



UCMERCED

**MEDICAL EDUCATION BUILDING PROJECT  
DRAFT ENVIRONMENTAL IMPACT REPORT**



**STATE CLEARINGHOUSE NO. 2021040047**

August 2022

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UCMERCED

**MEDICAL EDUCATION BUILDING PROJECT  
DRAFT ENVIRONMENTAL IMPACT REPORT**

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## TABLE OF CONTENTS

<b>1.0 INTRODUCTION .....</b>	<b>1-1</b>
1.1 Scope of the EIR .....	1-1
1.2 Purpose of this EIR .....	1-2
1.3 Project Background and Need .....	1-3
1.4 Environmental Review Process .....	1-4
1.4.1 Notice of Preparation and Scoping .....	1-4
1.4.2 Type of CEQA Document .....	1-5
1.4.3 Publication of Draft EIR .....	1-6
1.4.4 Publication of Final EIR .....	1-7
1.5 Intended Uses of This EIR .....	1-7
1.6 Organization of This EIR .....	1-8
<b>2.0 SUMMARY .....</b>	<b>2-1</b>
2.1 Purpose .....	2-1
2.2 Type of CEQA Document .....	2-1
2.3 Project Location .....	2-3
2.4 Project Description .....	2-3
2.4.1 Proposed Building .....	2-4
2.4.2 Roadway and Pedestrian Access, On-Site Circulation, Parking, and Electrical Upgrades .....	2-5
2.4.3 Storm Water Detention Improvements .....	2-5
2.5 Project Need and Objectives .....	2-6
2.6 Topics of Known Concern .....	2-7
2.7 Issues to be Resolved/Areas of Controversy .....	2-7
2.8 Alternatives .....	2-8
2.8.1 Alternative 1: No Project .....	2-8
2.8.2 Alternative 2: Reduced Program Alternative .....	2-9
2.8.3 Alternative 3: Reduced Building Footprint Alternative .....	2-9
2.9 2020 LRDP SEIR Transportation Supplement .....	2-10
2.10 Impact Summary .....	2-10
<b>3.0 PROJECT DESCRIPTION .....</b>	<b>3-1</b>
3.1 Introduction .....	3-1
3.2 Project Location .....	3-1
3.3 Existing Site Conditions .....	3-1
3.3.1 Land Use Designation .....	3-1
3.3.2 Existing Land Uses .....	3-1
3.3.3 Existing Site Access and Circulation .....	3-7
3.3.4 Surrounding Land Uses .....	3-7
3.4 Project Need and Objectives .....	3-8
3.4.1 Need .....	3-8
3.4.2 Project Objectives .....	3-10
3.5 Project Characteristics .....	3-10
3.5.1 Proposed Building Program .....	3-11
3.5.2 Building Design Features .....	3-12

3.5.3	Project Sustainability .....	3-12
3.5.4	Roadway and Pedestrian Access, On-Site Circulation, and Parking.....	3-15
3.5.5	Outdoor Spaces and Landscaping.....	3-15
3.5.6	Storm Water Detention Improvements.....	3-16
3.5.7	Utilities.....	3-16
3.5.8	Hazardous Materials and Waste.....	3-19
3.6	Project Population .....	3-19
3.7	Project Construction .....	3-20
3.7.1	Construction Schedule .....	3-20
3.7.2	Construction Access and Staging .....	3-20
3.7.3	Site Grading Activities and Construction Traffic .....	3-20
3.8	Required Approvals .....	3-21
<b>4.0</b>	<b>ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES.....</b>	<b>4-1</b>
4.0.1	Determination of Impact Significance and related Terminology.....	4-1
4.0.2	Definition of Baseline Conditions .....	4-2
4.0.3	Structure of Resource Topic Sections .....	4-2
4.0.4	Approach to Cumulative Impact Analysis .....	4-4
4.1	Air Quality .....	4.1-1
4.1.1	Introduction .....	4.1-1
4.1.2	Environmental Setting .....	4.1-1
4.1.3	Regulatory Considerations.....	4.1-13
4.1.4	Impacts and Mitigation Measures .....	4.1-19
4.1.5	Project Impacts and Mitigation Measures.....	4.1-25
4.1.6	Cumulative Impacts and Mitigation Measures.....	4.1-31
4.2	Hydrology and Water Quality .....	4.2-1
4.2.1	Introduction .....	4.2-1
4.2.2	Environmental Setting .....	4.2-1
4.2.3	Regulatory Considerations.....	4.2-8
4.2.4	Impacts and Mitigation Measures .....	4.2-12
4.2.5	Project Impacts and Mitigation Measures.....	4.2-13
4.2.6	Cumulative Impacts and Mitigation Measures.....	4.2-15
4.3	Public Services .....	4.3-1
4.3.1	Introduction .....	4.3-1
4.3.2	Environmental Setting .....	4.3-1
4.3.3	Regulatory Considerations.....	4.3-3
4.3.4	Impacts and Mitigation Measures .....	4.3-3
4.3.5	Project Impacts and Mitigation Measures.....	4.3-4
4.3.6	Cumulative Impacts and Mitigation Measures.....	4.3-6
4.4	Transportation .....	4.4-1
4.4.1	Introduction .....	4.4-1
4.4.2	Environmental Setting .....	4.4-1
4.4.3	Regulatory Considerations.....	4.4-2
4.4.4	Impacts and Mitigation Measures .....	4.4-6
4.4.5	Project Impacts and Mitigation Measures.....	4.4-12
4.4.6	Cumulative Impacts and Mitigation Measures.....	4.4-18
4.5	Tribal Cultural Resources .....	4.5-1
4.5.1	Introduction .....	4.5-1
4.5.2	Environmental Setting .....	4.5-1

4.5.3	Regulatory Considerations .....	4.5-3
4.5.4	Impacts and Mitigation Measures.....	4.5-5
4.5.5	Project Impacts and Mitigation Measures.....	4.5-7
4.5.6	Cumulative Impacts and Mitigation Measures.....	4.5-8
4.6	Utilities and Service Systems.....	4.6-1
4.6.1	Introduction.....	4.6-1
4.6.2	Environmental Setting .....	4.6-1
4.6.3	Regulatory Considerations .....	4.6-2
4.6.4	Impacts and Mitigation Measures.....	4.6-3
4.6.5	Project Impacts and Mitigation Measures.....	4.6-4
4.6.6	Cumulative Impacts and Mitigation Measures.....	4.6-8
<b>5.0</b>	<b>ALTERNATIVES .....</b>	<b>5-1</b>
5.1	Introduction .....	5-1
5.2	Project Objectives and Impacts.....	5-2
5.2.1	Project Objectives.....	5-2
5.2.2	Project Impacts.....	5-2
5.3	Alternatives Considered but not Evaluated in Detail.....	5-4
5.3.1	Locate Medical Education Program in Fresno .....	5-4
5.3.2	Locate Medical Education Program in Downtown Merced.....	5-5
5.4	Alternatives Evaluated in This EIR .....	5-5
5.5	Alternative Impact Analysis.....	5-6
5.5.1	Alternative 1: No Project Alternative .....	5-6
5.5.2	Alternative 2: Reduced Program Alternative.....	5-7
5.5.3	Alternative 3: Reduced Building Footprint Alternative .....	5-10
5.6	Comparison of Alternatives/Environmentally Superior Alternative .....	5-12
<b>6.0</b>	<b>OTHER CEQA CONSIDERATIONS.....</b>	<b>6-1</b>
6.1	Introduction .....	6-1
6.2	Significant and Unavoidable Effects.....	6-1
6.3	Analysis of Irreversible Changes.....	6-1
6.4	Growth-Inducing Impacts.....	6-3
6.5	Effects Not Found to be Significant.....	6-5
6.5.1	Aesthetics .....	6-6
6.5.2	Agriculture and Forestry Resources .....	6-6
6.5.3	Air Quality (Odors).....	6-6
6.5.4	Biological Resources .....	6-7
6.5.5	Cultural Resources.....	6-8
6.5.6	Energy.....	6-9
6.5.7	Geology and Soils.....	6-9
6.5.8	Greenhouse Gas Emissions.....	6-9
6.5.9	Hazards and Hazardous Materials .....	6-10
6.5.10	Hydrology and Water Quality.....	6-10
6.5.11	Land Use and Planning .....	6-11
6.5.12	Mineral Resources.....	6-11
6.5.13	Noise.....	6-11
6.5.14	Population and Housing .....	6-12
6.5.15	Public Services .....	6-13
6.5.16	Recreation .....	6-13

6.5.17	Transportation .....	6-14
6.5.18	Utilities and Service Systems (water, solid waste, electrical, and communications) .....	6-14
6.5.19	Wildfire .....	6-15
<b>7.0</b>	<b>2020 LRDP SEIR TRANSPORTATION SUPPLEMENT .....</b>	<b>7-1</b>
7.1	Introduction .....	7-1
7.1.1	Environmental Setting .....	7-2
7.1.2	Regulatory Considerations.....	7-7
7.1.3	Impacts and Mitigation Measures .....	7-14
7.1.4	LRDP Impacts and Mitigation Measures.....	7-20
7.1.5	Cumulative Impacts and Mitigation Measures.....	7-33
<b>8.0</b>	<b>REPORT PREPARATION .....</b>	<b>8-1</b>
8.1	Lead Agency .....	8-1
8.1.1	University of California, Merced .....	8-1
8.1.2	University of California, Office of the President .....	8-1
8.1.3	University of California, Office of the General Counsel .....	8-1
8.2	EIR Consultants .....	8-1
8.2.1	Barati Consulting, LLC .....	8-1
8.2.2	LSA .....	8-1
8.3	Transportation .....	8-1
8.4	Individuals and Agencies Consulted During EIR Preparation .....	8-2
<b>9.0</b>	<b>REFERENCES .....</b>	<b>9-1</b>

## APPENDICES

**Appendix 1.0:** NOP, Initial Study, Scoping Meeting notes, and Comment Letters

**Appendix 2.0:** Air Quality Emissions Data

**Appendix 3.0:** Preliminary Stormwater Analysis

**Appendix 4.0:** VMT Impact Analysis

**Appendix 5.0:** Cultural Resources Survey Memo

## FIGURES AND TABLES

### FIGURES

Figure 3-1: Regional Location .....	3-3
Figure 3-2: Project Area.....	3-5
Figure 3-3: Medical Education Building and Parking Lot Footprint.....	3-13
Figure 4.2-1: Campus Watersheds .....	4.2-3
Figure 7-1: Roadway Network.....	7-3
Figure 7-2: 2020 LRDP Land Use Designations.....	7-23

### TABLES

Table 2-1: Summary of UCM-ME Building Project Environmental Impacts and Mitigation Measures.....	2-12
Table 2-2: Summary of 2020 LRDP Program-Level Transportation Impacts and Mitigation Measures.....	2-33
Table 2-3: Summary Comparison of Project Alternatives .....	2-34
Table 3-1: Proposed UCM-ME Building Uses .....	3-11
Table 4-1: Near-Term Cumulative Projects .....	4-5
Table 4.1-1: Sources and Health Effects of Air Pollutants.....	4.1-2
Table 4.1-2: Federal and State Ambient Air Quality Standards.....	4.1-8
Table 4.1-3: Attainment Status of the San Joaquin Valley Air Basin .....	4.1-10
Table 4.1-4: Ambient Air Quality at the 2334 M Street, Merced Monitoring Station .....	4.1-12
Table 4.1-5: SJVAPCD Significance Thresholds.....	4.1-20
Table 4.1-6: Project Construction Emissions.....	4.1-27
Table 4.1-7: Project Operational Emissions .....	4.1-28
Table 4.4-1: VMT Metric and Significance Threshold for Project Impacts.....	4.4-7
Table 4.4-2: VMT Metric and Significance Threshold for Cumulative Impacts .....	4.4-8
Table 4.4-3: MCAG Model – Regional Housing, Population, and Employment .....	4.4-10
Table 4.4-4: VST Land Uses (Phases 1A – 1C) .....	4.4-10
Table 4.4-5: Study Populations by Scenario .....	4.4-11
Table 4.4-6: 2020 Baseline VMT Results .....	4.4-14
Table 4.4-7: UCM-ME Building Project VMT Impact – Metric 1 (Based on Net New Population & No VST Development).....	4.4-15
Table 4.4-8: UCM-ME Building Project VMT Impact – Metric 1 (Based on Net New Population & With VST Development).....	4.4-16
Table 4.4-9: UCM-ME Building Project VMT Impact – Metric 1 (Based on Total Population & No VST Development) .....	4.4-17
Table 4.4-10: UCM-ME Building Project VMT Impact – Metric 1 (Based on Total Population & With VST Development) .....	4.4-18
Table 4.4-11: UCM-ME Building Project VMT Impact – Metric 2 (Based on Net New Population & No VST Development) .....	4.4-19

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Table 4.4-12: UCM-ME Building Project VMT Impact – Metric 2 (Based on Net New Population & With VST Development) .....	4.4-20
Table 4.4-13: UCM-ME Building Project VMT Impact – Metric 2 (Based on Total Population & No VST Development) .....	4.4-20
Table 4.4-14: UCM-ME Building Project VMT Impact – Metric 2 (Based on Net New Population & With VST Development) .....	4.4-21
Table 4.6-1: Wastewater Generation Summary .....	4.6-6
Table 5-1: Reduced Program Alternative .....	5-8
Table 5-2: Summary Comparison of Project Alternatives .....	5-12
Table 7-1: VMT Metrics and Significance Thresholds for Project Impacts .....	7-15
Table 7-2: VMT Metrics and Significance Thresholds for Cumulative Impacts .....	7-16
Table 7-3: MCAG Model – Regional Housing, Population, and Employment .....	7-18
Table 7-4: VST Land Uses (Phases 1A – 1C) .....	7-18
Table 7-5: Study Populations by Scenario .....	7-19
Table 7-6: 2020 Baseline VMT Results .....	7-27
Table 7-7: LRDP VMT Impacts – Metrics 1 and 2 .....	7-28
Table 7-8: LRDP VMT Impacts– Metrics 1 and 2 (With VST Development) .....	7-29
Table 7-9: LRDP VMT Impacts – Metrics 3 and 4 .....	7-34
Table 7-10: LRDP VMT Impacts – Metrics 3 and 4 (With VST Development) .....	7-35

## LIST OF ACRONYMS

°F	degrees Fahrenheit
µg/m <sup>3</sup>	micrograms per cubic meter
AAQS	ambient air quality standards
AASHTO	American Association of State Highway and Transportation Officials
AB	Assembly Bill
ACGME	Accreditation Council for Graduate Medical Education
AFY	Acre-feet per year
AIA	Air Impact Assessment
AQMP	Air Quality Management Plan
asf	assignable square feet
ATCM	Airborne Toxic Control Measure
BAAQMD	Bay Area Air Quality Management District
BMPs	best management practices
BO	Biological Opinion
CAA	Federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
Cal Fire	California Department of Forestry and Fire Protection
CalEEMod	California Emissions Estimator Model version 2020.4.0
CalNAGPRA	California Native American Graves Protection and Repatriation Act
Caltrans	California Department of Transportation
Campus	University of California, Merced
CARB	California Air Resources Board
CBRSL	Campus Building Reserve & Support Land
CCAA	California Clean Air Act
CCIC	Central California Information Center
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act

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CFR	Code of Federal Regulations
City	City of Merced
CMP	Construction Mitigation Plan
CMU	Campus Mixed Use
CO	carbon monoxide
COVID-19	Coronavirus disease 2019
CRHR	California Register of Historical Resources
CTS	California tiger salamander
CWA	Clean Water Act
DOT	Department of Transportation
DPF	Diesel Particulate Filter
DPM	diesel particulate matter
EGRP	Energy Passive Groundwater Recharge
EH&S	Department of Environmental Health and Safety
EHS	UC Merced Environmental Health and Safety
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EIS/EIR	Environmental Impact Statement/Environmental Impact Report
FEMA	Federal Emergency Management Agency
FIP	Federal Implementation Plan
FIRM	Flood Insurance Rate Maps
FMMP	Farmland Mapping and Monitoring Program
FTE	full time equivalent
<i>GAMAQI</i>	<i>Guidance for Assessing and Mitigating Air Quality Impacts</i>
GHG	greenhouse gas
GIS	Geographic Information System
gpd	gallons per day
gpm	gallons per minute
gsf	gross square feet
HSRI	Health Sciences Research Institute
ISR	indirect source rule

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ITP	Incidental Take Permit
kV	kilovolt
kW	kilowatt
LEED	Leadership in Energy and Environmental Design
LID	Low Impact Design
LOS	Level of Service
LRA	Local Responsibility Area
LRDP	Long Range Development Plan
MCAG	Merced County Association of Governments
MCAG Model	<i>MCAG Three-County Regional Travel Demand Model</i>
MCFD	Merced County Fire Department
MCMs	Minimum Control Measures
ME	Medical Education
mg/m <sup>3</sup>	milligrams per cubic meter
mgd	million gallons per day
MID	Merced Irrigation District
MMRP	Mitigation Monitoring and Reporting Plan
MRZ	mineral resource zone
MS4	municipal separate storm sewer system
msl	above mean sea level
MW	megawatt
N/A	not applicable
NAAQS	National Ambient Air Quality Standard
NAGPRA	Native American Graves Protection and Repatriation Act of 1990
NAHC	Native American Heritage Commission
ND	no data
NEO	New Employee Orientations
NO <sub>2</sub>	nitrogen dioxide
NOC	Notice of Completion
NOP	Notice of Preparation
NO <sub>x</sub>	nitrogen oxides

