	4	100	A	600	A	Arterial	36,000	4	3,700	A	6,750	A
27	16th St.	West of SR-59	Arterial	36,000	4	20,400	A	23,400	A	Arterial	36,000	4	26,650	B	27,200	C

No.	Roadway Segment	Location	Existing							2020						
			Facility Type	Capacity	# Lanes	Existing No Project		Existing + UCM 2020 Project		Facility Type	Capacity	# Lanes	2020 No Project		2020 + UCM 2020 Project	
						Volume	LOS	Volume	LOS				Volume	LOS	Volume	LOS
28	Kibby Road	South of Yosemite Ave.	County Road	21,600	2	1,250	A	1,500	A	County Road	21,600	2	850	A	850	A
29	Kibby Road	North of Yosemite Pkwy.	County Road	21,600	2	1,950	A	2,000	A	County Road	21,600	2	900	A	950	A
30	N. Parsons Avenue	E. Olive to E. Yosemite	Collector	12,000	2	5,600	A	7,800	A	Collector	12,000	2	10,150	C	10,750	D
31	N. Parsons Avenue	Santa Fe to E. Olive	Collector	12,000	2	3,900	A	9,900	A	Collector	12,000	2	11,400	D	11,650	D
32	Bellevue Road	G St. to Lake Rd.	Collector	12,000	2	3,700	A	10,700	B	Arterial	54,000	6	4,400	A	10,100	A
33	Bellevue Road	SR-59 to G St.	Collector	12,000	2	1,800	A	4,300	A	Arterial	43,200	4	9,750	A	10,100	A
34	Bellevue Road	West of SR-59	Collector	12,000	2	2,650	A	3,900	A	Collector	36,000	2	6,950	A	10,350	A
35	SR-140	West of Massasso Ave.	Highway	43,200	4	7,450	A	7,500	B	Highway	12,000	4	9,050	A	9,050	A
36	SR-99	North of 16th St.	Freeway	96,000	4	56,000	A	56,500	D	Freeway	96,000	4	66,750	B	67,750	B
37	SR-99	North of M St.	Freeway	96,000	4	52,000	A	52,400	B	Freeway	96,000	4	62,800	B	62,800	B
38	SR-99	South of Yosemite Pkwy.	Freeway	96,000	4	41,500	A	41,500	B	Freeway	96,000	4	41,200	A	41,400	A
39	SR-99	South of Mission Ave.	Freeway	86,400	4	40,000	A	40,100	A	Freeway	96,000	4	52,250	A	52,500	A
40	Campus Parkway	E. Yosemite to E. Olive	DOES NOT EXIST							Expressway	56,400	4	15,750	A	17,650	A
41	Campus Parkway	E. Olive to SR-99	DOES NOT EXIST							Expressway	56,400	4	20,700	A	22,300	A
42	Cardella Road	G St. to M St.	Collector	12,000	2	300	A	300	A	Arterial	36,000	4	9,600	A	13,000	A
43	R Street	W. Yosemite to Bellevue Rd.	DOES NOT EXIST							Arterial	36,000	4	21,650	B	22,700	B
44	N. Parsons Avenue/ N. Gardner Avenue	E. Yosemite to Bellevue Rd.	DOES NOT EXIST							Arterial	36,000	4	9,000	A	12,950	A

shading = 1 percent project contribution to a roadway with a planned improvement project that is not fully funded
Source: Fehr & Peers, October 2008.

Table 4.13-3
Intersection LOS – existing and Near Term Conditions

Int No.	Intersection	Control (Existing)	Control (2020)	Period	Existing		Existing + UCM 2020 Project		2020 No Project		2020 + UCM 2020 Project	
					Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Snelling Hwy. (SR 59) and Bellevue Road	AWS	Signal	AM	13	B	15	B	31	C	44	D
				PM	11	B	12	B	27	C	30	C
2	G Street and Bellevue Road	AWS	Signal	AM	10	B	14	B	20	B	20	B
				PM	14	B	16	C	18	B	18	B
3	Lake Road and Bellevue Road	AWS	Signal	AM	10	A	28	D	32	C	44	D
				PM	9	A	12	B	31	C	35	C
4	Snelling Hwy. (SR 59) and Cardella Road	SSSC	Signal	AM	15	B	15	B	15	B	16	B
				PM	11	B	14	B	15	B	15	B
5	G Street and Cardella Road	SSSC	Signal	AM	13	B	14	B	24	C	32	C
				PM	16	C	18	C	17	B	17	B
6	Lake Road and Cardella Road	AWS	Signal	AM	10	A	26	D	20	B	18	B
				PM	10	A	18	C	12	B	18	B
7	Snelling Hwy. (SR 59) and Yosemite Ave	Signal	Signal	AM	14	B	15	B	14	B	14	B
				PM	12	B	12	B	14	B	14	B
8	G St and Yosemite Ave.	Signal	Signal	AM	**58**	**E**	**61**	**E**	31	C	31	C
				PM	42	D	43	D	27	C	27	C
9	Parsons and Yosemite Ave.	AWS	Signal	AM	16	C	25	C	17	B	17	B
				PM	11	B	20	C	15	B	15	B
10	McKee and Yosemite Ave.	Signal	Signal	AM	15	B	20	C	13	B	17	B
				PM	12	B	13	B	11	B	13	B
11	Lake and Yosemite Ave.	SSSC	Signal	AM	12	B	**>100**	**F**	13	B	19	B
				PM	11	B	**>100**	**F**	18	B	32	C
12	Kibby and Yosemite Ave.	SSSC	Signal	AM	11	B	13	B	5	A	6	A
				PM	10	A	12	B	6	A	7	A

Int No.	Intersection	Control (Existing)	Control (2020)	Period	Existing		Existing + UCM 2020 Project		2020 No Project		2020 + UCM 2020 Project	
					Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
13	Snelling Hwy. (SR 59) and Olive	Signal	Signal	AM PM	51 47	D D	55 49	D D	45 44	D D	45 44	D D
14	R St and Olive	Signal	Signal	AM PM	39 55	D D	40 **56**	D **E**	33 47	C D	33 52	C D
15	M St and Olive	Signal	Signal	AM PM	**57** **61**	**E** **E**	**59** **62**	**E** **E**	50 52	D D	50 52	D D
16	G St and Olive	Signal	Signal	AM PM	47 **56**	D **E**	48 **57**	D **E**	39 48	D D	39 48	D D
17	Parsons and Olive	Signal	Signal	AM PM	23 21	C C	25 24	C C	30 36	C D	30 37	C D
18	McKee and Olive	AWS	Signal	AM PM	11 8	B A	32 22	D C	47 43	D D	49 47	D D
19	Kibby and Olive	AWS	AWS	AM PM	8 8	A A	9 8	A A	8 8	A A	9 9	A A
20	Southern Pacific Ave and 16th St-SR-99 SB Ramps	SSSC	SSSC	AM PM	15 16	B C	15 16	C C	17 16	C C	16 17	C C
21	Snelling Hwy. (SR 59) and 16th St.	AWS	Signal	AM PM	16 18	C C	17 19	C C	28 30	C C	29 30	C C
22	Santa Fe and McKee	AWS	Signal	AM PM	14 10	B A	15 10	B A	11 9	B A	11 9	B A
23	Santa Fe and Yosemite Pkwy.	SSSC	Signal	AM PM	35 21	D C	9 9	A A	12 11	B B	12 11	B B
24	Lake and Bellevue	SSSC	Signal	AM PM	15 14	B B	8 8	A A	19 15	B B	23 22	C C
25	Yosemite Pkwy and SR 99 NB Ramps	SSSC	Signal	AM PM	5 5	A A	11 11	B B	16 17	B B	15 16	B B