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NPDES	National Pollutant Discharge Elimination System
NSO	New Student Orientations
O <sub>3</sub>	ozone
ogsf	outside gross square feet
OPR	Governor's Office of Planning and Research
Pb	lead
PCF	Paid Call Firefighters
PEIR	Merced County 2030 General Plan Program EIR
PG&E	Pacific Gas and Electric Company
PM <sub>10</sub>	particulate matter less than 10 microns in size
PM <sub>2.5</sub>	particulate matter less than 2.5 microns in size
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
ppb	parts per billion
ppm	parts per million
PRC	Public Resources Code
Project	Medical Education Building Project
proposed Project	Medical Education Building Project
ROG	reactive organic gases
RTP/SCS	Regional Transportation Plan/ Sustainable Communities Strategy
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCH	State Clearinghouse
SEIR	Subsequent Environmental Report
sf	square foot/square feet
SIP	State Implementation Plan
SJV	San Joaquin Valley
SJV PRIME	San Joaquin Valley Program in Medical Education
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SO <sub>2</sub>	sulfur dioxide
SOI	sphere of influence

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SOV	Single-occupant vehicle
SO <sub>x</sub>	sulfur oxides
SR-99	State Route 99 or Highway 99
SRA	State Responsibility Area
SSHA	School of Social Sciences, Humanities and Arts
SSM	Social Sciences and Management
State Route 140	Highway 140 or Yosemite Parkway
Highway 59	State Route 59
Station 85	McKee Fire Station 85
SUDP	1997 Specific Urban Development Plan
Sustainability Policy	California Policy on Sustainable Practices
SWMP	Storm Water Management Plan
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminants
TAZs	traffic analysis zones
TCRs	Tribal Cultural Resources
TDM	Transportation Demand Management
TES	Thermal Energy Storage
The Regents	The Board of Regents of the University of California
TMDL	Total Maximum Daily Load
TSDF	Treatment, Storage, and Disposal Facility
U.S. EPA	United States Environmental Protection Agency
UC	University of California
UC Merced	University of California, Merced
UCLC	University Community Land Company
UCP	University Community Plan
UCSF	University of California San Francisco
University	University of California
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service

UWMP	Urban Water Management Plan
VDE	Visible Dust Emissions
VHFHSZ	Very High Fire Hazard Severity Zone
VMT	Vehicle miles traveled metric
VST	Virginia Smith Trust
WAP	Water Action Plan
<i>Wastewater Master Plan</i>	<i>Wastewater Collection System Master Plan</i>
<i>Wastewater Master Plan EIR</i>	<i>Wastewater Collection System Master Plan Draft Environmental Impact Report</i>
WDRs	Waste Discharge Requirements
WQOs	water quality objectives
WWTP	wastewater treatment plant

## 1.0 INTRODUCTION

### 1.1 SCOPE OF THE EIR

This Draft Environmental Impact Report (EIR) evaluates the potentially significant environmental effects of the proposed UC Merced Medical Education (UCM-ME) Building Project (“proposed Project” or “Project”).<sup>1</sup> As part of the Project, UC Merced proposes to develop a new academic building, including a site access road and parking lot, in the southeastern portion of the existing campus in an area that is known on the campus as Cottonwood Meadow. The proposed building would house the Campus’ ME and related programs. The growth in campus population from the expansion of the ME and related programs is part of the enrollment and employment growth that is planned for in the 2020 Long Range Development Plan (LRDP) for the campus. In addition, UC Merced plans to fill the existing storm water detention basins that are located in Cottonwood Meadow to accommodate the siting of the proposed building, parking lot, and roadway improvements. As part of the proposed Project, a new storm water detention basin would be constructed in the southern portion of the campus southeast of Parking Lot No.4 and west of Fairfield Canal to replace the storm water detention capacity that would be lost from the development of Cottonwood Meadow and also handle the additional runoff that would be generated from the construction of the proposed project. The proposed Project also includes minor upgrades to the Central Plant involving the installation of two new electrical feeds that would be installed within the existing facilities and vaults. The Project is described in detail in **Chapter 3.0: Project Description**.

In addition to the evaluation of UCM-ME Building Project impacts, the University has completed a new analysis of the transportation impacts of campus growth under the UC Merced 2020 LRDP based on a vehicle miles traveled metric (VMT). In December 2018, the California Natural Resources Agency certified and adopted the *California Environmental Quality Act (CEQA) Guidelines* update package, including the section implementing SB 743 (*State CEQA Guidelines* Section 15064.3). Per these changes to the *State CEQA Guidelines*, as of July 1, 2020, automobile delay, as described by Level of Service (LOS) or similar measures of vehicular capacity or traffic congestion, shall not be considered a significant impact on the environment under CEQA, and VMT is the only legally acceptable metric for the evaluation of transportation-related environmental impacts pursuant to CEQA. This supplemental program-level VMT analysis is also included in this Draft EIR and replaces the LOS analysis in the 2020 LRDP Subsequent EIR. Mitigation measures previously adopted to reduce or avoid LOS-related impacts associated with the 2020 LRDP have been deleted, because automobile delay, as described solely by LOS or other similar measures of vehicle congestion, is no longer considered a significant impact under CEQA.

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<sup>1</sup> The proposed project was previously called the Health and Behavioral Sciences-Medical Education Building in the Notice of Preparation that was circulated for public review on April 2, 2021. It has subsequently been renamed the UC Merced Medical Education Building project. However, the teaching and research programs that would be housed in the building remain unchanged and include medical education, psychological sciences, and public health.

This section of the EIR includes a discussion of the: (1) purpose of the EIR; (2) project background and need; (3) environmental review process, including the type of CEQA document; (4) intended uses of the EIR; and (5) organization of the EIR.

## 1.2 PURPOSE OF THIS EIR

The University of California (UC or University) is the “lead agency” for this Project consistent with CEQA, and the University of California, Merced (UC Merced or Campus) is the Project proponent. The Board of Regents of the University of California (The Regents) has the principal responsibility for approving this Project. The *State CEQA Guidelines* require that an EIR (1) assess the potentially significant environmental effects of a proposed project, including cumulative impacts of the proposed project in conjunction with other reasonably foreseeable development; (2) identify feasible means of avoiding or substantially lessening significant adverse impacts; and (3) evaluate a range of reasonable alternatives to a proposed project, including the No Project Alternative.

The University has prepared this EIR evaluating the environmental effects of the proposed Project for the following purposes:

- To satisfy the requirements of CEQA (Public Resources Code, Sections 21000–21178), the *State CEQA Guidelines* (California Code of Regulations, Title 4, Chapter 14, Sections 15000–15387), and the University of California Guidelines for the Implementation of CEQA;
- To inform the general public, the local community, responsible and interested public agencies, and The Regents of the nature of the proposed Project, its potential significant environmental effects, measures to mitigate those effects, and alternatives to the proposed Project; and
- To enable The Regents to consider the environmental consequences of approving the proposed Project.

As described in CEQA and the *State CEQA Guidelines*, public agencies are charged with the duty to avoid or substantially lessen significant environmental effects, where feasible. In satisfying this duty, a public agency has an obligation to balance the project’s significant effects on the environment with its benefits, including economic, social, technological, legal, and other benefits. This EIR is an informational document, the purpose of which is to identify the potentially significant effects of the proposed Project on the environment and to indicate the manner in which those significant effects can be avoided or lessened; to identify any significant and unavoidable adverse impacts that cannot be mitigated; and to identify reasonable and feasible alternatives to the proposed Project that would eliminate or reduce any significant adverse environmental effects to a less than significant level.

The University, as the lead agency, is required to consider the information in the EIR, along with any other relevant information, in making its decisions on the proposed Project. Although the EIR does not determine the ultimate decision that will be made regarding implementation of the proposed Project, CEQA requires the University to consider the information in the EIR and make findings regarding each significant and unavoidable effect identified in the EIR. The Regents will review and

consider certification of the Final EIR prior to any decision on whether to approve the proposed Project.

### 1.3 PROJECT BACKGROUND AND NEED

In March 2009, The Regents certified a joint Environmental Impact Statement (EIS)/EIR (2009 UC Merced and University Community Project EIS/EIR; State Clearinghouse [SCH] No. 2008041009)<sup>2</sup> that analyzed and disclosed the impacts from the implementation of a LRDP for the UC Merced campus and a Community Plan for an adjoining community and approved the UC Merced 2009 LRDP as a guide for physical development of the campus to accommodate growth projected through 2030 and beyond. For ease of reference, the 2009 UC Merced and University Community Project EIS/EIR is referred to in this EIR as the 2009 LRDP EIS/EIR. The 2009 LRDP addressed the development of the campus to support an enrollment level of 25,000 students by the year 2030 on an 815-acre site.

Following the approval of the 2009 LRDP, the University revised its enrollment projections through 2030 down substantially and also acquired more land to the south of the campus as part of the dissolution of a prior joint development venture with the Virginia Smith Trust. Furthermore, UC Merced decided that it would accommodate the projected campus population growth on a smaller development footprint than previously identified in the 2009 LRDP. As a result of these changes, UC Merced developed a revised land use plan for the campus site, which is reflected in the 2020 LRDP.<sup>3</sup> The 2020 LRDP was designed to guide the physical development of the campus to accommodate a projected enrollment level of 15,000 students by 2030. The 2020 LRDP plans for the addition of up to 1.83 million square feet of building space to the campus to serve this projected campus population growth.

In March 2020, The Regents certified a program-level Subsequent EIR (SEIR)<sup>4</sup> (SCH No. 2018041010) that analyzed and disclosed the impacts from the implementation of the 2020 LRDP for the UC Merced campus and adopted the UC Merced 2020 LRDP as a guide for physical development to accommodate campus population growth projected through 2030. The SEIR did not fully replace the 2009 LRDP EIS/EIR but supplemented and updated most of the analyses, while retaining some of the analysis in the 2009 LRDP EIS/EIR. The University noted that the 2020 LRDP SEIR, in conjunction with the 2009 LRDP EIS/EIR, will serve as the base or first-tier environmental document for tiering purposes when implementing the 2020 LRDP. The 2020 LRDP replaced the 2009 LRDP as the planning document for decisions related to campus development. The proposed Project is a new academic building proposed under the 2020 LRDP.

The Project is proposed to address the scarcity of medical education opportunities and trained medical health professionals in the State of California, especially in the San Joaquin Valley (SJV). UC Merced is partnering with UC San Francisco (UCSF)-Fresno on the UCSF San Joaquin Valley Program in Medical Education (SJV PRIME) to recruit and train a new generation of healthcare professionals

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<sup>2</sup> University of California, Merced. 2009. *UC Merced and University Community Project Environmental Impact Statement/Environmental Impact Report*. March 2009.

<sup>3</sup> University of California, Merced. 2020a. *UC Merced 2020 Long-Range Development Plan*, March 2020.

<sup>4</sup> University of California, Merced. 2020b. *UC Merced 2020 Long-Range Development Plan Final Subsequent Environmental Impact Report*, March 2020.

who will provide high-quality, culturally sensitive, and accessible health care in the SJV. The space program for the proposed building would provide both specific types of learning spaces for medical education as well as hybrid learning and general assignment classrooms and class laboratories for the campus. The classrooms would support the delivery of a broad range of academic programs and partnerships in the health sciences arena, in addition to the overall campus population growth projected in the 2020 LRDP.

Construction of the proposed building would also allow for relocation of the Departments of Psychological Sciences and Public Health from the Social Sciences and Management (SSM) building to the new building. The resulting vacancy in the SSM building would enable the emerging School of Management to integrate the Departments of Economics and Cognitive Science under one roof while also providing sufficient space for future growth of the School of Management. Finally, relocation of the Department of Economics from the School of Social Sciences, Humanities and Arts (SSHA) into the SSM building would alleviate the overcrowding experienced by other departments in the SSHA building that was not resolved through the 2020 Project.

The proposed UCM-ME Building would become home to UC Merced's nascent Medical Education program, the Health Sciences Research Institute (HSRI), and the Departments of Psychological Sciences and Public Health. UC Merced's Psychological Sciences and Public Health Departments are guided by a regional and rural focus providing training in the deep and specific issues of marginalized, rural, and underserved populations and would help to provide essential research and training opportunities for undergraduate medical education. Multidisciplinary research is necessary to address the complex health problems facing the SJV. HSRI's overarching mission is to facilitate these research collaborations among UC Merced's faculty. The Campus believes that by bringing these particular departments and programs together in the proposed building the outcomes will be greater than the sum of their parts.

## 1.4 ENVIRONMENTAL REVIEW PROCESS

### 1.4.1 Notice of Preparation and Scoping

On April 2, 2021, a Notice of Preparation (NOP) and Initial Study were published for the proposed Project. In accordance with the State CEQA Guidelines, the NOP/IS was circulated for 30 days until May 3, 2021. Copies of the NOP, Initial Study, comment letters, and a summary of scoping meeting comments are included in **Appendix 1.0**.

Due to the circumstances associated with COVID-19, a virtual EIR scoping meeting was held on April 21, 2021. This meeting was intended to inform the public and interested agencies of the proposed Project, solicit comments, and identify areas of concern. As reflected in **Appendix 1.0**, the comments provided during the scoping meeting pertained to tribal cultural resources, storm water drainage and sewer facilities, plans for a medical school on the UC Merced campus, and the anticipated building construction schedule.



### 1.4.2 Type of CEQA Document

As noted above, in March 2020, The Regents certified a program-level SEIR<sup>5</sup> that analyzed and disclosed the impacts from the implementation of an updated LRDP<sup>6</sup> for the UC Merced campus and adopted the UC Merced 2020 LRDP as a guide for physical development to accommodate projected campus population growth through 2030. The 2020 LRDP SEIR addressed the development of the campus to accommodate the full buildout enrollment of 15,000 Full Time Equivalent (FTE) students within a 1,026-acre campus footprint. The campus population projection includes the enrollment and employment growth that would be accommodated in the proposed building and other buildings on the campus as a result of project implementation.

The SEIR updated and supplemented the information and analysis in UC Merced's 2009 LRDP EIR/EIS. The SEIR, in conjunction with the 2009 LRDP EIS/EIR, serves as the first-tier environmental document for tiering purposes when implementing the 2020 LRDP.

Because the proposed Project would be undertaken by the University, as the lead agency, the University must evaluate the potential environmental impacts of the proposed Project in compliance with CEQA. The University has completed an evaluation of the proposed Project pursuant to Section 15168(c)(2) of the CEQA Guidelines to determine if the proposed Project is within the scope of UC Merced's 2020 LRDP Program SEIR and the 2009 LRDP EIS/EIR.<sup>7</sup> The CEQA Guidelines state that if the lead agency can find that, pursuant to Section 15162, no new impacts could occur and no new mitigation measures are required, then the Project is within the scope of the previous program EIR, and no further evaluation is required. The University has determined – on the basis of the analysis in the Initial Study that was circulated for public review (**Appendix 1.0**) – that although the proposed Project is within the scope of the development that was analyzed in the 2020 LRDP SEIR and the 2009 LRDP EIS/EIR, the proposed Project has the potential to result in specific project-level impacts that may not be fully disclosed in the 2020 LRDP SEIR and the 2009 LRDP EIS/EIR. Thus, this document is a project-level EIR that tiers from the 2020 LRDP SEIR and the 2009 LRDP EIS/EIR under the tiering provisions of CEQA. Both EIRs are incorporated by reference and are available on UC Merced's planning website <https://planning.ucmerced.edu/ceqa-environmental-documents>, as well as in hard copy at: UC Merced Physical & Environmental Planning office in the Downtown Center at 655 West 18th Street, Merced, CA 95340.

This EIR tiers from the 2009 LRDP EIS/EIR for the resource topics of aesthetics, agricultural and forestry resources, cultural resources, and geology and soils. It tiers from the 2020 LRDP EIR for the resource topics of air quality, biological resources, greenhouse gas emissions, energy, hazards, hydrology and water quality, noise, population and housing, public services, recreation, and utilities. This EIR tiers from the 2009 LRDP EIS/EIR and the 2020 LRDP EIR for the following information:

- Background and setting information;
- Significance criteria;

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<sup>5</sup> University of California, Merced. 2020b. op. cit.

<sup>6</sup> University of California, Merced. 2020a. op. cit.

<sup>7</sup> University of California, Merced. 2009. op. cit.

- Issues that were evaluated in sufficient detail for which there is no significant new information or change in circumstances that would require further analysis; and
- Analysis of cumulative impacts.

New setting information is incorporated into this EIR, when necessary, due to changes over time or to provide details from project-specific surveys and reports. Similarly, the analysis is updated where appropriate to reflect a comparison to a 2021 baseline (except where otherwise noted, as described in **Chapter 4.0**) and the details of potential environmental impacts.

Because the proposed Project is an element of the growth projected under the 2020 LRDP, mitigation measures adopted by The Regents in conjunction with the approval of the 2020 LRDP that are relevant to the proposed Project have been included in and are a part of the UCM-ME Building Project. The analysis presented in **Chapter 4.0** evaluates environmental impacts that would result from the proposed Project following the implementation of applicable 2020 LRDP mitigation measures as standard project features. These standard project features are a part of the proposed Project and will not be readopted.

The 2020 LRDP SEIR analyzed potential impacts of traffic generated by campus growth through 2030 on roadway facilities based on an analysis of level of service (LOS) impacts. However, since the certification of the 2020 LRDP SEIR in March 2020, as noted above, as of July 1, 2020, CEQA documents must include an evaluation of transportation impacts based on VMT, pursuant to Senate Bill (SB) 743. As specified by SB 743 and the associated updates to the *State CEQA Guidelines*, automobile delay, as measured by “level of service” and other similar metrics, no longer constitutes a significant environmental effect under CEQA (Public Resources Code, Section 21099, subd. (b)(3)). Therefore, this EIR (**Chapter 7.0**) also includes an updated supplemental program-level transportation impact analysis of campus growth through 2030 under the 2020 LRDP based on VMT metrics consistent with *State CEQA Guidelines* Section 15064.3, subdivision (b). This updated transportation impact analysis replaces in full the prior LOS-based transportation analysis that was included in the 2020 LRDP SEIR, including applicable mitigation measures.

### 1.4.3 Publication of Draft EIR

The University has filed a Notice of Completion (NOC) with the Governor’s Office of Planning and Research, State Clearinghouse indicating that this Draft EIR has been completed and is available for review and comment by the public, interested parties, agencies, and organizations. Copies of this Draft EIR; the technical studies used in the preparation of this Draft EIR; the 2020 LRDP SEIR, the 2009 LRDP EIS/EIR, and addenda; are available for review during normal operating hours at the Physical & Environmental Planning office in the Downtown Center at 655 West 18th Street, Merced, CA 95340. All of these documents are also available online at <https://planning.ucmerced.edu/ceqa-environmental-documents>.

Consistent with *State CEQA Guidelines* Section 15087, this Draft EIR is being made available for public review for a period of 45 days. During this period, the general public, agencies, and organizations may submit written comments on the Draft EIR to UC Merced. In reviewing the Draft EIR, reviewers should focus on the document’s adequacy in identifying and analyzing significant

effects on the environment and ways in which the significant effects of the proposed Project might be avoided or mitigated. To ensure inclusion in the Final EIR and full consideration by the lead agency, comments on the Draft EIR must be received during the public review period, which ends at 5:00 p.m. on October 10, 2022. They may be e-mailed to [aarias40@ucmerced.edu](mailto:aarias40@ucmerced.edu) or sent to:

Phillip Woods, AICP  
Campus Architect and Director of Physical & Environmental Planning  
Physical & Environmental Planning  
University of California, Merced  
5200 North Lake Road  
Merced, California 95343

#### **1.4.4 Publication of Final EIR**

Following the close of the Draft EIR review period, the University will review the written and oral comments received and prepare responses to the comments that pertain to the environmental analysis and effects of the proposed Project. The Final EIR will consist of the Draft EIR, comments on the Draft EIR, responses to comments on the Draft EIR, and any text changes. The Final EIR will be considered by The Regents in a public meeting and certified if the Final EIR is determined to be in compliance with CEQA. Upon certification of the EIR, The Regents will consider the proposed Project for approval.

In conjunction with project approval, CEQA requires that a Mitigation Monitoring and Reporting Plan (MMRP) be prepared and adopted to ensure that the mitigation measures that are identified to mitigate the significant impacts of the project are implemented. As noted above, the 2020 LRDP mitigation measures that were adopted by the University when it approved the 2020 LRDP SEIR have been made standard project features for the proposed Project and those measures (with the exception of the LOS mitigation measures, as described below) will be monitored pursuant to the 2020 LRDP MMRP. The analysis in this EIR shows that no project-specific mitigation measures are required.

As noted above, consistent with *State CEQA Guidelines* Section 15064.3, subdivision (b), an updated supplemental program-level transportation impact analysis of campus growth through 2030 under the 2020 LRDP based on VMT metrics has been completed which replaces in full the prior LOS-based transportation analysis that was included in the 2020 LRDP SEIR. Mitigation measures previously adopted to reduce or avoid LOS-related impacts associated with the 2020 LRDP have been deleted from the MMRP for the 2020 LRDP because automobile delay, as described by solely by LOS or other similar measures of vehicle congestion, is no longer considered a significant impact under CEQA. Furthermore, based on the program-level transportation analysis, implementation of the 2020 LRDP would not exceed an applicable VMT threshold of significance, and no mitigation is required. Thus, the MMRP for the 2020 LRDP will be amended to delete the LOS mitigation measures.

#### **1.5 INTENDED USES OF THIS EIR**

The Regents will use this EIR to review and consider the environmental implications of approving the proposed Project. This document may also be used as a source of information by responsible agencies with permitting or approval authority over the proposed Project. This EIR (**Chapter 7.0**) will

supplement the 2020 LRDP SEIR and will serve as the first-tier document for evaluating the transportation (VMT) impacts of all new projects that are proposed on the campus under the 2020 LRDP.

## 1.6 ORGANIZATION OF THIS EIR

This EIR presents the potential Project-level environmental impacts of implementing the proposed Project, as well as the programmatic Transportation Supplement to the 2020 LRDP SEIR. The following chapters are included in this EIR:

**Chapter 1.0, Introduction** – provides an overview of the purpose of the EIR, the type of EIR, the EIR review process, the intended uses of the EIR, and an overview of the format and contents of the Draft EIR.

**Chapter 2.0, Summary** – presents a brief synopsis of the proposed Project and project objectives, issues to be resolved/areas of controversy, and an overview of Project alternatives. This chapter also provides a table that summarizes environmental impacts that would result from implementation of the proposed Project; 2020 LRDP mitigation measures to reduce potentially significant impacts, and the level of significance of impacts both before and after mitigation.

**Chapter 3.0, Project Description** – provides a detailed description of the proposed Project, including its location, background information, objectives, and physical characteristics.

**Chapter 4.0, Environmental Setting, Impacts, and Mitigation Measures** – provides the approach to the environmental analysis and contains the individual and cumulative environmental effects of the proposed Project by environmental topic. This chapter evaluates the following environmental topics in detail:

- |                                 |                                   |
|---------------------------------|-----------------------------------|
| 4.1 Air Quality                 | 4.4 Transportation                |
| 4.2 Hydrology and Water Quality | 4.5 Tribal Cultural Resources     |
| 4.3 Public Services             | 4.6 Utilities and Service Systems |

As the analysis in the Initial Study (**Appendix 1.0**) shows, the proposed Project is within the scope of the growth and development analyzed in the 2020 LRDP SEIR and would not result in new or more severe impacts on aesthetics, agriculture and forestry resources, biological resources, cultural resources, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, land use and planning, mineral resources, noise, population and housing, recreation, or wildfire than previously analyzed and disclosed in the 2020 LRDP SEIR and the 2009 LRDP EIS/EIR, and no new mitigation measures beyond those already adopted in conjunction with the adoption of 2020 LRDP would be required. Therefore, these environmental topics are not evaluated in further detail in this Draft EIR. **Chapter 6.0** includes a summary of effects not found to be significant, based on the analysis in the Initial Study.

**Chapter 5.0, Alternatives** -- describes alternatives to the proposed Project and presents the comparative environmental consequences and benefits of each alternative. This chapter includes an analysis of the No Project Alternative, among others, as required by CEQA.

**Chapter 6.0, Other CEQA Considerations** – summarizes impacts that would result from proposed Project implementation, including significant environmental effects, significant and unavoidable environmental effects, irreversible changes to the environment, growth-inducing impacts, and effects not found to be significant.

**Chapter 7.0, 2020 LRDP SEIR Transportation Supplement**– presents the LRDP-level analysis of transportation impacts of campus growth under the 2020 LRDP based on VMT metrics.

**Chapter 8.0, Report Preparation** -- identifies lead agency staff and consultants who prepared the Draft EIR under contract to the University. It also identifies all federal, state, or local agencies, and individuals consulted during the preparation of the Draft EIR.

**Chapter 9.0, References** – lists the documents and materials referenced in the text of the document.

This EIR includes the following appendices:

- **Appendix 1.0:** NOP, Initial Study, Scoping Meeting notes, and Comment Letters
- **Appendix 2.0:** Air Quality Emissions Data
- **Appendix 3.0:** Preliminary Stormwater Analysis
- **Appendix 4.0:** VMT Impact Analysis
- **Appendix 5.0:** Cultural Resources Survey Memo

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## 2.0 SUMMARY

### 2.1 PURPOSE

This document is an Environmental Impact Report (EIR) analyzing the environmental effects of the proposed UC Merced Medical Education (UCM-ME) Building Project (“proposed Project” or “Project”). This EIR also includes a Supplement to the 2020 Long Range Development Plan (LRDP) Subsequent EIR (SEIR) that analyzes the transportation impacts under the 2020 LRDP based on vehicle miles traveled (VMT) metrics consistent with current California Environmental Quality Act (CEQA) requirements.

*State CEQA Guidelines* (Section 15123) require 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 the project’s significant effects. This Summary is intended to address these CEQA requirements and provide a clear, simple, and concise description of the proposed Project and its potential significant environmental impacts.

The University of California (UC or University) is the “lead agency” for this Project consistent with CEQA, and the University of California, Merced (UC Merced or Campus) is the Project proponent. The Board of Regents of the University of California (The Regents) has the principal responsibility for approving this Project.

### 2.2 TYPE OF CEQA DOCUMENT

In March 2009, The Regents certified a joint Environmental Impact Statement (EIS)/EIR (2009 UC Merced and University Community Project EIS/EIR; State Clearinghouse No. 2008041009) that analyzed and disclosed the impacts from the implementation of a LRDP for the UC Merced campus and a community plan for an adjoining community and approved the UC Merced 2009 LRDP as a guide for physical development of the campus to accommodate growth projected through 2030 and beyond. The 2009 LRDP addressed the development of the campus to support an enrollment level of 25,000 students by the year 2030 on an 815-acre site. The 2009 EIS/EIR is hereinafter referred to as the 2009 LRDP EIS/EIR.

Following the approval of the 2009 LRDP, the University revised its enrollment projections through 2030 down substantially and also acquired more land to the south of the campus as a result of the dissolution of the University Community Land Company (UCLC) in which the University was a 50 percent owner. In light of these changes, UC Merced prepared an updated LRDP for a more compact campus to be developed by 2030. In March 2020, The Regents certified a program-level SEIR<sup>1</sup> that analyzed and disclosed the environmental impacts from the implementation of the updated LRDP<sup>2</sup>

<sup>1</sup> University of California, Merced. 2020. *UC Merced 2020 Long-Range Development Plan Final Subsequent Environmental Impact Report*, March 2020.

<sup>2</sup> University of California, Merced. 2020. *UC Merced 2020 Long-Range Development Plan*, March 2020.

for the UC Merced campus and adopted the UC Merced 2020 LRDP as a guide for physical development to accommodate campus population growth projected through 2030. The 2020 LRDP SEIR addressed the development of the campus to accommodate the full buildout enrollment of 15,000 Full Time Equivalent (FTE) students within a 1,026-acre campus footprint. The SEIR did not fully replace the 2009 LRDP EIS/EIR but supplemented and updated most of the analyses, while retaining some of the analysis in the 2009 LRDP EIS/EIR. The University noted that the 2020 LRDP SEIR, in conjunction with the 2009 LRDP EIS/EIR, will serve as the base or first-tier environmental document for tiering purposes when implementing the 2020 LRDP.

Because the proposed UCM-ME Building Project would be undertaken by the University, as the lead agency, the University must evaluate the potential environmental impacts of the proposed Project in compliance with CEQA. The University has completed an evaluation of the proposed Project pursuant to Section 15168(c)(2) of the *State CEQA Guidelines* to determine if the proposed Project is within the scope of the growth and development analyzed in UC Merced's 2020 LRDP SEIR and the 2009 LRDP EIS/EIR. *State CEQA Guidelines* provide that if the lead agency can find that, pursuant to Section 15162, no new impacts could occur and no new mitigation measures are required, then the Project is within the scope of the previous program EIR, and no further evaluation is required. The University has determined – on the basis of the analysis in the Initial Study that was circulated for public review between April 2, 2021 and May 3, 2021 (**Appendix 1.0**) – that while the proposed Project is within the scope of the development that was analyzed in the 2020 LRDP SEIR and the 2009 LRDP EIS/EIR, the proposed Project has the potential to result in specific project-level impacts that may not be fully disclosed in the 2020 LRDP SEIR and the 2009 LRDP EIS/EIR. Thus, this document is a project-level EIR that tiers from the 2020 LRDP SEIR and the 2009 LRDP EIS/EIR under the tiering provisions of CEQA. Both EIRs are incorporated by reference and are available on UC Merced's planning website <https://planning.ucmerced.edu/ceqa-environmental-documents>, as well as in hard copy at: UC Merced Physical & Environmental Planning office in the Downtown Center at 655 West 18th Street, Merced, CA 95340.

This EIR tiers from the 2009 LRDP EIS/EIR for the resource topics of aesthetics, agricultural and forestry resources, cultural resources, and geology and soils. It tiers from the 2020 LRDP EIR for the resource topics of air quality, biological resources, greenhouse gas emissions, energy, hazards, hydrology and water quality, noise, population and housing, public services, recreation, and utilities. This EIR tiers from the two first-tier EIRs for the following information:

- Background and setting information;
- Significance criteria;
- Issues that were evaluated in sufficient detail for which there is no significant new information or change in circumstances that would require further analysis; and
- Analysis of cumulative impacts.

New setting information is incorporated into this EIR, when necessary, due to changes over time or to provide details from project-specific surveys and reports. Similarly, analysis is updated where



appropriate to reflect a comparison to a 2021 baseline (except where otherwise noted) and the details of potential environmental impacts.

Because the proposed Project is an element of the growth and development projected under the 2020 LRDP, mitigation measures adopted by The Regents in conjunction with the approval of the 2020 LRDP that are relevant to the proposed Project have been included in and are a part of the UCM-ME Building Project. The analysis presented in **Chapter 4.0** evaluates environmental impacts that would result from the proposed Project following the implementation of applicable 2020 LRDP mitigation measures as standard project features. These standard project features are a part of the proposed Project and will not be readopted.

The 2020 LRDP SEIR analyzed potential impacts of traffic generated by campus growth through 2030 on roadway facilities based on an analysis of level of service (LOS) impacts. However, since the certification of the 2020 LRDP SEIR in March 2020, as of July 1, 2020, CEQA documents must include an evaluation of transportation impacts based on vehicle miles traveled (VMT), pursuant to Senate Bill (SB) 743. As specified by SB 743 and the associated updates to the *State CEQA Guidelines*, automobile delay, as measured by “level of service” (LOS) and other similar metrics, no longer constitutes a significant environmental effect under CEQA (Public Resources Code, Section 21099, subd. (b)(3)). Therefore, this EIR (**Chapter 7.0**) also includes an updated supplemental program-level transportation impact analysis of campus growth through 2030 under the 2020 LRDP based on VMT metrics consistent with *State CEQA Guidelines* Section 15064.3, subdivision (b). This updated transportation impact analysis replaces in full the prior LOS-based transportation impact analysis that was included in the 2020 LRDP SEIR. Mitigation measures previously adopted to reduce or avoid LOS-related impacts associated with the 2020 LRDP have been deleted, because automobile delay, as described solely by LOS or other similar measures of vehicle congestion, is no longer considered a significant impact under CEQA.

## 2.3 PROJECT LOCATION

The UC Merced campus is located in the San Joaquin Valley (SJV) of California in eastern Merced County, within the sphere of influence (SOI) of the City of Merced. The campus is approximately 2 miles northeast of the Merced City limits and is regionally accessed via State Route 99 (SR-99) and locally via Bellevue and Lake Roads. The campus is accessed by turning east off of Lake Road onto Ranchers Road, Scholars Lane, or Bellevue Road. The Project site is located in the southeast portion of the UC Merced campus, north of Cottonwood Meadow, east-southeast of the Academic Quad, and is accessed by Bellevue Road and Cottonwood Loop Road.

## 2.4 PROJECT DESCRIPTION

The 2020 LRDP sets forth the development plans for the UC Merced campus to the year 2030. The 2020 LRDP SEIR addressed the development of the campus to the full buildout enrollment of 15,000 students by 2030 on a 1,026-acre campus footprint. As described in Section 2.3.1 of the 2020 LRDP SEIR, the campus population is projected to increase by about 5,300 students between 2020 and 2030, and employment at the campus is projected to increase by 1,131 faculty and staff during the same period. As described in Section 2.3.2 of the 2020 LRDP SEIR, about 1.83 million gross square feet (gsf) of building space is projected to be added to the campus between 2020 and 2030 to

accommodate the projected enrollment increase and expanded and new academic programs. The proposed Project would include development of an approximately 190,000 outside gross square foot (ogsf)<sup>3</sup> building to provide facilities for the Campus' ME program and health-related departments of Psychological Sciences and Public Health and a population of about 2,999 people (2,811 students and 188 staff/faculty). About 1,681 of the 2,999 persons that would occupy this building are already enrolled as students or employed in the Psychological Sciences and Public Health Departments as of 2020, and therefore the net new population accommodated on the campus due to this project would be on the order of about 1,318 persons. The building space and population growth associated with the proposed Project are well within the growth assumptions used in the 2020 LRDP SEIR analyses.

The 2020 LRDP identified areas of the campus that would be developed with new facilities under the 2020 LRDP and assigned land use designations to those lands to guide the development of facilities. The proposed building would be located on land within the campus that is designated as Campus Mixed Use (CMU) pursuant to the 2020 LRDP. The CMU designation allows for the development of academic, research, student housing, student and support services, athletic and recreational facilities, university affiliate dining and retail, administrative offices, service facilities, and parking. The proposed building and associated parking lot would be an allowed use under the campus' CMU designation, as it would provide facilities for academic and research uses.