Int No.	Intersection	Control (Existing)	Control (2020)	Period	Existing		Existing + UCM 2020 Project		2020 No Project		2020 + UCM 2020 Project	
					Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
26	Mission Ave and SR 99 SB Ramps	Signal	Signal	AM PM	5 5	A A	5 5	A A	17 8	B A	30 8	C A
27	Mission Ave and SR 99 NB Ramps	Signal	Signal	AM PM	6 6	A A	6 6	A A	23 15	C B	20 15	C B
28	V St and 16th St.	Signal	Signal	AM PM	**59** **65**	**E** **E**	**62** **68**	**E** **E**	47 55	D D	47 52	D D
29	16th St and R St.	Signal	Signal	AM PM	29 44	C D	29 44	C D	28 33	C C	28 33	C C
30	Martin Luther King Jr. Way and SR-99 NB Ramps	SSSC	SSSC	AM PM	22 30	C D	23 **36**	C **E**	27 9	D A	27 9	D A
31	Kibby and Yosemite Pkwy.	SSSC	SSSC	AM PM	26 27	D D	24 29	C D	25 29	C D	25 29	C D
32	Martin Luther King Jr. Way and SR-99 SB Ramps	Signal	Signal	AM PM	46 52	D D	47 52	D D	42 42	D D	42 42	D D
33	G St and SR-99 NB Off-Ramp/14th St.	SSSC	SSSC	AM PM	16 19	C C	17 22	C C	18 16	C C	19 22	C C
34	G St and SR-99 SB On-Ramp	SSSC	SSSC	AM PM	8 9	A A	8 9	A A	8 9	A A	8 9	A A
35	Childs Ave. and Campus Pkwy.	DOES NOT EXIST	Signal	AM PM	DOES NOT EXIST				12 14	B B	18 16	B B
36	Yosemite Pkwy. and Campus Pkwy.	DOES NOT EXIST	Signal	AM PM	DOES NOT EXIST				37 26	D C	31 55	C D
37	E. Olive Ave and Campus Pkwy.	DOES NOT EXIST	Signal	AM PM	DOES NOT EXIST				21 18	C B	20 18	B B
38	E. Yosemite Ave. and Campus Pkwy.	DOES NOT EXIST	Signal	AM PM	DOES NOT EXIST				11 20	B B	21 34	C C

Int No.	Intersection	Control (Existing)	Control (2020)	Period	Existing		Existing + UCM 2020 Project		2020 No Project		2020 + UCM 2020 Project	
					Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
39	Dunn Rd. and Campus Pkwy.	DOES NOT EXIST										
40	Cardella Ave. and Campus Pkwy.	DOES NOT EXIST										
41	Road D and Campus Pkwy.	DOES NOT EXIST										
41A	Road D and Lake Rd.	SSSC	Signal	AM PM	DOES NOT EXIST		30 10	D B	DOES NOT EXIST		14 21	B C
42	Bellevue Rd. and Campus Pkwy.	DOES NOT EXIST										
43	Dunn Rd. (West) and Campus Pkwy.	DOES NOT EXIST										
44	Road B and Campus Pkwy.	DOES NOT EXIST										
45	Road C and Campus Pkwy.	DOES NOT EXIST										
46	Road E and Campus Pkwy.	DOES NOT EXIST										

Bold Not Shaded *– below-standard LOS*
Bold and Shaded *– significant impact*
Source: Fehr & Peers, 2008.

Table 4.13-4
Intersection Impacts, Mitigation Measures, and Percent Contribution to Traffic Growth for the UCM 2020 Project

Intersection	Mitigation	Period	Existing With UCM 2020 Project		2020 With UCM 2020 Project	
			% Campus	% Other	% Campus	% Other
11. Lake Rd and Yosemite Ave.	Signalize Intersection; add SBR and WBR lanes	PM	92%	8%	NO IMPACTS	
14. R St and Olive Ave.	Optimize signal timings	PM	2%	98%		
30. Martin Luther King Jr. Way and SR-99 NB Ramps	Signalize Intersection	PM	< 1%	99%		

Source: Fehr & Peers, October 2008

Table 4.13-5
Intersection LOS – UCM 2020 Campus With and Without Mitigation

Intersection	Peak Hour	Existing + UCM 2020 Project			Existing + UCM 2020 Mitigated		
		Traffic Control	Delay	LOS	Traffic Control	Delay	LOS
8. G Street and Yosemite Ave.	AM PM	Signal	61 43	E D	Signal	37 29	D C
11. Lake Rd and Yosemite Ave.	AM PM	Signal	>120 104	F F	Signal	51 40	D D
14. R St and Olive Ave.	AM PM	Signal	40 56	D E	Signal	19 22	B C
15. M St and Olive Ave.	AM PM	Signal	59 62	E E	Signal	36 51	D D
16. G St and Olive Ave.	AM PM	Signal	48 57	D E	Signal	45 44	D D
28. V St and 16th St.	AM PM	Signal	62 68	E F	Signal	46 54	D D
30. Martin Luther King Jr. Way and SR-99 NB Ramps	AM PM	SSSC	23 36	C E	Signal	10 9	A A

Source: Fehr & Peers, October 2008

Table 4.13-6
Project Contribution to Improved Segments with Planned Improvement Projects

Street	Location	2020 + Project	
		% Campus	% Other
1. Lake Road	Cardella to Bellevue	92%	8%
2. Lake Road	Yosemite to Cardella	49%	51%
5. E. Yosemite Avenue	SR-59 to R St.	4%	96%
7. E. Yosemite Avenue	N. Parsons to Lake Rd.	14%	86%
10. Yosemite Parkway	West of Santa Fe	2%	98%
11. Yosemite Parkway	East of Santa Fe	2%	98%
15. G Street	Cardella to Bellevue	2%	98%
16. G Street	E. Yosemite to Cardella	5%	95%
25. Cardella Road	SR-59 to M St.	7%	93%
26. Cardella Road	G St. to Lake Rd.	26%	74%
32. Bellevue Road	G St. to Lake Rd.	83%	17%
33. Bellevue Road	G St. to SR-59	4%	96%
34. Bellevue Road	West of SR-59	5%	95%
40. Campus Parkway	E. Yosemite to E. Olive	19%	81%
41. Campus Parkway	E. Olive to SR-99	14%	86%
42. Cardella Road	Between G St. and M St.	15%	85%
43. R Street	W. Yosemite to Bellevue	3%	97%
44. N. Parsons/Gardner	E. Yosemite to Bellevue	18%	82%

Source: Fehr & Peers, October 2008

4.14 UTILITIES AND SERVICE SYSTEMS

4.14.1 ENVIRONMENTAL SETTING

Section 4.14, Utilities and Service Systems, in **Volume 2** of this Draft EIS/EIR presents the existing utilities and service systems in the project vicinity. The utilities and service systems for the UC Merced and University Community Project area, including the UCM 2020 Project site, are described in Volume 2 and this section summarizes the conditions and impacts relevant to the UCM 2020 Project. The primary concerns related to utilities and service systems are the potential environmental effects of supplying the proposed project with potable water, water for fire protection, irrigation water, wastewater disposal, solid waste disposal, electricity, and natural gas.

As described in Volume 2 of this Draft EIS/EIR, the entire UC Merced Campus is located within unincorporated Merced County. Under existing conditions, the Phase 1.1 portion of the campus site is served by City water and wastewater services under a service agreement with the City; the remainder of the campus site is not served by any municipal utility system. It is anticipated that the UCM 2020 Project site would be annexed to the City of Merced in the future and would receive City services and utilities. In the event that annexation does not take place or annexation is delayed, the University plans to enter into an agreement with the City, similar to the agreement for Phase 1.1 Campus, for the provision of water and sewer service to the UCM 2020 Project site.

4.14.1.1 Water Services

Section 4.14, **Volume 2**, provides a description of water services currently available within the Campus. Discussion of the size and status of the underground aquifer that provides this water is presented in **Section 4.8, Hydrology and Water Quality,** in **Volume 2.**

Potable water is provided to the Phase 1.1 Campus by the City of Merced via its municipal distribution system. An on-campus distribution system delivers potable water to each building within the Phase 1.1 Campus. Irrigation water for the Phase 1.1 Campus is also obtained from the City of Merced. Non-potable water may also be obtained from the MID canals for the campus in the future. There are no existing recycled water facilities in the vicinity of the campus.

4.14.1.2 Wastewater

Section 4.14, **Volume 2**, provides a description of wastewater services currently available within the campus, including the UCM 2020 Project site. As indicated in Volume 2, the City of Merced owns and operates a municipal wastewater treatment system and provides service to all areas within City limits and also to some unincorporated areas outside the City limits, including the Phase 1.1 Campus.

The Phase 1.1 Campus is connected to the City of Merced wastewater collection and treatment system by way of a sanitary sewer line in Bellevue Road that connects to the City of Merced's sewer system at an existing 27-inch trunk line on G Street near Merced College (see **Figure 3.0-7, Conceptual Sanitary Sewer System,** in **Volume 1**). The sewer pipeline under Bellevue Road is sized to serve the full development of the campus, and the existing 27-inch sewer pipeline on G Street has the capacity to serve a campus with up to 10,000 FTE students and associated faculty and staff (City of Merced 2008). For campus growth up to 10,000 FTE students, no off-site improvements to the wastewater collection system are needed. As indicated in Volume 2, wastewater generated on the Phase 1.1 Campus is treated at the City of Merced wastewater treatment plant (WWTP). The WWTP currently has a secondary treatment capacity of 12 million gallons per day (mgd), but is only permitted to treat up to 10 mgd. It currently treats an average flow of 8 mgd. In 2006, the City certified an EIR (SCH# 2005101135) for the phased expansion of the WWTP to a design capacity of 20 mgd. It is anticipated that the WWTP's permitted capacity will increase by 1.5 mgd (to 11.5 mgd) by 2010 after its first expansion phase.

4.14.1.3 Solid Waste Disposal

Section 4.14, **Volume 2**, provides a description of solid waste disposal services currently available to the campus, including the UCM 2020 Project site. Wastes not defined as municipal solid waste, including hazardous and radioactive waste, are discussed in **Section 4.7, Hazards and Hazardous Materials**, of this Draft EIR/EIS.

Nonhazardous municipal waste from the campus would be sent to the Merced County Highway 59 Landfill, located at 6049 North Highway 59. This landfill has a permitted capacity of approximately 30 million cubic yards and is permitted to receive up to 1,115 tons per day (CIWMB 2008).

4.14.1.4 Electricity and Natural Gas

Section 4.14, **Volume 2**, provides a description of electricity and natural gas currently available within the Campus, including the UCM 2020 Project site.

4.14.2 IMPACTS AND MITIGATION MEASURES

4.14.2.1 Standards of Significance

Refer to **Section 4.14**, **Volume 2**, for a discussion of applicable significance criteria.

4.14.2.2 Analytical Methodology

See **Section 4.14**, **Volume 2,** for a detailed description of the analytical methodology used to evaluate the utilities and service systems impacts associated with the overall campus development, including the effects of the UCM 2020 Project.

Potable Water and Water for Fire Protection

The UCM 2020 Project would require an estimated 648 acre-feet per year (afy) of potable water under high water conservation conditions.[2] This includes residential and academic use and water for cooling purposes.

Irrigation

The proposed UCM 2020 Project would require approximately 360 afy of water for irrigation of turf grass and other landscaping, assuming a high degree of water conservation**.**[3]

Wastewater

As described in **Section 4.14, Volume 2**, water use and wastewater flows are related. In general, wastewater is generated from indoor water uses, and thus, is affected by water conservation efforts. The estimates of wastewater that would be generated assume that 90 percent of indoor water demand and 30 percent of cooling water demand would become wastewater. Based on projected water demand from **Table 4.14-1** in **Section 4.14, Volume 2**, the proposed UCM 2020 Project would generate approximately 0.47 mgd of wastewater, assuming a high degree of water conservation.[4]

---

2 Based on 15 gallons per day (gpd) per person and 55 gpd per bed for a population of 13,574, including students, faculty staff, postdoctoral researchers, and other daily population.

3 Based on an irrigation rate of 3.0 feet per year for turf and 2.5 feet per year for non-turf uses. Percent of acreage that is irrigated is based on land coverage percentage projections by Clascape, May 30, 2008.

4 Based on 90 percent of Annual Indoor Water Demand. Assumes that 30 percent of cooling water is discharged directly to the sewer system.

Solid Waste

In 2007, the on-campus population of 2,361 persons generated about 618 tons of municipal solid waste that required disposal at a landfill. Based on existing waste generation rates, at buildout of the UCM 2020 Project, the UCM 2020 on-campus population would generate about 3,817 tons of solid waste per year.

4.14.2.3 Impacts Adequately Addressed at the Program Level or Not Applicable to the UCM 2020 Project

As stated in **Section 4.14, Volume 2**, implementation of the Campus project would generate solid waste that would not require expansion of the regional landfill. The University of California adopted a Policy on Sustainable Practices, which sets waste diversion goals of 75 percent by June 2012 and zero waste by 2020 for UC campuses. Therefore, the Campus, including the UCM 2020 Project, would not generate solid waste that would substantially affect the capacity of the Highway 59 Landfill. As discussed in **Section 4.14, Volume 2**, the maximum electric demand at full development of the campus, including the 2020 Project, is estimated at 18 MW. Service from the grid would be maintained for redundancy and reliability and the grid would be the source of electricity while on-site alternate electricity sources are developed. Development of the campus would require on- and off-site improvements, including an extension of electric transmission lines (Impact UTILS-4). The environmental impacts of the off-site and on-site portions of this power line are evaluated throughout Volume 2 of this Draft EIS/EIR. This power line would not be required to serve the electricity needs of the campus through buildout of the UCM 2020 Project.