The proposed Project consists of two components: (1) development of the proposed UCM-ME Building, including a site access road and a small surface parking lot; and (2) filling of the existing storm water detention basins within Cottonwood Meadow and the construction of a new stormwater basin in the southern portion of the campus. The salient features of the proposed Project are described below. Refer to **Chapter 3.0** for the full Project description.

#### 2.4.1 Proposed Building

The proposed building would include approximately 190,000 ogsf of building space. After the space associated with common areas, such as lobbies, hallways, restrooms and mechanical space, is deducted, there would approximately 118,750 assignable square feet (asf)<sup>4</sup> of instructional, academic office, research, and community facing space in the proposed building. The proposed building would include faculty offices, graduate student, post doc, and undergraduate research space for the Medical Education programs and the Departments of Psychological Sciences and Public Health. Further, it would support the growth of new medical education and allied healthcare worker training programs by providing the capacity for advanced new instructional facilities in anatomy, clinical and simulation skills training and hybrid learning. Existing biology and physiology students as well as students in various partnership programs in the healthcare community would also utilize these new specialized instructional facilities. The proposed building would also house the HSRI and associated research facilities, thus integrating the new building with a significant cross section of the campus research community.

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<sup>3</sup> "Outside gross square feet (ogsf)" includes the interior building area within the enclosed structure as well as the covered, unenclosed corridors, including walkways, porches, balconies, etc.

<sup>4</sup> "Assignable square feet (asf)" comprises the portion of building area assigned to or available for an occupant or specific use. Common areas such as restrooms, hallways, or mechanical space are excluded.

The proposed Project would comprise a large rectangular-shaped four-story building, approximately 65 feet in height (60 feet plus a 5-foot parapet), consisting of two wings that would wrap around a central courtyard. The first floor would include instructional space, Developmental Psychology labs, space for community participation, and a receiving dock. The second floor would be assigned for the medical education program. The top two stories would include faculty offices, computational labs, wet labs, and conference rooms.

#### **2.4.2 Roadway and Pedestrian Access, On-Site Circulation, Parking, and Electrical Upgrades**

The site planning and other aspects of the proposed UCM-ME Building would ensure the integration of the new building within the existing campus fabric. The site selection criteria that were used to identify the preferred site included the following: site suitability to ensure compatibility with the physical context of the campus; location and proximity to the academic core; community access; pedestrian access; future site considerations, and infrastructure connections.

Automobile access to the site would be via the Bellevue Road extension and Cottonwood Loop Road. The research vision for the proposed UCM-ME Building requires design that is sensitive to access by the general community, including children and disabled individuals. To facilitate community participation in research studies in developmental psychology and community-based public health initiatives, a small parking lot with 60 spaces would be provided adjacent to the proposed building with direct access to Cottonwood Loop Road. The parking lot would also include electrical vehicle stalls/charging stations.

The proposed Project would include a pedestrian link from the UCM-ME Building to the Academic Quad and Academic Walk, a main pedestrian path along the eastern side of the campus. This connection would allow the building functions to be fully integrated into the academic core of the UC Merced campus. The proposed Project would also include bicycle spaces, showers, and locker rooms in order to encourage the use of bicycles for travel to the site. Bicycle spaces would be provided consistent with LEED v4.1 requirements.

Public transportation would be available through the UC Merced shuttle system. The shuttle provides service to downtown Merced. The transit hub at the campus Health and Athletic Center north of the Bellevue Road extension would be the shuttle stop that is nearest to the proposed UCM-ME Building.

While there is sufficient electrical capacity in the switchgear at UC Merced's Central Plant to serve the UCM-ME Building, the proposed Project also includes minor upgrades to the Central Plant involving the installation of two new electrical feeds that would be installed within the existing facilities and vaults. No new ground disturbance would occur as a result of the upgrades to Central Plant and the new electrical feed installation.

#### **2.4.3 Storm Water Detention Improvements**

Development of the proposed building, parking lot, walkways and access road would increase the area of impervious surfaces at the Project site. The Project site is located in Cottonwood Meadow, which is currently used to manage storm water runoff from a substantial portion of the developed campus. Cottonwood Meadow was engineered and constructed as a storm water management area

with basins that detain storm water to allow for evaporation and groundwater recharge. The proposed Project would involve the filling and grading of the storm water detention basins in Cottonwood Meadow and the construction of a new storm water detention basin in the southern portion of the campus to replace the basins that would be filled and to also handle the increased storm water flows that would result from project development. New storm drains would be installed in Cottonwood Loop Road and other roadways to convey storm water flows from the proposed building area to the new storm water detention basin. The new detention basin would be located west of Fairfield Canal and to the southeast of Parking Lot 4. It would have a surface area of about 8.06 acres, and an average depth of about 6 feet. The basin would have a storage capacity of 42.7 acre-feet, which is the estimated volume of storm water resulting from a 100-year, 24-hour storm from about 170 acres of developed campus land, including the site of the proposed Project. Outflows from the basin would maintain existing pre-development flows that currently discharge downstream into Cottonwood Creek.

## 2.5 PROJECT NEED AND OBJECTIVES

The proposed Project is intended to address the following conditions:

- **Medical Education and Allied Healthcare Programs.** UC Merced currently does not have the appropriate facilities to support the UC San Francisco (UCSF)-Fresno and UCSF San Joaquin Valley Program in Medical Education (SJV PRIME) partnership nor other partnerships with community colleges or other SJV healthcare worker training programs. For example, the Campus currently does not have anatomy training facilities, adequate hybrid learning classrooms, or clinical or simulation skills training areas.
- **Obstacles to Faculty Hiring/Program Growth.** Additional office, research lab, graduate student and post doc space is needed to facilitate future growth in the Departments of Psychological Sciences, Public Health, and the emerging School of Management. Without additional space, these four existing programs will not be able to continue to support campus population growth at the undergraduate and graduate level nor hire the additional faculty required to develop the anticipated new programs necessary to deliver a flourishing medical education pipeline program and affect the clinical research and healthcare in the region.
- **Obstacles to Creation of New Community-Based Programs.** The Campus has no capacity to create and house new programs (i.e., Institute for Child and Family Sciences) without the creation of more and new types of space. Partnerships with community colleges, secondary schools, the Accreditation Council for Graduate Medical Education (ACGME) programs in the SJV and the other Health Center Program Look-Alikes in the SJV require facilities that promote community access and interaction.
- **General Assignment Classrooms.** Recent classroom utilization studies have shown that capacity in all classrooms will be reached by the time student enrollment reaches 12,500 students (approximately 2025) and capacity has already been reached in certain types of classrooms. The recent experience of COVID-19 also emphasizes the need for the Campus to make hybrid learning capable classrooms a priority in any future buildings.

Based on the above conditions, the key objectives of the proposed Project are to:

- Provide space for the development of a new Medical Education program, initially in partnership with the UCSF-Fresno and SJV/PRIME program.
- Provide space for growth in the Department of Public Health.
- Provide space for growth in the Department of Psychological Sciences and creation of an Institute for Child and Family Sciences.
- Consolidate and collocate these existing and new programs in one facility so as to optimally draw upon the intellectual, technological, and material resources of the UC Merced programs and facilities, and enhance intellectual exchange and collaboration between related programs.
- Provide classroom space to support campus population growth.
- Maximize energy efficiency, sustainability, and cost-effectiveness of these programs by housing them in a consolidated, state-of-the-art building designed to balance energy use and cost efficiencies.

## 2.6 TOPICS OF KNOWN CONCERN

To determine which environmental topics should be addressed in this EIR, UC Merced circulated a Notice of Preparation (NOP) between April 2 and May 3, 2021 in order to receive input from interested public agencies and the public. A copy of the NOP is presented in **Appendix 1.0** of this EIR. Based on the scoping comments and the analysis in the Initial Study that accompanied the NOP, this EIR addresses the following environmental topics in depth:

- Air Quality
- Hydrology and Water Quality
- Public Services (fire protection)
- Transportation
- Tribal Cultural Resources
- Utilities (wastewater system capacity)

## 2.7 ISSUES TO BE RESOLVED/AREAS OF CONTROVERSY

Specific issues that were raised in scoping comments include the following:

- Project potential for impacts to a historical resource or tribal cultural resources;
- Consideration of drainage and sewer capacity for future buildings as part of previous analyses conducted for the 2020 LRDP;
- Project details including the anticipated construction schedule for the UCM-ME Building and whether a medical school will be developed on the campus;
- Recommendations from the California Department of Fish and Wildlife (CDFW) regarding potential impacts to nesting birds and burrowing owls;

- Recommendation to consult with the United States Fish and Wildlife Service (USFWS) on potential impacts to federally-listed species, including, but not limited to, California tiger salamander;
- Consideration of mitigation measures put forth by Merced Irrigation District (MID) for potential effects on MID facilities on the campus; and,
- Recommendation by the Native American Heritage Commission (NAHC) that UC Merced conduct consultation with California Native American Tribes that are traditionally and culturally affiliated with the geographic area of the proposed Project to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources.

All applicable scoping comments are addressed in the impact analysis. **Section 4.5** of this EIR includes an evaluation of Project impacts on tribal cultural resources, and **Section 4.2** and **Section 4.6** include analyses of potential Project-related impacts on storm water drainage and sewer capacity, respectively. CDFW recommends preconstruction surveys for burrowing owls consistent with the Staff Report on Burrowing Owl Mitigation (CDFG 2012), as well as nesting bird surveys in advance of ground disturbing activities associated with the Project. As specified in the biological resources impact analysis in the Initial Study (Section 5.6 of **Appendix 1.0**), the 2020 LRDP SEIR provides a mitigation measure that was adopted pertaining to preconstruction surveys for nesting birds and burrowing owls consistent with the 2012 Staff Report; as such, this mitigation would be implemented as part of the proposed Project. CDFW also recommends that UC Merced consult with the USFWS for federally-listed species. UC Merced will adhere to the terms of the existing Biological Opinion issued by USFWS to the University in 2002 and updated in 2009 for campus development. Further evaluation in this EIR is not required.

## 2.8 ALTERNATIVES

Consistent with CEQA requirements, a reasonable range of alternatives were considered and evaluated in this EIR. Two alternatives that were considered to be potentially feasible were evaluated in detail along with the mandated No Project Alternative. The alternatives evaluated in detail in **Chapter 5.0** of this EIR are summarized below.

### 2.8.1 Alternative 1: No Project

*State CEQA Guidelines* require the analysis of a No Project Alternative (Section 15126.6(e)). The analysis must discuss existing conditions, as well as what would be reasonably expected to occur in the foreseeable future if the proposed project were not to be approved, based on current plans, site zoning, and consistent with available infrastructure and community services. If a project is a development project on an identifiable site, *State CEQA Guidelines* Section 15126.6(e)(3)(B) provides that the discussion of the No Project Alternative should compare the environmental effects of the site remaining in its existing state against environmental effects which would occur if the project is approved.

Under the No Project alternative, the UCM-ME Building would not be constructed and there would be no modifications to the existing Cottonwood Meadow detention basins, site access, or infrastructure and the Project site would continue to remain undeveloped. The Departments of

Psychological Sciences and Public Health would remain in the Social Sciences and Management (SSM) Building. Without the vacated space within the SSM Building, the Department of Economics would remain in the School of Social Sciences, Humanities and Arts (SSHA) Building. The medical education program would be developed by accommodating it in existing buildings. With respect to enrollment and employment increase, the No Project alternative would involve the same population increase as the proposed Project if the Campus is able to accommodate the new and expanded programs in existing buildings or the alternative would involve a smaller population increase due to lack of space.

### **2.8.2 Alternative 2: Reduced Program Alternative**

The Reduced Program Alternative was developed in order to reduce the size of the proposed building. Under this alternative, only the medical education program would be accommodated in the new building. Other existing campus departments would remain in their current locations, i.e., the Departments of Psychological Sciences and Public Health would remain in the SSM Building and the Department of Economics would remain in the SSHA Building.

Under this alternative, the proposed medical education building would be reduced in size from approximately 190,000 gsf to approximately 145,300 gsf, a reduction in size of about 24 percent. With a smaller amount of building space and still maintaining a four-story building, the building footprint would be reduced by about 20 to 24 percent, and the associated parking would be reduced by approximately 50 percent. As with the proposed Project, the new building under this alternative would also be located in Cottonwood Meadow and filling of the storm water basins on the project site would be required. The access roadway, new storm water detention basin, and other infrastructure improvements would be the same as under the proposed Project.

The anticipated net new population accommodated in the building would be 845 persons (i.e., 784 new students, and 61 new faculty and staff), compared to 1,318 persons under the proposed Project (1,269 students and 49 faculty/staff). However, the rest of the project-related new population would be accommodated in existing buildings, and the total increase in campus population would be comparable to that under the proposed Project.

### **2.8.3 Alternative 3: Reduced Building Footprint Alternative**

The Reduced Building Footprint Alternative was developed in order to decrease the development footprint of the UCM-ME Building while maintaining the building program planned under the proposed Project. Under this alternative, the new building would accommodate the co-location of the medical education program and the health and behavioral sciences programs as planned for the proposed Project but the building footprint would be reduced by increasing the height of the building. Thus, the building would be a five-story (approximately 75 feet in height [70 feet plus a 5-foot parapet]) structure, compared to a four-story/65-foot-tall structure under the proposed Project. The Reduced Building Footprint Alternative would result in a decrease in the building footprint by approximately 20 percent, or from 2.05 acres under the proposed Project to approximately 1.64 acres for the taller building.

The same amount of parking would be provided as under the proposed Project. As with the proposed Project, the new building under this alternative would also be located in Cottonwood



Meadow and filling of the storm water basins on the project site would be required. The access roadway, new storm water detention basin, and other infrastructure improvements would be the same as under the proposed Project.

The new building under this alternative would accommodate the same number of new persons (1,318 persons, including 1,269 students and 49 faculty/staff) as the proposed Project, and the total increase in campus population would be comparable to that under the proposed Project.

## 2.9 2020 LRDP SEIR TRANSPORTATION SUPPLEMENT

The 2020 LRDP SEIR analyzed potential impacts of traffic generated by campus growth through 2030 on roadway facilities based on an analysis of LOS impacts. However, since the certification of the 2020 LRDP SEIR in March 2020, as of July 1, 2020, CEQA documents must include an evaluation of transportation impacts based on VMT, pursuant to SB 743. As specified by SB 743 and the associated updates to the *State CEQA Guidelines*, automobile delay, as measured by “level of service” and other similar metrics, no longer constitutes a significant environmental effect under CEQA (Public Resources Code, Section 21099, subd. (b)(3)). Therefore, this EIR (**Chapter 7.0**) also includes an updated supplemental program-level transportation impact analysis of campus growth through 2030 under the 2020 LRDP based on VMT metrics consistent with *State CEQA Guidelines* Section 15064.3, subdivision (b). This updated transportation impact analysis replaces in full the prior LOS-based transportation analysis that was included in the 2020 LRDP SEIR, including applicable mitigation measures.

## 2.10 IMPACT SUMMARY

The Initial Study for the proposed Project is included in **Appendix 1.0** to this EIR. The Initial Study, which incorporates checklist items from Appendix G of the *State CEQA Guidelines*, supports the determination that the Project would have no impact or a less-than-significant impact, or that impacts would be less than significant with implementation of the 2020 LRDP mitigation measures (including 2009 LRDP mitigation measures that were redesignated 2020 LRDP mitigation measures) for the following environmental issues: aesthetics, agriculture and forestry resources, biological resources, cultural resources, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, land use and planning, mineral resources, noise, population and housing, recreation, and wildfire. Additionally, specific CEQA checklist items related to air quality, hydrology and water quality, public services, transportation, and utilities and service systems were screened out based on no impact or less-than-significant impact determinations. **Chapter 6.0, Other CEQA Considerations**, includes a summary of the findings for each topic not discussed in the EIR. Based on the analysis in the Initial Study, one or more CEQA checklist items within the following topic areas required further study in this EIR: air quality, hydrology and water quality, public services, transportation, tribal cultural resources, and utilities and service systems. A detailed discussion regarding potential environmental impacts of the proposed project is provided in **Chapter 4.0, Environmental Setting, Impacts, and Mitigation Measures**.

A summary of the impacts of the proposed Project, as reflected in the Initial Study (**Appendix 1.0**) and **Chapter 4.0** of this EIR, is provided in **Table 2-1, Summary of Project Environmental Impacts and Mitigation Measures**. Also included in **Table 2-1** are 2020 LRDP mitigation measures that would



be implemented to avoid or reduce significant project impacts. The table indicates whether implementation of the mitigation measures would reduce the impact to a less-than-significant level.

A summary of the program-level 2020 LRDP transportation impacts, as discussed in the supplemental impact analysis in **Chapter 7.0**, is provided in **Table 2-2, Summary of 2020 LRDP Program-Level Transportation Impacts and Mitigation Measures**. Based on the program-level transportation analysis, implementation of the 2020 LRDP would not exceed an applicable VMT threshold of significance, and no mitigation is required. As reflected above in **Section 2.2**, mitigation measures previously adopted to reduce or avoid LOS-related impacts associated with the 2020 LRDP have been deleted, because automobile delay, as described by solely by LOS or other similar measures of vehicle congestion, is no longer considered a significant impact under CEQA. Thus, the Mitigation Monitoring and Reporting Plan for the 2020 LRDP will be amended to delete the LOS mitigation measures, as described in **Section 1.4.4**.

**Table 2-3, Summary Comparison of Project Alternatives**, lists the impacts of the proposed Project, and identifies whether the alternatives would result in similar, reduced or greater environmental impacts than the proposed Project.

**Table 2-1: Summary of UCM-ME Building Project Environmental Impacts and Mitigation Measures**

Project Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
<b>Aesthetics</b> (Initial Study, Appendix 1.0)			
Would the Project have a substantial adverse effect on a scenic vista?	<i>Less Than Significant</i>	<b>2020 LRDP MM AES-1b:</b> Where possible, major vehicular and pedestrian transportation corridors on the Campus shall be located and designed to provide views of the Sierra Nevada.  <b>2020 LRDP MM AES-3a:</b> The University shall design all new aboveground infrastructure on the Campus to the following standards: (a) Screen aboveground 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 aboveground 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.	N/A
Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<i>No Impact</i>	No mitigation is required.	N/A
In non-urbanized areas, would the Project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	<i>Less Than Significant</i>	Implement <b>2020 LRDP MM AES-3a.</b>	N/A
Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<i>Less Than Significant</i>	No mitigation is required.	N/A
<b>Agriculture and Forestry Resources</b> (Initial Study, Appendix 1.0)			
There are no significant agriculture and forestry resources impacts.			

**Table 2-1: Summary of UCM-ME Building Project Environmental Impacts and Mitigation Measures**

Project Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
<b>Air Quality</b> (Impacts AQ-1 through 4 and C-AQ-1 in EIR, Section 4.1. Remaining Impacts in Initial Study, Appendix 1.0)			
<b>UCM-ME Impact AQ-1:</b> The proposed Project would not result in construction emissions that would result in a cumulatively considerable net increase of criteria pollutants for which the air basin is in non-attainment.	<i>Less than Significant</i>	<p><b>2020 LRDP MM AQ-1a:</b> The construction contractors shall be required via contract specifications to use construction equipment rated by the U.S. EPA as meeting Tier 4 (model year 2008 or newer) emission limits for engines between 50 and 750 horsepower.</p> <p><b>2020 LRDP MM AQ-1b:</b> UC Merced shall include in all construction contracts the measures specified in SJVAPCD Regulation VIII (as it may be amended for application to all construction projects generally) to reduce fugitive dust impacts, including but not limited to the following:</p> <ul style="list-style-type: none"> <li>• All disturbed areas, including storage piles, which are not being actively utilized for construction purpose, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, or vegetative ground cover.</li> <li>• All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.</li> <li>• All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions using application of water or by presoaking.</li> <li>• When materials are transported off-site, all material shall be covered, effectively wetted to limit visible dust emissions, or at least 6 inches of freeboard space from the top of the container shall be maintained.</li> <li>• All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit visible dust emissions. Use of blower devices is expressly forbidden.)</li> <li>• Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, storage piles shall be effectively stabilized of fugitive dust emissions by using sufficient water or chemical stabilizer/ suppressant.</li> </ul>	N/A

**Table 2-1: Summary of UCM-ME Building Project Environmental Impacts and Mitigation Measures**

<b>Project Impacts</b>	<b>Significance Before Mitigation</b>	<b>Mitigation Measures</b>	<b>Significance After Mitigation</b>
<b>UCM-ME Impact AQ-2:</b> The proposed Project would not result in operational emissions that would involve a cumulatively considerable net increase of criteria pollutants for which the air basin is in non-attainment.	<i>Less than Significant</i>	<p><b>2020 LRDP MM AQ-2a:</b> UC Merced shall implement the following measures to reduce emissions from vehicles:</p> <p>Provide pedestrian-enhancing infrastructure to encourage pedestrian activity and discourage vehicle use.</p> <ul style="list-style-type: none"> <li>• Provide bicycle facilities to encourage bicycle use instead of driving, such as bicycle parking, bicycle lanes, bicycle lockers; and showers and changing facilities for employees.</li> <li>• Provide preferential carpool and vanpool parking for non-residential uses.</li> <li>• Provide transit-enhancing infrastructure to promote the use of public transportation, such as covered bus stops and information kiosks.</li> <li>• Provide facilities, such as electric car charging stations and a CNG refueling station, to encourage the use of alternative-fuel vehicles.</li> <li>• Improve traffic flows and congestion by timing of traffic signals at intersections adjacent to the campus to facilitate uninterrupted travel.</li> <li>• Work with campus transit provider to replace CatTracks buses with either electric buses or buses operated on alternative fuels.</li> <li>• Work with the City of Merced to establish park and ride lots and provide enhanced transit service between the park and ride lots and the campus.</li> <li>• Replace campus fleet vehicles with electric vehicles or vehicles that operate on alternative fuels.</li> <li>• Reduce the number of daily vehicle trips by providing more housing on campus.</li> </ul> <p><b>2020 LRDP MM AQ-2b:</b> UC Merced shall implement the following measures to reduce emissions from area and energy sources, as feasible:</p> <ul style="list-style-type: none"> <li>• Utilize low-VOC cleaning supplies and low-VOC paints (100 grams/liter or less) in building maintenance.</li> <li>• Utilize electric equipment for landscape maintenance.</li> <li>• Plant low maintenance landscaping.</li> <li>• Implement a public information program for resident students to minimize the use of personal consumer products that result in ROG emissions, including information on alternate products.</li> <li>• Instead of natural gas water heaters, install solar water heating systems.</li> </ul>	N/A
<b>UCM-ME Impact AQ-3:</b> Implementation of the proposed Project would not expose sensitive receptors to substantial pollutant concentrations of carbon monoxide.	<i>Less than Significant</i>	No mitigation is required.	N/A

**Table 2-1: Summary of UCM-ME Building Project Environmental Impacts and Mitigation Measures**

Project Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
<b>UCM-ME Impact AQ-4:</b> Implementation of the proposed Project would not conflict with or obstruct implementation of the applicable air quality plan.	<i>Less than Significant</i>	No mitigation is required.	N/A
Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	<i>Less than Significant</i>	No mitigation is required.	N/A
<b>Cumulative Impact C-AQ-1:</b> The construction and operation of the proposed Project, in conjunction with other past, present, and reasonably foreseeable future development in the project area, could hinder air quality attainment and maintenance efforts for criteria pollutants.	<i>Less than Significant</i>	<b>Cumulative MM C-AQ-1:</b> Implement <b>2020 LRDP MM AQ-2a and AQ-2b.</b>	N/A
<b>Biological Resources</b> (Initial Study, Appendix 1.0)			
Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<i>Less than Significant</i>	<p><b>2020 LRDP MM BIO-9a:</b> Avoid and minimize impacts on native birds protected under the MBTA, including listed species, fully protected species, special-status species of concern, and raptors and passerines.</p> <p>(a) Limit ground disturbance activities to the non-breeding season and remove potential unoccupied breeding habitat during the non-breeding season if possible. If breeding season work is required, conduct take avoidance (tree, shrub, and ground) nest surveys to identify and avoid active nests.</p> <ul style="list-style-type: none"> <li>• If feasible, UC Merced shall conduct all project-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 (typically between September 16 and February 14).</li> <li>• If activities are scheduled to occur during the breeding season (typically between February 15 through September 15), applicable CDFW and/or USFWS permit conditions in the permits issued to the University related to bird surveys must be followed. In addition, a UC Merced-approved qualified avian biologist, with knowledge of the species to be surveyed, shall conduct focused nesting surveys within 15 days prior to the start of project or ground-disturbing activities and within the appropriate habitat. The qualified avian biologist shall determine the exact survey duration and location (typically 500 feet around the work area) based on the work conditions and shall take into account existing applicable CDFW or USFWS permit conditions.</li> </ul>	N/A

**Table 2-1: Summary of UCM-ME Building Project Environmental Impacts and Mitigation Measures**

Project Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		<ul style="list-style-type: none"> <li>• If an unoccupied nest (without birds or eggs) of a non-listed or fully protected species (as determined by the qualified avian biologist) is found, the nest shall be removed under the direction of the qualified avian biologist.</li> <li>• If an active nest is located, a qualified avian biologist shall establish an appropriate no-disturbance buffer around the nest making sure that any buffer width required by the University's permit obligations is followed. A 500-foot buffer is recommended for listed or fully protected nesting birds (or another buffer determined in consultation with CDFW and/or USFWS), a 250-foot buffer around raptors, and a 75-foot buffer around passerines. If work activities cause or contribute to a bird being flushed from a nest, the buffer width shall be adjusted to avoid and minimize impacts to nesting birds.</li> <li>• A qualified avian biologist shall monitor the nest site regularly during work activities to ensure that the nest site is not disturbed, the buffer is maintained and the success or failure of the nest is documented.</li> <li>• If UC Merced elects to remove a nest tree, nest trees may only be removed after the qualified avian biologist has determined that the nests are unoccupied.</li> <li>• If an active nest is causing a safety hazard, CDFW shall be contacted to determine if the nest can be removed.</li> </ul> <p>(b) Minimize impacts to burrowing owl and compensate for habitat loss. CDFW (2012) recommends that take-avoidance (preconstruction) surveys be conducted to locate active burrowing owl burrows in the construction work area and within an approximately 500-foot buffer zone around the construction area. A qualified avian biologist shall conduct take avoidance surveys for active burrows according to the CDFW's Staff Report on Burrowing Owl Mitigation (2012 Staff Report). Surveys shall be conducted no less than 14 days prior to initiating ground disturbance activities and surveillance surveys should be conducted as frequently as recommended in the 2012 Staff Report. If ground-disturbing activities are delayed or suspended for than 30 days after the take avoidance survey, the area shall be resurveyed. If no burrowing owls are detected, no further mitigation is required. If active burrowing owls are detected, the following additional measures are required:</p> <ul style="list-style-type: none"> <li>• Project implementation shall seasonally and spatially avoid negative impacts and disturbances that could result in the take of burrowing owls, nest or eggs.</li> <li>• If burrowing owls and their habitat can be protected in place or adjacent to a construction site, buffer zones, visual screens or other measures shall be used to minimize disturbance impacts while project activities are occurring. To use these minimization measures, a qualified avian biologist shall determine the exact measures following the guidance described in the 2012 Staff Report.</li> </ul>	

**Table 2-1: Summary of UCM-ME Building Project Environmental Impacts and Mitigation Measures**

Project Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		<ul style="list-style-type: none"> <li>• 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 CDFW guidelines. At least 1 week will be necessary to complete passive relocation and allow owls to acclimate to alternate burrows.</li> <li>• 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 CDFW. Newly created burrows shall follow guidelines established by the CDFW.</li> </ul> <p><b>2020 LRDP MM BIO-9b:</b> New buildings and structures proposed under the 2020 LRDP shall incorporate bird-safe design practices (for example, American Bird Conservancy's <i>Bird-Friendly Building Design</i> [2015] or San Francisco Planning Department's <i>Standards for Bird-Safe Buildings</i> [2011]). The UC Merced Physical and Environmental Planning Department shall review the final designs of the buildings and structures to determine that appropriate bird safety designs have been effectively incorporated to reduce potential impacts to birds. The following design strategies shall be considered in the design of buildings and structures:</p> <ul style="list-style-type: none"> <li>• Create building facades with "visual noise" via cladding or other design features that make it easier for birds to identify buildings and not mistake windows for open sky or trees.</li> <li>• Incorporate windows that are not clear or reflective into the building or structure designs.</li> <li>• Use windows that incorporate glass types such as UV-A or fritted glass and windows that incorporate UV-absorbing and UV-reflecting stripe.</li> <li>• Use grid patterns on windows in locations with the highest potential for bird-window collisions (e.g., windows at the anticipated height of adjacent vegetation at maturity).</li> <li>• Reduce the proportion of glass to other building materials in new construction.</li> <li>• Avoid placement of bird-friendly attractants (i.e., vegetated roofs, water features, tall trees) near glass whenever possible.</li> <li>• Install motion-sensitive lighting in any area visible from the exterior that automatically turn lights off during after-work hours.</li> </ul> <p><b>2020 LRDP MM BIO-4:</b> Prior to any new development on previously undisturbed land, and as long as the species is considered a candidate endangered species or in the event that it becomes listed under the California Endangered Species Act, a qualified wildlife biologist shall conduct visual surveys of the development area during the flight season for the Crotch bumble bee (late February through late October). The following methodology shall apply unless the California Department of Fish and Wildlife (CDFW) releases species-specific survey protocol; in</p>	

**Table 2-1: Summary of UCM-ME Building Project Environmental Impacts and Mitigation Measures**

Project Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		<p>this case, CDFW's survey protocol shall apply.</p> <p>Between two and four evenly space presence/absence surveys shall be conducted for the highest detection probability, which, at present time, is the greatest between early spring (late March/early April) and early summer (late June/July). Surveys shall take place when temperatures are above 60°F, preferably on sunny days with low wind speeds (e.g., less than 8 miles per hour) and at least 2 hours after sunrise and 3 hours before sunset. On warm days (e.g., over 85°F), bumble bees will be more active in the mornings and evenings. Surveyors shall conduct transect surveys focusing on detection of foraging bumble bees and underground nests using visual aids such as butterfly binoculars. Even if no Crotch bumble bees are observed, a pre-construction survey shall be conducted within 30 days prior to start of construction. If no Crotch bumble bees or potential Crotch bumble bees are detected during the presence/absence surveys and the pre-construction survey, no further mitigation is required.</p> <p>If Crotch bumble bees or potential Crotch bumble bees are observed within the development area, a plan to protect Crotch bumble bee nests and individuals shall be developed and implemented in consultation with CDFW. The plan shall include, but not be limited to, the following measures:</p> <ul style="list-style-type: none"> <li>• Specifications for construction timing and sequencing requirements (e.g., avoidance of raking, mowing, tilling, or other ground disturbance until late March to protect overwintering queens);</li> <li>• Preconstruction surveys conducted within 30 days and consistent with any current available CDFW standards prior to the state of ground disturbing activities to identify active nests;</li> <li>• Establishment of appropriate no-disturbance buffers for nest sites and construction monitoring by a qualified biologist to ensure compliance;</li> <li>• Restrictions associated with construction practices, equipment, or materials that may harm bumble bees (e.g., avoidance of pesticides/herbicides, BMPs to minimize the spread of invasive plant species);</li> <li>• Provisions to avoid Crotch bumble bees or potential Crotch bumble bees if observed away from a nest during project activity (e.g., ceasing of project activities until the animal has left the work area on its own volition); and</li> <li>• Prescription of an appropriate restoration seed mix targeted for the Crotch bumble bee, including native plant species known to be visited by native bumble bee species and containing a mix of flowering plant species with continual floral availability through the entire active season of the Crotch bumble bee (March to October).</li> </ul>	



**Table 2-1: Summary of UCM-ME Building Project Environmental Impacts and Mitigation Measures**

<b>Project Impacts</b>	<b>Significance Before Mitigation</b>	<b>Mitigation Measures</b>	<b>Significance After Mitigation</b>
Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<i>No Impact</i>	No mitigation is required.	N/A
Would the Project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<i>No Impact</i>	No mitigation is required.	N/A
Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<i>No Impact</i>	No mitigation is required.	N/A
Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<i>No Impact</i>	No mitigation is required.	N/A
Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<i>No Impact</i>	No mitigation is required.	N/A
<b>Cultural Resources</b> <i>(Initial Study, Appendix 1.0)</i>			
Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	<i>Less than Significant</i>	<b>2020 LRDP MM CUL-2:</b> 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	N/A

**Table 2-1: Summary of UCM-ME Building Project Environmental Impacts and Mitigation Measures**

<b>Project Impacts</b>	<b>Significance Before Mitigation</b>	<b>Mitigation Measures</b>	<b>Significance After Mitigation</b>
		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.	
Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<i>Less than Significant</i>	Implement <b>2020 LRDP MM CUL-2</b> .	N/A
Would the project disturb any humans remains, including those interred outside of formal cemeteries?	<i>Less than Significant</i>	<b>2020 LRDP MM CUL-3:</b> If human remains of Native American origin are discovered during ground disturbing activities, the Campus 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 American 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 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.	N/A
<b>Energy</b> (Initial Study, Appendix 1.0)			
Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?	<i>Less than Significant</i>	No mitigation is required.	N/A
Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<i>Less than Significant</i>	No mitigation is required.	N/A

**Table 2-1: Summary of UCM-ME Building Project Environmental Impacts and Mitigation Measures**

Project Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
<b>Geology and Soils</b> (Initial Study, Appendix 1.0)			
Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: (i). Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42. (ii) Strong seismic ground shaking? (iii) Seismic-related ground failure, including liquefaction? (iv) Landslides?	<i>Less than Significant</i>	<b>2020 LRDP MM GEO-2:</b> 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.	N/A
Would the Project result in substantial soil erosion or the loss of topsoil?	<i>Less than Significant</i>	No mitigation is required.	N/A
Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<i>Less than Significant</i>	Implement <b>2020 LRDP MM GEO-2.</b>	N/A
Would the project be located on expansive soil, as defined in Table 18 1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	<i>Less than Significant</i>	Implement <b>2020 LRDP MM GEO-2.</b>	N/A
Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	<i>No Impact</i>	No mitigation is required.	N/A