In addition, environmental effects from the construction of off-site utilities, including gas lines, are also discussed throughout Volume 2 of this EIR/EIS, and have been determined to be less than significant. For the reasons presented above and in **Section 4.14, Volume 2**, development of the UCM 2020 Project, would result in less-than-significant impacts related to electrical and natural gas infrastructure.

4.14.2.4 Project Impacts and Mitigation Measures

UCM 2020 Impact UTILS-1: **The UCM 2020 Project-related demand for potable water for indoor and outdoor uses would require the construction of new water supply and conveyance facilities, which would not result in significant impacts on the environment. (*Less than Significant*)**

The UCM 2020 Project would generate a demand for 1,151 afy of potable water for indoor uses at full development (Stantec 2008). This estimate assumes a high degree of water conservation based on best management practices (BMPs) for conserving water, and compliance with state and federal plumbing

fixture requirements. On the UCM 2020 Project site, indoor conservation methods would include water conservation awareness campaigns, installation of water-efficient bathroom fixtures, water-efficient practices for irrigation, and regular monitoring of water usage. The design of the campus includes irrigation water conservation measures such as heavy mulching, landscaping with native, drought-resistant plants, and drip irrigation systems.

As described in detail in **Section 4.14, Volume 2**, the fire flow needs of the UCM 2020 Project would be met by the existing 16-inch water supply line located within the roadway alignment of Bellevue Road and by the on-campus well. It is anticipated that this supply line and on-campus well would sufficiently serve the UCM 2020 Project. Therefore, no improvements to this water line or an additional water line would be needed. Infrastructure improvements planned as part of the UCM 2020 Project include extension of fire flow lines to all areas of the UCM 2020 site.

Government Code Section 54999 authorizes public utilities to charge the University a limited capital facilities fee under certain circumstances (i.e., a non-discriminatory charge to defray the actual cost of that portion of a public utilities facility actually serving the University). This fee covers the Campus's share of construction cost, including the cost of mitigation measures to address environmental impacts from the construction of improvements, should any off-site improvements be necessary. In the event that there are any costs incurred by the City associated with the provision of water to campus development under the UCM 2020 Project, the University will comply with its obligations as authorized under Section 54999.

For the reasons presented above, the impacts of the proposed UCM 2020 Project related to water infrastructure and conveyance would be less than significant.

Mitigation Measure: No mitigation measure is required.

UCM 2020 Impact UTILS-2: **The UCM 2020 Project would generate wastewater flows that would not require construction of new conveyance or treatment facilities. (*Less than Significant*)**

Wastewater generated on the UCM 2020 Project site would require collection and conveyance to an on- or off-site wastewater treatment plant for treatment and disposal. The City has committed to provide wastewater treatment service to the campus, including the UCM 2020 Project site. As described above, it is anticipated that the WWTP's permitted capacity will increase to 11.5 mgd by 2010 after its first expansion phase.

In developing its plans to expand the WWTP, the City anticipated that development of the campus would generate about 2.25 mgd and provided for this daily flow in its planned expansion. Based on wastewater

generation rates from existing campus uses, it is anticipated that the UCM 2020 Project would generate 0.47 mgd of wastewater. If the 0.47 mgd flows associated with the UCM 2020 Project were added to the existing flows (8 mgd) from the existing development in the City of Merced, the total flows would be 8.47 mgd, well within the existing capacity of the WWTP. If 0.47 mgd associated with the UCM 2020 Project were added to the flows (17.1 mgd) from the full development of the rest of the City of Merced SUDP under the current City General Plan, the total flows would be 17.57 mgd, well within the capacity of the WWTP following expansion. Therefore, wastewater flows associated with development of the UCM 2020 Project could be accommodated within both the existing and approved capacity of the WWTP. No further improvements would be required. Therefore, there would be no impacts associated with the provision of expanded treatment plant capacity.

Government Code Section 54999 authorizes public utilities to charge the University a limited capital facilities fee under certain circumstances (i.e., a non-discriminatory charge to defray the actual cost of that portion of a public utilities facility actually serving the University). This fee covers the Campus's share of construction cost, including the cost of mitigation measures to address environmental impacts from the construction of improvements, should any off-site improvements be necessary. In the event that there are any costs incurred by the City associated with the provision of water to campus development under the UCM 2020 Project, the University will comply with its obligations as authorized under Section 54999.

To serve development within the portion of the Campus south of the Bellevue Road extension, an interim pump station may be needed to pump wastewater to the sewer pipeline in Bellevue Road. Impacts associated with construction and operation of the interim pump station are discussed in other sections of this Draft EIS/EIR, and were found to be less than significant. Therefore, the impacts related to the provision of wastewater service and associated infrastructure to the UCM 2020 Project would be less than significant.

Mitigation Measure: No mitigation measure is required.

4.15 OTHER CEQA CONSIDERATIONS

4.15.1 INTRODUCTION

This section describes all other California Environmental Quality Act (CEQA) topics not discussed in other sections of this volume of the Draft EIS/EIR that would either not be affected by the development of the UCM 2020 Project or for which the impacts of the UCM 2020 Project have been addressed in **Volumes 1** and **2.**

4.15.2 OTHER CEQA TOPICS

The 2002 Long Range Development Plan (LRDP) EIR (UC Merced 2002) concluded that there were no mineral resource zones (MRZ) present within the campus site. The 2004 UCP EIR (County of Merced 2004) found that the University Community site also does not contain any MRZ that require managed production (MRZ-2 area). Patches of undetermined sand and gravel resources categorized as MRZ-3a and MRZ-3b are located primarily in the northern and central-southern portion of the University Community site. Land areas classified MRZ-3a are underlain by geologic settings that are favorable environments for the occurrence of sand and gravel. Land areas classified MRZ-3b are underlain by geologic settings that appear to be favorable environments for sand and gravel (County of Merced 2004).

No delineated mineral recovery sites are located on the campus site. (UC Merced 2002) There are also no locally important mineral resource recovery sites delineated on any plans applicable to the University Community site. Implementation of the Proposed Action would not result in loss of availability of known mineral resources that would be of value to the region or residents of the state. Therefore, implementation of the Proposed Action would have no impact on mineral resources.

4.15.3 GLOBAL CLIMATE CHANGE

See Section **4.16, Global Climate Change**, in **Volume 2** of this Draft EIS/EIR for a discussion of impacts related to global climate change.

4.15.4 CUMULATIVE IMPACTS

See Section **5.0, Cumulative Impacts**, in **Volume 2** of this Draft EIS/EIR for a discussion of cumulative impacts.

4.15.5 GROWTH INDUCEMENT

See Section **6.0, Growth Inducement**, in **Volume 2** of this Draft EIS/EIR for a discussion of the potential for the UC Merced and University Community Project, including the UCM 2020 Project, to cause impacts related to growth inducement.

4.15.6 SIGNIFICANT AND UNAVOIDABLE ENVIRONMENTAL IMPACTS

See Section **7.0, Other CEQA Considerations**, in **Volume 2** of this Draft EIS/EIR for a discussion of significant environmental effects which cannot be avoided if the proposed UC Merced and University Community Project, including the UCM 2020 Project, is implemented.

4.15.7 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

See Section **7.0, Other CEQA Considerations**, in **Volume 2** of this Draft EIS/EIR for a discussion of significant irreversible environmental changes which would be involved in the proposed UC Merced and University Community Project, including the UCM 2020 Project, should it be implemented.