**Table 2-1: Summary of UCM-ME Building Project Environmental Impacts and Mitigation Measures**

<b>Project Impacts</b>	<b>Significance Before Mitigation</b>	<b>Mitigation Measures</b>	<b>Significance After Mitigation</b>
Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<i>Less than Significant</i>	<b>2020 LRDP MM CUL-4a:</b> 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.	N/A
<b>Greenhouse Gas Emissions</b> (Initial Study, Appendix 1.0)			
Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<i>Less than Significant</i>	<p><b>2020 LRDP MM GHG-1a:</b> UC Merced shall set a goal to reduce or control the increase in its GHG emissions such that the total emissions do not exceed 3,300 MTCO<sub>2</sub>e/year by the end of the year 2030. UC Merced shall monitor GHG emissions each year, monitor upcoming projects for their potential to increase the campus' GHG emissions, and implement project-specific and campus-wide GHG reduction measures to reduce the campus' GHG emissions in accordance with the 3,300 MTCO<sub>2</sub>e/year goal for 2030. In the event that adequate reduction is not achieved by these measures, UC Merced shall purchase renewable energy credits, or other verifiable GHG offsets to keep the net emissions at or below 3,300 MTCO<sub>2</sub>e/year.</p> <p><b>2020 LRDP MM GHG-1b:</b> UC Merced shall implement LRDP Mitigation Measures AQ-2a and -2b.</p> <p><b>2020 LRDP MM GHG-1c:</b> UC Merced shall periodically review new technologies that can be implemented to further reduce the campus' GHG emissions.</p>	N/A
Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<i>Less than Significant</i>	Implement <b>2020 LRDP MM GHG-1a, GHG-1b, and GHG-1c</b>	N/A
<b>Hazards and Hazardous Materials</b> (Initial Study, Appendix 1.0)			
Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<i>Less than Significant</i>	No mitigation is required.	N/A

**Table 2-1: Summary of UCM-ME Building Project Environmental Impacts and Mitigation Measures**

<b>Project Impacts</b>	<b>Significance Before Mitigation</b>	<b>Mitigation Measures</b>	<b>Significance After Mitigation</b>
Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<i>Less than Significant</i>	No mitigation is required.	N/A
Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<i>No Impact</i>	No mitigation is required.	N/A
Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<i>Less than Significant</i>	<b>2020 LRDP MM HAZ-4:</b> 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.	N/A
Would the project be located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	<i>No Impact</i>	No mitigation is required.	N/A
Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<i>Less than Significant</i>	No mitigation is required.	N/A
Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	<i>Less than Significant</i>	No mitigation is required.	N/A
<b>Hydrology and Water Quality</b> (UCM-ME Impacts HYD-1 and C-HYD-1 in EIR, Section 4.2. Remaining Impacts in Initial Study, Appendix 1.0)			
<b>UCM-ME Impact HYD-1:</b> Implementation of the proposed Project would not substantially alter the existing drainage pattern of the	<i>Less than Significant</i>	No mitigation is required.	N/A

**Table 2-1: Summary of UCM-ME Building Project Environmental Impacts and Mitigation Measures**

<b>Project Impacts</b>	<b>Significance Before Mitigation</b>	<b>Mitigation Measures</b>	<b>Significance After Mitigation</b>
campus site through alteration of a water course or through the addition of impervious surfaces such that it would result in substantial erosion or siltation on or off site, result in flooding on or off site, contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems, or impede or redirect flood flows.			
Would the project: a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality? b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	<i>Less than Significant</i>	No mitigation is required.	N/A
Would the project, in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	<i>No Impact</i>	No mitigation is required.	N/A
Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	<i>Less than Significant</i>	No mitigation is required.	N/A
<b>Cumulative Impact C-HYD-1:</b> Implementation of the proposed Project, in conjunction with other past, present, and reasonably foreseeable future development in the project area, could cumulatively increase surface runoff but would not increase local and regional flooding.	<i>Less than Significant</i>	No mitigation is required.	N/A
<b>Land Use and Planning</b> (Initial Study, Appendix 1.0)			
Would the project physically divide an established community?	<i>No Impact</i>	No mitigation is required.	N/A

**Table 2-1: Summary of UCM-ME Building Project Environmental Impacts and Mitigation Measures**

<b>Project Impacts</b>	<b>Significance Before Mitigation</b>	<b>Mitigation Measures</b>	<b>Significance After Mitigation</b>
Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	<i>Less than Significant</i>	No mitigation is required.	N/A
<b>Mineral Resources</b> (Initial Study, Appendix 1.0)			
There are no significant mineral resources impacts.			
<b>Noise</b> (Initial Study, Appendix 1.0)			
Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<i>Less than Significant</i>	<p><b>2020 LRDP MM NOI-3:</b> Prior to initiation of construction on a project that is within 500 feet of off-site residential receptors, UC Merced shall develop and implement a construction noise mitigation program for that project that includes but is not limited to the following:</p> <ul style="list-style-type: none"> <li>Construction activities within 500 feet of any residences shall be restricted to the hours of 7:00 AM and 6:00 PM on weekdays and Saturdays with no construction on Sundays and holidays.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>Electrically powered equipment shall be used instead of pneumatic or internal combustion powered equipment, where practicable.</li> <li>Material stockpiles, mobile equipment staging, construction vehicle parking, and maintenance areas shall be located as far as practicable from noise-sensitive land uses.</li> <li>Stationary noise sources such as generators or pumps shall be located away from noise-sensitive land uses as feasible.</li> <li>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.</li> </ul>	N/A

**Table 2-1: Summary of UCM-ME Building Project Environmental Impacts and Mitigation Measures**

Project Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		<ul style="list-style-type: none"> <li>The erection of temporary noise barriers shall be considered where project activity is unavoidably close to noise-sensitive receptors.</li> <li>The noisiest construction operations shall be scheduled to occur together to avoid continuing periods of the greatest annoyance, wherever possible.</li> <li>Construction vehicle trips shall be routed as far as practical from existing residential uses.</li> <li>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.</li> <li>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.</li> </ul>	
Would the project result in generation of excessive groundborne vibration or groundborne noise levels?	<i>Less than Significant</i>	<p><b>2020 LRDP MM NOI-4a:</b> UC Merced 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, UC Merced shall describe and commit to a mitigation plan to minimize construction vibration damage using all feasible means available.</p> <p><b>2020 LRDP MM NOI-4b:</b> For construction adjacent to highly sensitive uses such as laboratories, UC Merced shall 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.</p>	N/A
For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<i>No Impact</i>	No mitigation is required.	N/A
<b>Population and Housing</b> (Initial Study, Appendix 1.0)			
Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing	<i>Less than Significant</i>	No mitigation is required.	N/A



**Table 2-1: Summary of UCM-ME Building Project Environmental Impacts and Mitigation Measures**

<b>Project Impacts</b>	<b>Significance Before Mitigation</b>	<b>Mitigation Measures</b>	<b>Significance After Mitigation</b>
new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?			
Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	<i>No Impact</i>	No mitigation is required.	<i>N/A</i>
<b>Public Services</b> (UCM-ME Impact PUB-1 in EIR, Section 4.3. Remaining Impacts in Initial Study, Appendix 1.0)			
<b>UCM-ME Impact PUB-1:</b> Implementation of the proposed Project would increase demand for fire protection services and would require the construction of new facilities, but the impacts from construction would be less than significant with mitigation.	<i>Less than Significant</i>	No mitigation is required.	<i>N/A</i>
Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for police protection services?	<i>Less than Significant</i>	No mitigation is required.	<i>N/A</i>
Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for school services?	<i>Less than Significant</i>	No mitigation is required.	<i>N/A</i>

**Table 2-1: Summary of UCM-ME Building Project Environmental Impacts and Mitigation Measures**

<b>Project Impacts</b>	<b>Significance Before Mitigation</b>	<b>Mitigation Measures</b>	<b>Significance After Mitigation</b>
Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for park services?	<i>Less than Significant</i>	<p><b>2020 LRDP MM PUB-6a:</b> UC Merced 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.</p> <p><b>2020 LRDP MM PUB-6b:</b> UC Merced will pay its fair share of the cost of necessary improvements to the regional park. UC Merced'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.</p> <p><b>2020 LRDP MM PUB-6c:</b> 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 <b>2020 LRDP Mitigation Measures PUB-6a and PUB-6b</b> above, will implement mitigation measures to avoid and minimize indirect effects on biological resources.</p>	N/A
Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for other public facilities?	<i>Less than Significant</i>	No mitigation is required.	N/A
<b>Cumulative Impact C-PUB-1:</b> Development of the proposed Project, in conjunction with other past, present, and reasonably foreseeable future development in the project area, would generate an increased demand for fire protection services, the provision of which would not result in a significant cumulative environmental impact.	<i>Less than Significant</i>	No mitigation is required.	N/A

**Table 2-1: Summary of UCM-ME Building Project Environmental Impacts and Mitigation Measures**

Project Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
<b>Recreation</b> (Initial Study, Appendix 1.0)			
Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<i>Less than Significant</i>	<b>2020 LRDP MM PUB-6a:</b> UC Merced 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.  <b>2020 LRDP MM PUB-6b:</b> UC Merced will pay its fair share of the cost of necessary improvements to the regional park. UC Merced'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.	N/A
Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<i>Less than Significant</i>	No mitigation is required.	N/A
<b>Transportation</b> (UCM-ME Impact TRANS-1, TRANS-2 and C-TRANS-1 in EIR, Section 4.4. Remaining Impacts in Initial Study, Appendix 1.0)			
<b>UCM-ME Impact TRANS-1:</b> Implementation of the proposed Project would not conflict with a program, plan, ordinance, or policy addressing roadway facilities.	<i>Less than Significant</i>	No mitigation is required.	N/A
<b>UCM-ME Impact TRANS-2:</b> Implementation of the proposed Project would not exceed an applicable VMT threshold of significance under 2030 with Project conditions and therefore would not conflict with State CEQA Guidelines Section 15064.3, subdivision (b).	<i>Less than Significant</i>	No mitigation is required.	N/A
Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<i>No Impact</i>	No mitigation is required.	N/A
Would the project result in inadequate emergency access?	<i>Less than Significant</i>	No mitigation is required.	N/A

**Table 2-1: Summary of UCM-ME Building Project Environmental Impacts and Mitigation Measures**

<b>Project Impacts</b>	<b>Significance Before Mitigation</b>	<b>Mitigation Measures</b>	<b>Significance After Mitigation</b>
<b>Cumulative Impact C-TRANS-1:</b> Implementation of the proposed Project would not exceed an applicable VMT threshold of significance under cumulative conditions.	<i>Less than Significant</i>	No mitigation is required.	N/A
<b>Tribal Cultural Resources</b> (UCM-ME Impacts TCR-1 and C-TCR-1 in EIR, Section 4.5)			
<b>UCM-ME Impact TCR-1:</b> The proposed Project would not cause a substantial adverse change in the significance of a Tribal Cultural Resource as defined in Section 21074.	<i>Less than Significant</i>	No mitigation is required.	N/A
<b>Cumulative Impact C-TCR-1:</b> Implementation of the proposed Project would not result in a significant cumulative impact on Tribal Cultural Resources.	<i>Less than Significant</i>	No mitigation is required.	N/A
<b>Utilities and Service Systems</b> (UCM-ME Impacts UTL-1 and C-UTL-1 in EIR, Section 4.6. Remaining Impacts in Initial Study, Appendix 1.0)			
<b>UCM-ME Impact UTL-1:</b> Implementation of the proposed Project would not require construction of new or expanded wastewater conveyance or treatment facilities; nor would the proposed project result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the project's projected demand in addition to existing commitments.	<i>Less than Significant</i>	No mitigation is required.	N/A
Would the project: a. Require or result in the relocation or construction of new or expanded water, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects? b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and	<i>Less than Significant</i>	No mitigation is required.	N/A

**Table 2-1: Summary of UCM-ME Building Project Environmental Impacts and Mitigation Measures**

Project Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
multiple dry years? d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals? e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?			
<b>Cumulative Impact C-UTL-1:</b> Development of the proposed Project, in conjunction with other past, present, and reasonably foreseeable future development in the project area, would not result in a significant cumulative impact on wastewater collection and treatment facilities, such that construction of new or expanded facilities would be required.	<i>Less than Significant</i>	No mitigation is required.	N/A
<b>Wildfire</b> (Initial Study, Appendix 1.0)			
Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?	<i>Less than Significant</i>	No mitigation is required.	N/A
Would the project, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	<i>Less than Significant</i>	No mitigation is required.	N/A
Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	<i>Less than Significant</i>	No mitigation is required.	N/A

**Table 2-1: Summary of UCM-ME Building Project Environmental Impacts and Mitigation Measures**

<b>Project Impacts</b>	<b>Significance Before Mitigation</b>	<b>Mitigation Measures</b>	<b>Significance After Mitigation</b>
Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	<i>Less than Significant</i>	No mitigation is required.	N/A

**Table 2-2: Summary of 2020 LRDP Program-Level Transportation Impacts and Mitigation Measures**

Thresholds/Project Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
<b>Transportation</b> (EIR, Section 7.0)			
<b>LRDP Impact TRANS-1:</b> Implementation of the 2020 LRDP would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.	<i>Less than Significant</i>	No mitigation is required.	N/A
<b>LRDP Impact TRANS-2:</b> Implementation of the 2020 LRDP would not exceed an applicable VMT threshold of significance under 2030 with LRDP conditions and therefore would not conflict with State CEQA Guidelines Section 15064.3, subdivision (b).	<i>Less than Significant</i>	No mitigation is required.	N/A
<b>LRDP Impact TRANS-3:</b> Implementation of the 2020 LRDP would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	<i>Less than Significant</i>	No mitigation is required.	N/A
<b>LRDP Impact TRANS-4:</b> The campus road network system would be adequately sized and designed to facilitate emergency access vehicles.	<i>Less than Significant</i>	No mitigation is required.	N/A
<b>Cumulative Impact C-TRANS-1:</b> Implementation of the 2020 LRDP would not exceed an applicable VMT threshold of significance under 2030 plus LRDP conditions.	<i>Less than Significant</i>	No mitigation is required.	N/A

**Table 2-3: Summary Comparison of Project Alternatives**

Project Impact	Proposed Project	Alternative 1	Alternative 2	Alternative 3
		No Project	Reduced Program	Reduced Building Footprint
<b>UCM-ME Impact AQ-1:</b> The proposed Project would not result in construction emissions that would result in a cumulatively considerable net increase of criteria pollutants for which the air basin is in non-attainment.	<i>LTS</i>	Avoided	Reduced	Similar
<b>UCM-ME Impact AQ-2:</b> The proposed Project would result in operational emissions that would not involve a cumulatively considerable net increase of criteria pollutants for which the air basin is in non-attainment.	<i>LTS</i>	Reduced	Similar	Similar
<b>UCM-ME Impact AQ-3:</b> Implementation of the proposed Project would not expose sensitive receptors to substantial pollutant concentrations of carbon monoxide.	<i>LTS</i>	Reduced	Similar	Similar
<b>UCM-ME Impact AQ-4:</b> Implementation of the proposed Project would not conflict with or obstruct implementation of the applicable air quality plan.	<i>LTS</i>	Reduced	Similar	Similar
<b>Cumulative Impact C-AQ-1:</b> The construction and operation of the proposed Project, in conjunction with other past, present, and reasonably foreseeable future development in the project area, would not hinder air quality attainment and maintenance efforts for criteria pollutants.	<i>LTS</i>	Reduced	Similar	Similar
<b>UCM-ME Impact HYD-1:</b> Implementation of the proposed Project would not substantially alter the existing drainage pattern of the campus site through alteration of a water course or through the addition of impervious surfaces such that it would result in substantial erosion or siltation on or off site, result in flooding on or off site, contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems, or impede or redirect flood flows.	<i>LTS</i>	Avoided	Similar	Similar
<b>Cumulative Impact C-HYD-1:</b> Implementation of the proposed Project, in conjunction with other past, present, and reasonably foreseeable future development in the Project area, could cumulatively increase surface runoff but would not increase local and regional flooding.	<i>LTS</i>	Avoided	Similar	Similar
<b>UCM-ME Impact PUB-1:</b> Implementation of the proposed UCM-ME Building would increase demand for fire protection services and could require an expansion of an existing fire station or the construction of a new facility, but the impacts from construction would be less than significant.	<i>LTS</i>	Avoided	Similar/Reduced	Similar/Greater



**Table 2-3: Summary Comparison of Project Alternatives**

Project Impact	Proposed Project	Alternative 1	Alternative 2	Alternative 3
		No Project	Reduced Program	Reduced Building Footprint
<b>Cumulative Impact C-PUB-1:</b> Development of the proposed Project, in conjunction with other past, present, and reasonably foreseeable future development in the project area, would generate an increased demand for fire protection services, the provision of which would not result in a significant cumulative environmental impact.	LTS	Avoided	Similar/Reduced	Similar
<b>UCM-ME Impact TCR-1:</b> The proposed Project would not cause a substantial adverse change in the significance of a tribal cultural resource as defined in Section 21074.	LTS	Avoided	Reduced	Reduced
<b>Cumulative Impact C-TCR-1:</b> Implementation of the proposed Project would not result in a significant cumulative impact on tribal cultural resources.	LTS	Avoided	Reduced	Reduced
<b>UCM-ME Impact TRANS-1:</b> Implementation of the proposed Project would not conflict with a program, plan, ordinance or policy addressing roadway facilities.	LTS	Avoided	Similar	Similar
<b>UCM-ME Impact TRANS-2:</b> Implementation of the proposed Project would not exceed an applicable VMT threshold of significance under 2030 with Project conditions and therefore would not conflict with State CEQA Guidelines Section 15064.3, subdivision (b).	LTS	Reduced	Similar	Similar
<b>Cumulative Impact C-TRANS-1:</b> Implementation of the proposed Project would not exceed an applicable VMT threshold of significance under 2030 with Project conditions.	LTS	Reduced	Similar	Similar
<b>UCM-ME Impact UTL-1:</b> Implementation of the proposed Project would not require construction of new or expanded wastewater conveyance or treatment facilities; nor would the proposed project result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the project's projected demand in addition to existing commitments.	LTS	Reduced	Similar	Similar
<b>Cumulative Impact C-UTL-1:</b> Development of the proposed Project, in conjunction with other past, present, and reasonably foreseeable future development in the project area, would not result in a significant cumulative impact on wastewater collection and treatment facilities, such that construction of new or expanded facilities would be required.	LTS	Reduced	Similar	Similar

LTS = Less than significant impact

Similar = Impact similar to proposed project

Reduced = Impact less than proposed project

Greater = Impact greater than proposed project

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## 3.0 PROJECT DESCRIPTION

### 3.1 INTRODUCTION

The section describes the proposed UC Merced Medical Education (UCM-ME) Building Project (“proposed Project” or “Project”), including the Project location and surrounding uses, need and objectives, proposed Project components and design features, the associated campus population, and discretionary approvals needed for project implementation.

### 3.2 PROJECT LOCATION

The UC Merced campus is located in the San Joaquin Valley (SJV) of California in eastern Merced County, within the sphere of influence (SOI) of the City of Merced, as shown in **Figure 3-1: Regional Location**. The campus is approximately 2 miles northeast of the Merced City limits and is regionally accessed via State Route 99 (SR-99) and locally via Bellevue and Lake Roads. The Project site is located in the southeast portion of the UC Merced campus, east-southeast of the Academic Quad, in an area known on the campus as Cottonwood Meadow. **Figure 3-2: Project Area** shows the location of the approximately 43.5-acre Project area within the campus, including the area where the proposed building would be developed, the area that would be used for construction staging, and the area where the proposed storm water detention basin would be located.

### 3.3 EXISTING SITE CONDITIONS

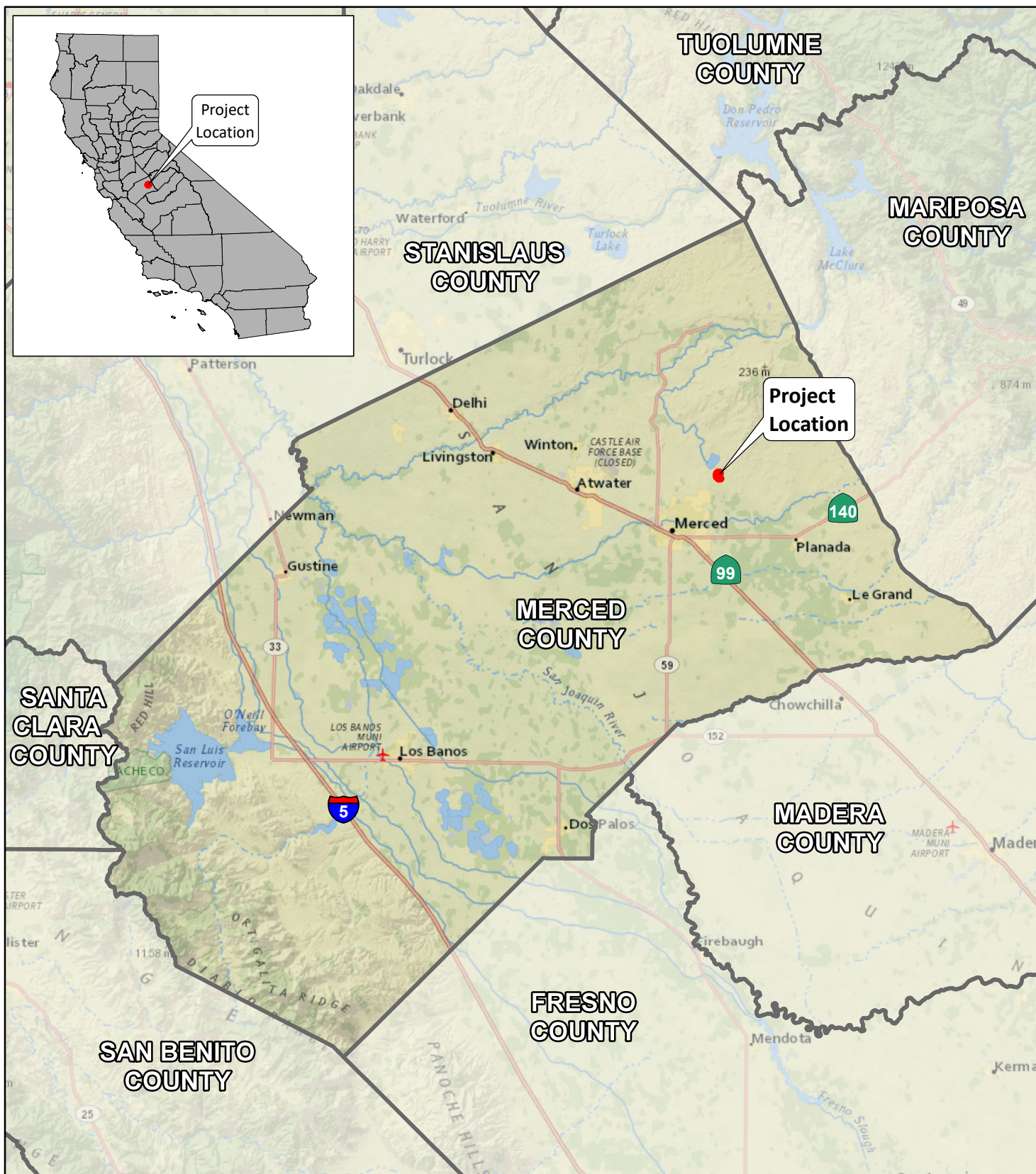
#### 3.3.1 Land Use Designation

The 2020 LRDP identified areas of the campus that would be developed with new facilities under the 2020 LRDP and assigned land use designations to those lands to guide the development of facilities. The proposed building would be located on land within the campus that is designated as Campus Mixed Use (CMU) pursuant to the 2020 LRDP and the proposed storm water detention basin would be located on lands designated CMU and Campus Building Reserve & Support Land (CBRSL). The CMU designation allows for the development of academic, research, student housing, student and support services, athletic and recreational facilities, university affiliate dining and retail, administrative offices, service facilities, and parking. The proposed building and associated parking lot would be an allowed use under the campus’ CMU designation, as it would provide facilities for academic and research uses (as described in **Section 3.5** below). The storm water detention basin would be an allowed use under the CMU and CBRSL designations.

#### 3.3.2 Existing Land Uses

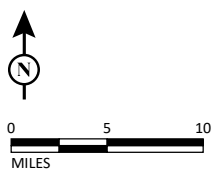
The Project area is currently not developed with any campus buildings. As shown in **Figure 3-2**, the UCM-ME Building site overlaps slightly with a paved and landscaped outdoor gathering area associated with the Arts and Computational Sciences building. The building site is located within Cottonwood Meadow which is currently developed with storm water detention basins. There are recently planted landscape trees and shrubs located throughout Cottonwood Meadow. Other portions of the Project area to the south of Cottonwood Meadow consist of graded (unpaved) areas currently being used for campus construction staging and parking, and the area of the proposed storm water detention basin is previously disturbed but undeveloped land.

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FIGURE 3-1



*UC Merced Medical Education Building Project  
Merced County, California*

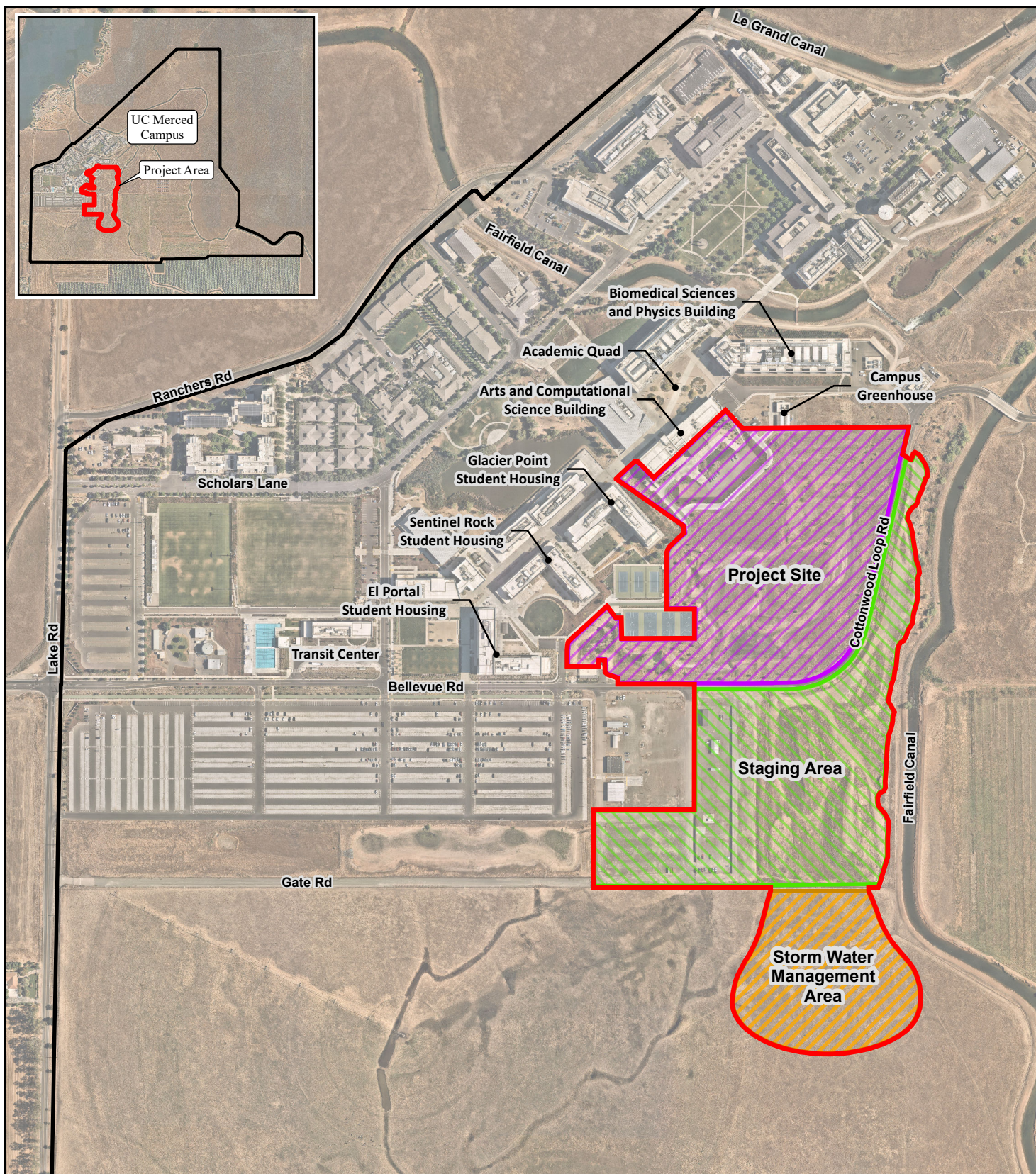
Regional Location

SOURCE: National Geographic World Map (2021).

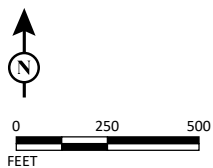
I:\BTI2002.01\GIS\Maps\EIR\Figure 3-1\_Regional Location.mxd (7/22/2022)

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SOURCE: Nearmap (05/2022).

I:\BTI2002.01\GIS\Maps\EIR\Figure 3-2\_Project Area.mxd (8/10/2022)

#### LEGEND

- Project Area (46.5 acres)
- Project Site (19.4 acres)
- Staging Area (18.0 acres)
- Stormwater Management Area (8.0 acres)
- UC Merced Campus Boundary

FIGURE 3-2

*UC Merced Medical Education Building Project  
Merced County, California*

**Project Area**



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### 3.3.3 Existing Site Access and Circulation

The primary access to the campus from the area's primary population center, the City of Merced, is via Lake and Bellevue Roads. The core of the campus is accessed by turning east off of Lake Road onto Ranchers Road, Scholars Lane, or Bellevue Road. Both Scholars Lane and Rancher's Road run east a short distance before turning northeast and continuing to parallel each other, providing access to Carol Tomlinson-Keasey Quad and the campus facilities that surround it. Bellevue Road serves as the southern boundary for the developed portion of the campus and provides access to the Bellevue Parking Lot, the University Transit Center and the Health and Athletic Center, University Plaza, and student housing beyond. Just east of the Bellevue Parking Lot, Bellevue Road becomes Cottonwood Loop Road, which veers north along the Fairfield Canal and provides access to the site of the proposed UCM-ME Building. Meyer's Gate Road is an existing unpaved roadway which provides access from Lake Road to the southern undeveloped portions of the campus, including the storm water detention basin site.

### 3.3.4 Surrounding Land Uses

The Project site is located in the southeast portion of the UC Merced campus adjacent to recent development associated with the 2020 Project. Surrounding facilities include the campus greenhouse and Biomedical Sciences and Physics building to the north, the Arts and Computational Sciences building and Glacier Point residences to the west, Cottonwood Loop Road and the Fairfield Canal to the east, and the Cottonwood Meadow storm water detention facilities to the south.

On a broader scale, the campus is situated within lands used primarily for agricultural and natural resource conservation purposes. Lake Yosemite, a reservoir owned and operated by the Merced Irrigation District (MID), is located less than 0.5 miles northwest of the campus. Lake Yosemite Regional Park, owned by MID and managed by Merced County under an easement, is located along the south side of the lake to the north of the campus. Two irrigation canals also owned by MID, Le Grand Canal and the Fairfield Canal, convey water from the lake to agricultural areas to the south. Both canals meander through the campus, generally following the contours of the land. Fairfield Canal is located to the north and immediately east of the UCM-ME Building site and to the east of the proposed storm water basin site.

Grasslands used for seasonal grazing occupy lands to the north and east of the campus. All of these lands are also either under a conservation easement or planned for conservation. Most of these lands are part of the University of California Merced Vernal Pools and Grassland Reserve. Agricultural lands also lie to the south of the campus. Immediately south of the campus, land owned by the Virginia Smith Trust (VST) is currently grazed and planted with almond trees. This land has been planned for development since Merced County's adoption of the University Community Plan (UCP). The UCP is a mixed-use development with commercial and residential uses, in addition to substantial open space. The VST is currently preparing a Specific Plan in accordance with the UCP for mixed-use development consistent with the UCP. Land south of the VST property is owned by Hunt Farms and is also in agricultural use, under recently planted almond orchards.

## 3.4 PROJECT NEED AND OBJECTIVES

### 3.4.1 Need

The COVID-19 epidemic has highlighted the critical need to address the scarcity of medical education opportunities and trained medical health professionals in the State of California, especially in the SJV. In its February 2019 Final Report,<sup>1</sup> the California Future Health Workforce Commission estimated a shortfall of over 4,000 primary care providers in the State by 2030. Recognizing this serious need for medical education and trained medical health professionals in the SJV, the Campus has been actively engaged in the development of a medical education program since 2016. UC Merced is partnering with UC San Francisco (UCSF)-Fresno and the UCSF San Joaquin Valley Program in Medical Education (SJV PRIME) to recruit and train a new generation of healthcare professionals who will provide high-quality, culturally sensitive, and accessible health care in the SJV. The proposed building would house UC Merced's nascent Medical Education, Psychology and Public Health Departments.

The remainder of the proposed building program has evolved directly from the results of a 2018 Comprehensive Campus Space Planning Study<sup>2</sup> and a 2018 Classroom Capacity Study<sup>3</sup>. Both studies identified several areas of vulnerability for the campus in the next decade (2018–2028). While the UC Merced 2020 Project facilities addressed many historical space issues, the comprehensive space planning study identified several unmet campus space needs, including the space required to support medical education. Additionally, the study revealed that insufficient and inadequate behavioral science research space is currently affecting future student enrollments and faculty hiring in the Departments of Psychological Sciences and Public Health.

High student-to-faculty ratios in the classroom have impeded the existing faculty's ability to develop the new medical education and other health sciences related programs. Hence, the Campus desires to build the necessary space to attract and house new, bright, and creative faculty to these programs to support existing students and new enrollments and to help develop the medical education and health sciences related programs. The space program for the proposed building would enable the Developmental Psychology faculty to develop the Institute for Child and Family Sciences, and facilitate the delivery of the psychology and public health curricula and new curricula in anatomy and medicine. Further, enrollment growth will continue to put pressure on UC Merced's general classroom inventory as the 2018 Classroom Capacity Study indicates. The UC Merced 2020 Project, completed in summer 2020, is intended to support classroom instruction for up to 10,000 students. Recent classroom utilization studies conducted by UC Merced predict that 90 to 100 percent utilization will occur in all sizes of classrooms by the time that enrollment reaches 12,500 students (approximately 2025).

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<sup>1</sup> California Future Health Workforce Commission. 2019. Meeting the Demand of Health: Final Report of the California Future Health Workforce Commission, February. Website: <https://futurehealthworkforce.org/>. Website accessed on February 18, 2021.

<sup>2</sup> University of California, Merced. 2018a. 2020 Project and Backfill Space Allocation Plan. December.

<sup>3</sup> University of California, Merced. 2018b. UC Merced Spring 2018 Capacity Analysis (Ad Astra Information Systems).