5.0 ALTERNATIVES

The California Environmental Quality Act (CEQA) requires that an EIR contain an analysis describing a range of reasonable alternatives to a project that could feasibly attain most of the basic objectives of the project while avoiding or substantially lessening any significant impacts. The analysis also evaluates the comparative merits of the alternatives (*State CEQA Guidelines* Section 15126.6). Alternatives that avoid or substantially reduce significant impacts are considered, even if these alternatives would impede to some degree the attainment of project objectives or would be more costly to the project applicant (*State CEQA Guidelines* Section 15126.6(b)). An EIR need not consider every conceivable alternative to a project, but rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation (*State CEQA Guidelines* Section 15126.6(a)).

The project has been described and analyzed in the previous sections of this volume of the Draft EIS/EIR with an emphasis on potentially significant and significant unavoidable impacts. The analysis in this section is intended to inform the public and decision-makers of alternatives to the project and to provide a meaningful evaluation, analysis, and comparison of these alternatives with the proposed project. As required by CEQA, this chapter also includes an analysis of the No Project Alternative.

A description of the complete range of alternatives considered for the UC Merced and University Community Project, of which the UCM 2020 Project is a part, is presented in **Section 3.0, Alternatives**, in **Volume 2** of this Draft EIS/EIR, and an analysis of the potential impacts of those alternatives is presented in **Section 4.0, Environmental Setting, Impacts, and Mitigation Measures**, in **Volumes 1 and 2** of the Draft EIS/EIR.

5.1 OBJECTIVES OF THE UCM 2020 PROJECT

Section 1 of **Volume 1** describes the need for a new UC campus. The specific need for the UCM 2020 Project is to construct the next several buildings and other facilities to provide adequate space for envisioned programs and enrollment growth through academic year 2019-20. All of the objectives of the 2009 LRDP also apply to the UCM 2020 Project. Additionally, the specific objectives are to:

- Construct the next set of buildings that support the projected enrollment growth and new programs that are anticipated to be established on the campus in the next 10 years;
- Construct buildings that are designed with enough flexibility to accommodate the growing university programs while providing state-of-the-art facilities for the growing campus population; and
- Develop facilities in a manner that promotes a logical development pattern for later phases of campus development.

5.2 IMPACTS OF THE UCM 2020 PROJECT

To develop project alternatives, the University considered the project objectives and reviewed the significant impacts of the proposed project, identified those impacts that could substantially be avoided or reduced through an alternative, and determined the appropriate range of alternatives to be analyzed. **Section 4.0, Environmental Setting, Impacts, and Mitigation Measures**, of this volume of the Draft EIS/EIR evaluates the potential for the proposed project to result in significant impacts to the following environmental topics: aesthetics; agricultural resources; air quality; biological resources; cultural resources; geology and soils; hazards and hazardous materials; hydrology and water quality; land use; noise; population and housing; public services; transportation and traffic; and utilities.

Impacts related to aesthetics (visual character and light and glare), air quality, and population growth were found to be significant and unavoidable. All other impacts were found to be less than significant or less than significant after incorporation of mitigation measures identified in this Draft EIS/EIR.

Aesthetics

Section 4.1, Aesthetics, of this volume of the Draft EIS/EIR identified potentially significant impacts related to visual character and visual quality (Impact AES-2) and light and glare (Impact AES-3) which could not be reduced to a less than significant level with project-level mitigation. These impacts of the UCM 2020 Project would be significant and unavoidable. The analysis also identified a potentially significant impact to scenic vistas (Impact AES-1), which could be reduced to a less than significant level with mitigation.

Agricultural Resources

Section 4.2, Agricultural Resources, identified less than significant impacts. No significant unavoidable impacts were identified for agricultural resources.

Air Quality

Section 4.3, Air Quality, identified potentially significant impacts related to operational emissions (Impact AQ-2) and cumulative impacts related to emissions of criteria pollutants (Impact AQ-3), which could not be reduced to a less than significant level with project-level mitigation. These impacts of the UCM 2020 Project would be significant and unavoidable. The analysis also identified less than significant impacts related to construction emissions.

Biological Resources

Section 4.4, Biological Resources, of this volume of the Draft EIS/EIR identified less than significant impacts. No significant and unavoidable impacts were identified for biological resources.

Cultural Resources

Section 4.5, Cultural Resources, of this volume of the Draft EIS/EIR, identified less than significant impacts on historic resources, archaeological resources, and human remains with mitigation. No significant unavoidable impacts were identified related to cultural resources.

Geology and Soils

Section 4.6, Geology and Soils, identified a potentially significant impact related to exposure of people and structures to seismic ground-shaking hazards, including liquefaction (Impact GEO-1), which would be reduced to a less than significant level with mitigation. No significant and unavoidable impacts were identified related to geology.

Hazards and Hazardous Materials

Section 4.7, Hazards and Hazardous Materials, identified a potentially significant impact related to exposure of the public or the environment to hazardous materials (Impact HAZ-1), which would be reduced to a less than significant level with mitigation. No significant unavoidable impacts were identified for hazards.

Hydrology and Water Quality

Section 4.8, Hydrology and Water Quality, of this volume of the Draft EIS/EIR, identified potentially significant impacts related to flooding (Impact HYD-2), which would be reduced to a less than significant level with project-specific mitigation. The analysis also identified less than significant impacts related to erosion and sedimentation. No significant and unavoidable impacts were identified for hydrology and water quality.

Land Use and Planning

Section 4.9, Land Use and Planning, of this volume of the Draft EIS/EIR, identified less than significant impacts. No significant unavoidable impacts were identified related to land use.

Noise

Section 4.10, Noise, identified potentially significant impacts related to construction noise (Impact NOI-2), which would be reduced to a less than significant level with project-specific mitigation. The analysis also identified less than significant impacts related to traffic noise and noise and vibration associated with operational conditions. No significant and unavoidable impacts were identified for noise.

Population and Housing

Section 4.11, Population and Housing, of this volume of the Draft EIS/EIR identified potentially significant impacts related to population growth (Impact POP-1), which could not be reduced to a less than significant level with project-level mitigation. These impacts of the UCM 2020 Project would be significant and unavoidable.

Public Services

Section 4.12, Public Services, of this volume of the Draft EIS/EIR identified potentially significant impacts related to park facilities (Impact PUB-2), which would be reduced to a less than significant level with project-specific mitigation. The analysis also identified less than significant impacts related to law enforcement facilities and public schools. No significant unavoidable impacts were identified related to public services.

Transportation and Traffic

Section 4.13, Transportation and Traffic, identified significant impacts related to transportation and traffic (Impact TRANS-1), which would be reduced to a less than significant level with project-specific mitigation. No significant unavoidable impacts were identified for transportation and traffic.

Utilities and Service Systems

Section 4.14, Utilities and Service Systems, of this volume of the Draft EIS/EIR, identified less than significant impacts related to water supply and sanitary sewer service. No significant unavoidable impacts were identified for utilities and service systems.

Cumulative Impacts

Section 5.0, Cumulative Impacts, in **Volume 2** of the Draft EIS/EIR identified significant and unavoidable cumulative impacts of the proposed project on aesthetics, agricultural resources, air quality, hydrology and water quality, traffic noise, population and housing, traffic, and utilities and service

systems. Cumulative impacts for all resources areas were less than significant or less than significant after mitigation.

5.3 ALTERNATIVES TO THE PROJECT

5.3.1 Alternatives Considered But Not Evaluated in Detail

This section discusses alternatives that were considered for the project but were not evaluated in detail because they did not meet project objectives or were found to be infeasible for technical, environmental, or social reasons.

2002 LRDP Alternative

Volumes 1 and **2** of this Draft EIS/EIR considered development as contemplated under the 2002 LRDP as an alternative for the UC Merced and University Community Project. This alternative would include development of facilities similar to those of the proposed UCM 2020 Project at generally similar locations and densities. Because of the similarities to the proposed project, such development would be likely to have similar impacts, and would not significantly avoid or reduce the impacts of the proposed project. Therefore, this alternative was eliminated from further consideration in this volume of the Draft EIS/EIR.

Alternate Off-Site Locations

Volumes 1 and **2** of this Draft EIS/EIR considered several off-site alternative locations for the UCM and University Community Project, as described in **Section 3.0**, **Volume 1**. These alternatives would locate some or all of the facilities needed to accommodate a student population of 25,000 FTE at sites other than the existing and proposed UC Merced Campus. As described in **Section 3.0** of **Volume 1**, some of these alternatives were not carried forward for analysis because they did not meet the project objectives or were infeasible for technical, environmental, or economic reasons. Because the UCM 2020 Project is part of the UC Merced and University Community Project and would construct some of the facilities and infrastructure included in the larger project, these considerations generally apply to it as well. In particular, an alternative off-site location would not meet the UCM 2020 Project objective of developing facilities in a manner that promotes a logical development pattern for later phases of campus development, and would increase traffic and other impacts compared to the proposed project. For these reasons, the off-site alternatives were eliminated from further consideration in this volume of the Draft EIS/EIR.

5.3.2 Alternatives Considered in Detail

As noted earlier in this section, the proposed project would result in significant and unavoidable impacts related to aesthetics, air quality, and population growth. There would also be potentially significant or significant impacts related to geology and soils, hazards and hazardous materials, hydrology and water quality, noise, public services, and traffic; these would be reduced to a less than significant level with the implementation of mitigation measures. In all other resource areas, with the implementation of measures which are included in the proposed UCM and University Community project, the project's impacts would be less than significant. Therefore, the focus of this alternatives analysis is on the ability of the alternatives presented below to avoid or minimize the significant environmental impacts of the proposed project, especially those identified as significant and unavoidable impacts. The following alternatives were evaluated in detail for their ability to avoid or minimize the significant environmental impacts of the proposed project. Note that in the discussion below, resource areas where project impacts would be less than significant are also discussed with the view to determine whether the alternatives would further reduce less than significant impacts of the proposed project and also to determine whether the alternative would result in a significant impact on a resource area where the project would not result in a significant impact.

Alternative 1: No Project

CEQA requires that a "No Project" alternative be considered. "No Project" is generally considered to be equivalent to a "no development" alternative. With this alternative, the proposed project would not be implemented. In the short term, the existing campus would continue to be used, but would not be expanded beyond its present level of development except for a few facilities already approved but not yet constructed as part of the Phase 1.1 Campus. The remainder of the campus would likely remain rural in character with continued agricultural and pasture operations dominating the land uses. On-site wetlands would remain mostly intact with continued disturbance and some degradation from ranching and other agricultural activities. In the long term, however, the existing campus could be subject to some form of intensified development as demand for academic and support facilities and services increases.

Relationship to Project Objectives

Alternative 1 would not achieve any of the project's key objectives identified above.

Comparative Analysis of Impacts

Aesthetics

There would be no impact related to aesthetics because the project would not be built on the site. However, since a small portion of the project site could be developed under the 2002 LRDP, limited future development could occur on the project site. Impacts as identified for the proposed project associated with degradation of visual character would be greatly reduced or eliminated under this alternative.

Agricultural Resources

There would be no impact to agricultural resources because the project would not be built on the site. However, since a small portion of the project site could be developed under the 2002 LRDP, limited future development could occur on the project site. Agricultural resource impacts as identified for the proposed project would be greatly reduced or eliminated under this alternative.

Air Quality

There would be no impact to air quality because the project would not be built on the site. However, since a small portion of the project site could be developed under the 2002 LRDP, limited future development could occur on the project site. Air quality impacts as identified for the proposed project would be greatly reduced or eliminated under this alternative.

Biological Resources

There would be no impact to biological resources on and off site since the project would not be constructed under this alternative. However, since a small portion of the project site could be developed under the 2002 LRDP, limited future development could occur on the project site. Biological impacts as identified for the proposed project would be greatly reduced or eliminated under this alternative.

Cultural Resources

Under the No Project Alternative, there would be no impacts to cultural resources as the project would not be built. However, since a small portion of the project site could be developed under the 2002 LRDP, limited future development could occur on the project site. Cultural resources impacts as identified for the proposed project would be greatly reduced or eliminated under this alternative.

Geology and Soils

There would be no impact associated with geology and soils because the project would not be built on the site. However, since a small portion of the project site could be developed under the 2002 LRDP, limited future development could occur on the project site. Impacts related to geology and soils as identified for the proposed project would be greatly reduced or eliminated under this alternative.

Hazards and Hazardous Materials

There would no impacts associated with hazardous materials because the project would not be built on the site. However, since a small portion of the project site could be developed under the 2002 LRDP, limited future development could occur on the project site. Hazardous materials impacts as identified for the proposed project would be greatly reduced or eliminated under this alternative.

Hydrology and Water Quality

There would no impact associated with hydrology and water quality on and off site because the project would not be built on the site. However, since a small portion of the project site could be developed under the 2002 LRDP, limited future development could occur on the project site. Hydrology and water quality impacts as identified for the proposed project would be greatly reduced or eliminated under this alternative.

Land Use and Planning

There would no impact associated with land use and planning because the project would not be built on the site. However, since a small portion of the project site could be developed under the 2002 LRDP, limited future development could occur on the project site. Land use and planning impacts as identified for the proposed project would be greatly reduced or eliminated under this alternative.

Noise

There would no impact associated with noise because the project would not be built on the site. However, since a small portion of the project site could be developed under the 2002 LRDP, limited future development could occur on the project site. Noise impacts as identified for the proposed project would be greatly reduced or eliminated under this alternative.

Population and Housing

Under the No Project Alternative, the proposed project would not be built. Therefore, no new population would be added to LBNL. However, since a small portion of the project site could be developed under the 2002 LRDP, limited future development could occur on the project site. Population and housing impacts as identified for the proposed project would be greatly reduced or eliminated under this alternative.

Public Services

Under the No Project Alternative, the proposed project would not be built. Therefore, there would be no impacts related to public services. However, since a small portion of the project site could be developed under the 2002 LRDP, limited future development could occur on the project site. Public services impacts as identified for the proposed project would be greatly reduced or eliminated under this alternative.

Transportation and Traffic

There would no impact associated with transportation and traffic because the project would not be built on the site. However, since a small portion of the project site could be developed under the 2002 LRDP, limited future development could occur on the project site. Transportation and traffic impacts as identified for the proposed project would be greatly reduced or eliminated under this alternative.

Utilities and Service Systems

There would no impact associated with utilities services that would be provided to the site since the project would not be built. However, since a small portion of the project site could be developed under the 2002 LRDP, limited future development could occur on the project site. Impacts to utilities and service systems as identified for the proposed project would be greatly reduced or eliminated under this alternative.

Cumulative Impacts

Under the No Project Alternative, the proposed project would not be built. Therefore, all of the cumulative impacts would be avoided, including the significant and unavoidable cumulative aesthetics, agricultural resources, air quality, hydrology and water quality, traffic noise, population and housing, traffic, and utilities impacts. However, since a small portion of the project site could be developed under the 2002 LRDP, limited future development could occur on the project site. Cumulative impacts as identified in **Section 5.0, Cumulative Impacts**, in **Volume 2** of this Draft EIS/EIR would be greatly reduced or eliminated under this alternative.

Alternative 2: Reduced Density Alternative

Significant environmental impacts of any project typically stem from the size of its footprint (e.g., biological resource impacts) or the population and activities associated with the project (e.g., traffic and traffic-related air quality impacts). The proposed size of the UCM campus at buildout was determined by the University based on projected enrollment demand, student population size necessary to support a wide range of academic programs, the appropriate number of faculty to support state of the art research, and the sizes of other major research universities. The UCM 2020 Project was designed to meet these projections through the 2019-20 academic year, when the campus is expected to have approximately 10,000 FTE students, and the size of the campus in terms of acres of land was determined based on the facilities needed to support this population.

As described in **Section 3.0** in **Volume 1** of this Draft EIS/EIR, alternatives to the UC Merced and University Community Project have been evaluated in previous environmental documents and in this Draft EIS/EIR that include variations of a reduced project alternative. Most of these reduced project alternatives have focused on ways to reduce the project's footprint impacts without necessarily reducing the size of the associated population. Such an alternative was examined in **Section 3.0** in **Volume 1** of this Draft EIS/EIR, but was not chosen for further evaluation for the UC Merced and University Community Project as a whole. However, such an alternative for the UCM 2020 Project that would reduce the size of the campus and population was carried forward for evaluation at a project level in this volume with a view to determining whether it could avoid or reduce the potentially significant impacts, such as aesthetics, air quality, and traffic, specific to the UCM 2020 Project.

The Reduced Density Alternative would include the development of Phases 1.2 and 2.1 of the UCM 2020 Project, as well as a portion of Phase 2.2 (see **Figure 3.0-3** in **Section 3.0, Project Description**, in this volume for a depiction of these development phases). This alternative would develop facilities and infrastructure to support a campus population of approximately 7,000 to 7,500 FTE students, equivalent to the existing campus population plus approximately half the population increase associated with the UCM 2020 Project as proposed. The reduced alternative thus represents a form of slower growth for the campus through 2019-20, but assumes that the campus would ultimately be built out as proposed under the UC Merced and University Community Project.

Fewer academic buildings and student housing and support facilities would be needed in order to support this reduced population, and the amount of new infrastructure needed would also be reduced. Alternative 2 would include approximately 2 million GSF of academic space, 300,000 GSF of research space, 70,000 GSF of student services space, and 3,000 beds for resident students. These facilities would be concentrated in the North Campus and Central Campus East and West subareas. Buildings would

generally be smaller in scale and height than proposed under the UCM 2020 Project; academic and research buildings would be 2 to 3 stories high, and residential buildings would be 2 to 3 stories high in the Main Street area and 2 stories in other student neighborhoods.

A single parking structure would be built in the Central Campus West subarea. Surface parking lots with a total of approximately 2,000 additional spaces would be located near the perimeter of the North Campus and Central Campus areas. No new facilities would be constructed east of the Fairfield Canal in the southeast part of the campus, and new facilities in the Campus South subarea would be limited to sports fields. Site Development and Infrastructure Phase 7 and much of the East and South Campus Infrastructure would not be built under Alternative 2.

Relationship to Project Objectives

As explained in **Section 3.0**, **Volume 1** of this Draft EIS/EIR and in the 2002 LRDP EIR, a reduced project alternative that reduced the maximum enrollment level for the campus, would fail to meet numerous project objectives, including meeting enrollment demand, serving historically underrepresented populations, maximizing academic distinction, modeling environmental stewardship, attracting high-quality faculty, and creating an efficient and vital teaching and learning environment. Each of these failings are described in detail in the 2002 LRDP EIR (see pages 5-7 through 5-9). However, Alternative 2 would achieve some of the specific project objectives identified for the UCM 2020 Project. Implementation of Alternative 2 would partially achieve the goals of constructing the buildings needed to support the projected enrollment growth and new programs that are anticipated to be established on the campus in the next 10 years, and of constructing buildings designed with enough flexibility to accommodate the growing university programs while providing state-of-the-art facilities for the growing campus population. It would not fully achieve these objectives because it would not provide all of the space and facilities needed for a student population of 10,000 FTE, which is the level projected by 2020. Alternative 2 would generally meet the objective of developing facilities in a manner that promotes a logical development pattern for later phases of campus development, as it would locate new and expanded facilities adjacent to both the existing campus and the areas of future campus development included in the UC Merced and University Community Project.

Comparative Analysis of Impacts

Impacts related to aesthetics (visual character and light and glare), air quality, and population growth were found to be significant and unavoidable for the UCM 2020 Project. All other impacts were found to be less than significant or less than significant after incorporation of mitigation measures identified in this Draft EIS/EIR. Because of its smaller size and density compared to the UCM 2020 Project as proposed,

Alternative 2 would result in decreased footprint impacts related to the physical size and location of the proposed project, such as effects on sensitive habitat, wetlands, and site hydrology, but would not fully avoid the significant impacts related to aesthetics, air quality, and population. As discussed in **Section 3.0** in **Volume 1** of this Draft EIS/EIR, other impacts associated with a reduced project alternative would be somewhat reduced because of a reduction in the campus population, but not in a quantifiable amount. Impacts of Alternative 2 are discussed by topic below.

Aesthetics

Implementation of Alternative 2 would reduce the number and height of buildings to be developed as part of the UCM 2020 Project. However, even with a reduction in the mass and bulk of the buildings, the project would substantially alter the visual character of the project area, changing it from largely undeveloped grasslands and irrigated pasture to a fully urbanized area, developed with buildings, sidewalks, paved parking lots, and landscaping. This project impact would remain significant and unavoidable. With fewer buildings, the amount of light and glare would also be reduced, but would nonetheless be substantial compared with the existing rural landscape, which is mostly dark at night. This project impact would remain significant and unavoidable under Alternative 2.

Agricultural Resources

Because the land area affected by Alternative 2 would be somewhat reduced compared to the proposed UCM 2020 Project, agricultural impacts would also be reduced. As with the proposed project, impacts to agricultural resources would be less than significant.

Air Quality

Under Alternative 2, the amount of site grading would be reduced; thus, dust emissions from construction activities would be reduced in comparison to the proposed UCM 2020 Project. Other construction activities, and corresponding emissions of pollutants, also could be decreased in comparison to the proposed project. However, because grading and other construction activities are not expected to occur all at once, construction-related emissions in a given year likely would be similar to the emissions generated by the proposed project. As with the proposed project, air quality impacts related to construction would be less than significant.

Under Alternative 2, emissions of pollutants associated with vehicle trips would be reduced by approximately 30 percent compared to the proposed UCM 2020 Project, the same proportion as vehicle miles traveled. Other sources of emissions would also be reduced because of decreased population levels. While fewer vehicle trips would result in proportionately fewer emissions, operational emissions would

still be substantial and would violate an air quality standard or contribute substantially to an existing or projected air quality violation. Operational air quality impacts would be significant and unavoidable, similar to the proposed project. Mitigation measures similar to the ones identified for the proposed project would be implemented but would not be sufficient to reduce this impact to a less than significant level.

Biological Resources

Implementation of this alternative would result in a reduced area of disturbance compared to the proposed project. Given this, implementation of Alternative 2 would result in reduced potential impacts to on- and off-site biological resources. All biological resources impacts would be reduced to less than significant with mitigation. Therefore, impacts to biological resources with this alternative would be less than significant or less than significant with mitigation, similar to the proposed project.

Cultural Resources

Under Alternative 2, the footprint impacts of the proposed project would be less than those of the proposed project. However, the alternative, like the proposed project, would have a potential to disturb previously unidentified cultural resources. Therefore, this alternative would not reduce any of the potentially significant impacts of the proposed project on cultural resources. Impacts would be less than significant with mitigation.

Geology and Soils

Implementation of Alternative 2 would result in a reduced area of disturbance compared to the proposed project. However, similar to the proposed project, development of this alternative expose people or structures to increased risk related to ground shaking and seismically induced ground failure, including liquefaction. Alternative 2 would reduce the number of persons exposed to such hazards compared to the proposed UCM 2020 Project, but this impact would still be considered significant. Impacts would be less than significant with mitigation.

Hazards and Hazardous Materials

Under Alternative 2, the new campus facilities would be developed in an area where, due to past uses, there is a potential for hazardous materials to be present that could create a significant hazard to the public or the environment. This impact would be similar to that of the proposed project, and would not be reduced by implementation of the alternative. Impacts would be less than significant with mitigation.

Hydrology and Water Quality

Under Alternative 2, the footprint impacts of the proposed project would be reduced. However, construction activities could result in sedimentation and erosion, potentially affecting water quality, and the project would increase impervious surfaces, increasing the risk of flooding. These impacts would be similar to those of the proposed project, and would not be reduced by implementation of the alternative. Impacts would be less than significant with mitigation.

Land Use and Planning

The land uses proposed under Alternative 2 would be similar to those of the proposed UCM 2020 Project, although the footprint impacts of the proposed project would be slightly reduced. Therefore, this alternative will not alter the proposed project's less than significant impact related to land use and planning.

Noise

Alternative 2 would increase traffic on local roadways and associated noise, although to a lesser degree than with the proposed UCM 2020 Project. This less than significant impact would be slightly reduced compared to the proposed project. Construction activities would be similar to those of the proposed project, and construction noise impacts thus would not be reduced by this alternative. Impacts would be less than significant with mitigation.

Population and Housing

The on-site population increase would be reduced by approximately 30 percent fewer persons under Alternative 2 compared to the proposed UCM 2020 Project. However, this would still represent a substantial increase in the population of the City of Merced and a significant proportion of the population increase projected under local and state agency plans. The project's significant impacts on population growth would be reduced compared to the proposed project, but would remain significant and unavoidable.

Public Services

Alternative 2 would result in a lower campus population than the proposed UCM 2020 Project, and demand for public services, including police, fire protection, schools, and recreational facilities, would be proportionately reduced. Solid waste generation would also decrease with a smaller campus population. However, under Alternative 2, the demand for public services would still increase substantially compared to existing conditions, and related impacts would be potentially significant, although

somewhat reduced compared to the proposed project. Impacts would be less than significant with mitigation.

Transportation and Traffic

Implementation of Alternative 2 would reduce the campus population by about 30 percent compared to the proposed UCM 2020 Project, resulting in a corresponding reduction of vehicle trips. The proposed project would have significant impacts (before mitigation and planned improvements) to three local intersections. The lower traffic volumes associated with Alternative 2 would likely avoid significant impacts at two of these intersections. This alternative would therefore substantially reduce traffic impacts compared to the proposed project. Impacts would be less than significant with mitigation.

Utilities and Service Systems

Implementation of Alternative 2 would result in a lower campus population than the proposed UCM 2020 Project and would thus create reduced demand for water, generation of wastewater, and energy use compared to the proposed project. However, under Alternative 2, the demand for utilities would still increase substantially compared to existing conditions. As with the proposed project, impacts would be less than significant with mitigation and improvements planned as part of the project.

Cumulative Impacts

The proposed project would have significant and unavoidable impacts related to aesthetics, air quality, and population growth, and would create a cumulatively considerable contribution to impacts related to aesthetics, agricultural resources, air quality, hydrology and water quality, traffic noise, population and housing, traffic, and utilities. Although implementation of Alternative 2 would reduce many impacts compared to the proposed UCM 2020 Project, its project-level impacts related to air quality and population growth would also contribute to significant and unavoidable cumulative impacts.

5.4 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The No Project Alternative would avoid all of the significant environmental impacts of the proposed project. This alternative would therefore be the environmentally superior alternative. It would, however, not meet any of the proposed project's objectives.

If the No Project Alternative is the environmentally superior alternative, *State CEQA Guidelines* Section 15126(d) (2) requires that an EIR identify an environmentally superior alternative from amongst the other alternatives evaluated in the EIR.

The Reduced Density Alternative (Alternative 2) would reduce the project's significant and unavoidable population and cumulative impacts, although not to a less than significant level, and could reduce some of the project's less than significant impacts on agricultural resources, biological resources, geology and soils, noise, public services, transportation, and utilities.

Therefore, Alternative 2 is considered the environmentally superior alternative because it would reduce some of the significant impacts of the proposed project, although other significant impacts would remain unchanged including the significant and unavoidable impacts identified for the proposed UCM 2020 Project.

6.0 REFERENCES

City of Merced. 1997. *Merced Vision 2015 General Plan*.

County of Merced. 2004. County of Merced *University Community Plan*. Supplemental to the Draft Environmental Impact Report. Prepared by EIP.

County of Merced. 2004. *County of Merced University Community Plan, Final Environmental Impact Report.* Prepared by EIP Associates. November 19, 2004.

Jones & Stokes Associates, Inc. 2002a. Resource mitigation plan for federally listed species that may be affected by the establishment of the University of California, Merced. February. (J&S 01-549.) Prepared for the University of California, Merced. Sacramento, CA.

Jones & Stokes Associates, Inc. 2002b. Supplement to the biological assessment for the UC Merced Campus Project. (J&S 01-549.) Prepared for University of California, Merced, and the County of Merced Department of Public Works. Sacramento, CA.

Jones & Stokes Associates, Inc. 2002c. *Construction Mitigation Plan for Biological Resources for Phase 1 of the University of California, Merced Project.* Prepared for University of California, Merced.

UC Merced. 2002a. Long Range Development Plan.

UC Merced. 2002b. Long Range Development Plan, Final Environmental Impact Report. Prepared by URS. January 2002.