The space program for the proposed building would provide both specific types of learning spaces for medical education as well as hybrid learning and general assignment classrooms and class laboratories for the campus. The classrooms would support the delivery of a broad range of academic programs and partnerships in the health sciences arena, in addition to overall campus population growth.

Construction of the proposed building would allow for relocation of the Departments of Psychological Sciences and Public Health from the Social Sciences and Management (SSM) building to the new building. The resulting vacancy in the SSM building would enable the emerging School of Management to integrate the Departments of Economics and Cognitive Science under one roof while also providing sufficient space for future growth of the School of Management. Finally, relocation of the Department of Economics from the School of Social Sciences, Humanities and Arts (SSHA) into the SSM building would alleviate the overcrowding experienced by other departments in the SSHA building that was not resolved through the 2020 Project.

The proposed UCM-ME Building would become home to UC Merced's nascent Medical Education program, the Health Sciences Research Institute (HSRI), and the Departments of Psychological Sciences and Public Health. UC Merced's Psychological Sciences and Public Health Departments are structured by a regional, rural focus providing training in the deep and specific issues of marginalized, rural, and underserved populations and would help to provide essential research and training opportunities for undergraduate medical education. Multidisciplinary research is necessary to address the complex health problems facing the SJV. HSRI's overarching mission is to facilitate these research collaborations among UC Merced's health sciences faculty. The Campus believes that by bringing these particular departments and programs together in the proposed building the outcomes will be greater than the sum of their parts.

In summary, the proposed Project is intended to address the following conditions:

- **Medical Education and Allied Healthcare Programs.** UC Merced currently does not have the appropriate facilities to support the UCSF-Fresno and SJV PRIME partnership nor other partnerships with community colleges or other SJV healthcare worker training programs. For example, the Campus currently does not have anatomy training facilities, adequate hybrid learning classrooms, or clinical or simulation skills training areas.
- **Obstacles to Faculty Hiring/Program Growth.** Additional office, research lab, graduate student and post doc space is needed to facilitate future growth in the Departments of Psychological Sciences, Public Health, and the emerging School of Management. Without additional space, these four existing programs will not be able to continue to support campus population growth at the undergraduate and graduate level nor hire the additional faculty required to develop the anticipated new programs necessary to deliver a flourishing medical education pipeline program and affect the clinical research and healthcare in the region.
- **Obstacles to Creation of New Community-Based Programs.** The Campus has no capacity to create and house new programs (i.e., Institute for Child and Family Sciences) without the creation of more and new types of space. Partnerships with community colleges, secondary schools, the Accreditation Council for Graduate Medical Education (ACGME) programs in the SJV

and the other Health Center Program Look-Alikes in the SJV require facilities that promote community access and interaction.

- **General Assignment Classrooms.** Recent classroom utilization studies have shown that capacity in all classrooms will be reached by the time student enrollment reaches 12,500 students (approximately 2025) and capacity has already been reached in certain types of classrooms. The recent experience of COVID-19 also emphasizes the need for the Campus to make distance learning capable classrooms a priority in any future buildings.

### 3.4.2 Project Objectives

Based on the above conditions, the key objectives of the proposed Project are to:

- Provide space for the development of a new Medical Education program, initially in partnership with the UCSF-Fresno and SJV/PRIME program.
- Provide space for growth in the Department of Public Health.
- Provide space for growth in the Department of Psychological Sciences and creation of an Institute for Child and Family Sciences.
- Consolidate and collocate these existing and new programs in one facility so as to optimally draw upon the intellectual, technological, and material resources of the UC Merced programs and facilities, and enhance intellectual exchange and collaboration between related programs.
- Provide classroom space to support campus population growth.
- Maximize energy efficiency, sustainability, and cost-effectiveness of these programs by housing them in a consolidated, state-of-the-art building designed to balance energy use and cost efficiencies.

## 3.5 PROJECT CHARACTERISTICS

The proposed Project consists of two components: 1) development of the proposed UCM-ME Building, including a site access road and a small surface parking lot, and 2) filling of the storm water detention basins within Cottonwood Meadow and the construction of a new storm water detention basin in the southern portion of the campus. As reflected in **Figure 3-2**, the Project site is approximately 17 acres in size and consists of the following individual areas: approximately 4.3 acres for the proposed building, parking lot, walkways and access road; approximately 12.7 acres of grading and filling of Cottonwood Meadow storm water detention basins; approximately 17.6 acres for construction staging; and approximately 8 acres for the new storm water detention basin. Individual Project components are further described below.

### 3.5.1 Proposed Building Program

The proposed building would include approximately 190,000 outside gross square feet (ogsf)<sup>4</sup> of building space. After the space associated with common areas, such as lobbies, hallways, restrooms, and mechanical space, is deducted, there would approximately 118,750 assignable square feet (asf)<sup>5</sup> of instructional, academic office, research, and community facing space in the proposed building.

**Table 3-1: Proposed UCM-ME Building Uses** summarizes the uses that would be within the proposed building and the area of each type of space.

**Table 3-1: Proposed UCM-ME Building Uses**

Category	Square Feet
Academic Office and Support	17,222
Research and Research Support	48,788
Instructional and Instructional Support	33,350
Student Support/Study	6,680
Community Facing Space	12,710
<b>Total Assignable Square Feet</b>	<b>118,750</b>
<b>Total Outside Gross Square Feet</b>	<b>190,000</b>

Source: UC Merced (August 2022).

The proposed building would include faculty offices, graduate student, post doc, and undergraduate research space for the Departments of Psychological Sciences and Public Health, and Medical Education programs. Further, it would support the growth of new medical education and allied healthcare worker training programs by providing the capacity for advanced new instructional facilities in anatomy, clinical and simulation skills training and distance learning. Existing biology and physiology students as well as students in various partnership programs in the healthcare community would also utilize these new specialized instructional facilities. The proposed building would also house the HSRI and associated research facilities, thus integrating the new building with a significant cross section of the campus research community.

The Institute for Child and Family Sciences and the Community Public Health Sample Collection and Analysis Labs would be conveniently accessible to the community on the ground floor and with accessible parking. Finally, creating an opportunity for community forums and dialog, large and medium sized lecture halls would be outfitted for distance learning, panel discussions, clinical and research symposiums, and introductory social and basic science courses.

The proposed building would be programmed and designed to provide instructional facilities for medical education and other allied healthcare-related courses that can evolve as these programs mature. Space types would be functionally programmed to serve dual and triple uses to ensure that as research priorities change and the medical education program progresses towards accreditation,

<sup>4</sup> "Outside gross square feet (ogsf)" includes the interior building area within the enclosed structure as well as the covered, unenclosed corridors, including walkways, porches, balconies, etc.

<sup>5</sup> "Assignable square feet (asf)" comprises the portion of building area assigned to or available for an occupant or specific use. Common areas such as restrooms, hallways, or mechanical space are excluded.

the Campus fully utilizes the capacity that the proposed building would provide. The building would be designed to facilitate vibrant and interactive collaboration among researchers, students across all levels, instructors, and the community. The proposed building would provide multiple areas for learning and collaborating, including multiple hybrid learning classrooms, a community sample collection and analysis lab, developmental psychology intake labs, social sciences faculty research labs, clinical practicum spaces, anatomy, simulation trainer environments, and a café.

The proposed Project would comprise a large rectangular-shaped, four-story building, approximately 65 feet in height (60 feet plus a 5-foot parapet), consisting of two wings that would wrap around a central courtyard. The building footprint would occupy approximately 2 acres. The first floor would include instructional space, Developmental Psychology labs, space for community participation, and a receiving dock. The second floor would be assigned for medical education. The top two stories would include faculty offices, computational labs, wet labs, and conference rooms. **Figure 3-3: Medical Education Building and Parking Lot Footprint** shows the approximate layout of the proposed Project.

### 3.5.2 Building Design Features

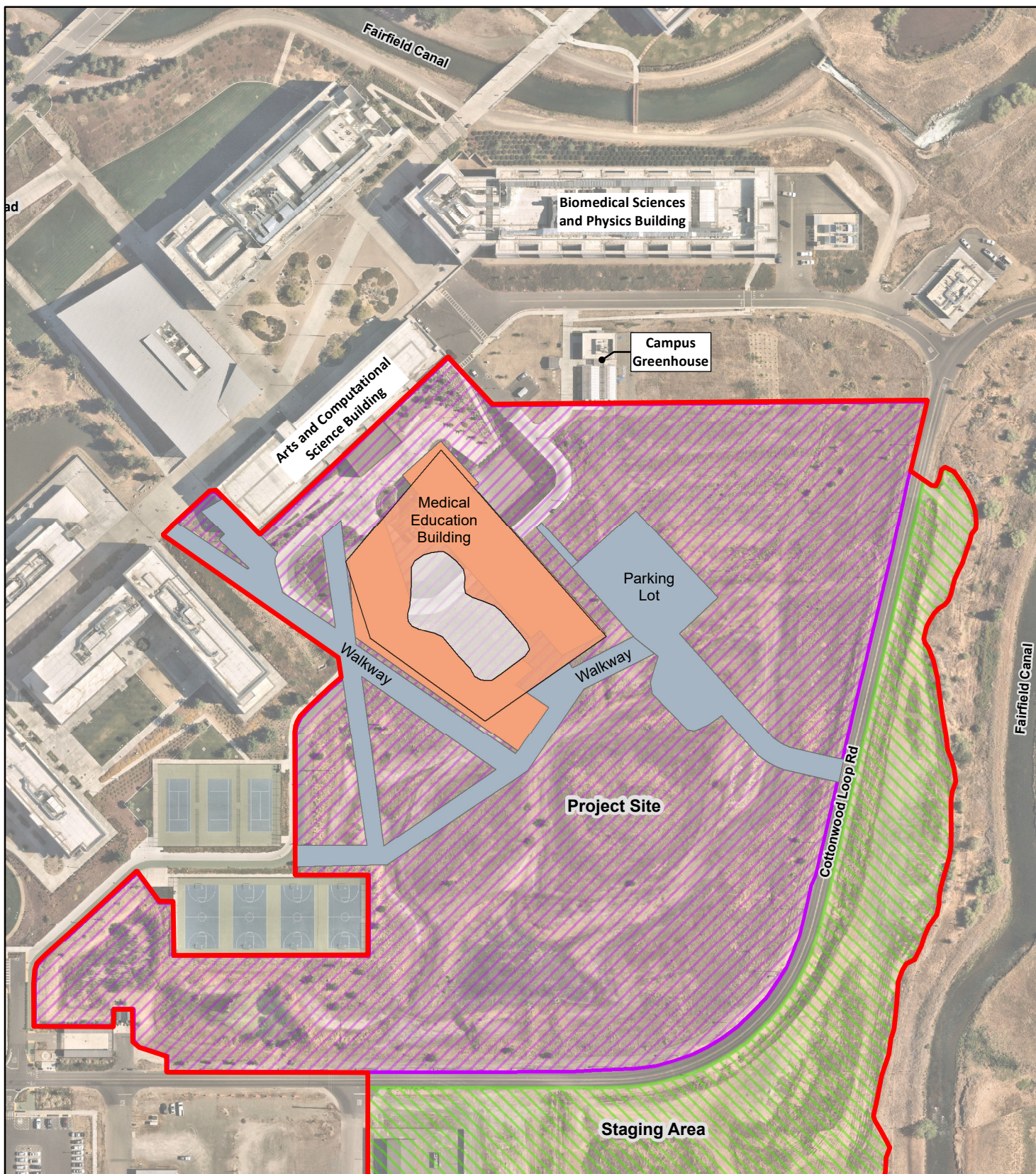
The proposed building would be designed to be consistent with goals of the 2020 LRDP, follow the design guidance in the campus Physical Design Framework, and will be an important campus addition that will serve as a place for engagement of and interaction with the community. The architectural design of the new building would adhere to the campus aesthetic vision and reflect UC Merced's vision for a distinctive environment that is dynamic and engaging for learning, living, and working. The arrangement of building design elements would emphasize academic-oriented social interactions in ways that reinforce interactive learning. The proposed building would create a visual connection with strong building lines, complementary forms and careful arrangement of building massing. The proposed building would be oriented towards existing academic core buildings, view corridors, and open spaces to facilitate "way-finding." In addition, the public spaces would be designed to expand the visual experience for users, with the orientation towards views and campus landmarks. The proposed building would incorporate visible entryways, arcades and common spaces to engage the public at the ground level. The proposed building would be designed to be consistent with goals of the 2020 LRDP (i.e., "dark-sky" friendly lighting). Outside lighting associated with the proposed building would be designed to be directed downward to avoid spill over. The proposed building would also incorporate bird-safe design practices to reduce potential injury or mortality impacts to birds from building strikes.

### 3.5.3 Project Sustainability

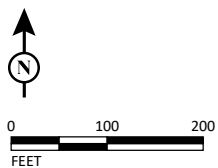
The proposed building would comply with the University of California Policy on Sustainable Practices (Sustainability Policy) and the Campus's sustainable practice design guidelines.

Project sustainability targets and goals include Leadership in Energy and Environmental Design (LEED) minimum building certification level of Gold under the LEED Green Building Rating System, with incentives for Platinum.





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**LEGEND**

- Project Area (46.5 acres)
- Project Site (19.4 acres)
- Staging Area (18.0 acres)
- Medical Education Building
- Parking Lot and Walkways

SOURCE: Aerial from Nearmap (05/2022).

I:\BTI2002.01\GIS\Maps\EIR\Figure 3-3\_Medical Education Building and Parking Lot Footprint.mxd (8/10/2022)

**FIGURE 3-3**

*UC Merced Medical Education Building Project  
Merced County, California*

**Medical Education Building  
and Parking Lot Footprint**



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The proposed building would be UC Merced's first fully electrified project. The proposed Project would outperform the California Energy Code by 20 percent or better as required by Sustainability Policy and would also meet UC's Whole Building Energy Performance Targets. The 2020 LRDP establishes a "triple zero commitment" to produce zero net emissions, zero waste, and zero net water. Strategies to maintain this commitment would be studied during the design phases of the Project.

#### **3.5.4 Roadway and Pedestrian Access, On-Site Circulation, and Parking**

The site planning and other aspects of the proposed UCM-ME Building would ensure the integration of the new building within the existing campus fabric. The site selection criteria that were used to identify the preferred site included the following: site suitability to ensure compatibility with the physical context of the campus; location and proximity to the academic core; community access; pedestrian access; future site considerations, and infrastructure connections.

Automobile access to the site would be via the Bellevue Road extension and Cottonwood Loop Road. The research vision for the proposed UCM-ME Building requires design that is sensitive to access by the general community, including children and disabled individuals. To facilitate community participation in research studies in developmental psychology and community-based public health initiatives, a moderately-sized parking lot with 60 spaces would be provided adjacent to the proposed building with direct access to Cottonwood Loop Road. The parking lot would also include electrical vehicle stalls/charging stations.

The proposed Project would include a pedestrian link from the UCM-ME Building to the Academic Quad and Academic Walk, a main pedestrian path along the eastern side of the campus. This connection would allow the building functions to be fully integrated into the academic core of the UC Merced campus. The proposed Project would also include bicycle spaces, showers, and locker rooms in order to encourage the use of bicycles for travel to the site. Bicycle spaces would be provided consistent with LEED v4.1 requirements.

Public transportation would be available through the UC Merced shuttle system. The shuttle provides service to downtown Merced. The transit hub at the campus Health and Athletic Center north of the Bellevue Road extension would be the shuttle stop that is nearest to the proposed UCM-ME Building.

#### **3.5.5 Outdoor Spaces and Landscaping**

The Project would provide outdoor gathering spaces protected from wind and shaded for users in a large, landscaped courtyard that would be located in the center of the building. The courtyard as well as other parts of the project site, including the parking lot, would be landscaped in a manner consistent with UC Merced Campus Design Standards (Section II, Part F: Landscape Requirements). The landscaping would conform to and complement the existing character of planting in the broader area around the site. Drought-tolerant, low water use, and low fire fuel volume plant materials (mostly grasses) would be installed in unpaved areas disturbed during Project construction. The existing campus irrigation system would be extended to the proposed landscaped areas.

### 3.5.6 Storm Water Detention Improvements

Development of the proposed building would increase the area of impervious surfaces at the Project site by approximately 4.3 acres, including the building footprint, parking area, walkways, and access road. The Project site is located in Cottonwood Meadow, which is used to manage storm water runoff from the campus. Cottonwood Meadow was engineered and constructed as a storm water management area with basins that detain storm water to allow for evaporation and groundwater recharge. The proposed Project would involve the filling and grading of the storm water detention basins in Cottonwood Meadow and the construction of a new storm water detention basin in the southern portion of the campus to replace the basins that would be filled and to also handle the increased storm water flows that would result from project development. New storm drains would be installed in Cottonwood Loop Road and other roadways to convey storm water flows from the proposed building area to the new storm water detention basin. The new detention basin would be located west of Fairfield Canal and to the southeast of Parking Lot No. 4. It would have a surface area of about 8 acres, and an average depth of about 6 feet. The basin would have the storage capacity to detain 42.7 acre-feet of storm water flows that would be generated in a 100-year, 24-hour storm from about 170 acres of developed campus land, including the proposed Project. Outflows from the basin would maintain pre-development flows that currently discharge into Cottonwood Creek which is located to the south of the proposed basin. The basin would also be fitted with a built-in weir such that flows above the 100-year, 24-hour storm would outflow from the basin into the nearby swale to drain into Cottonwood Creek. The approximate location of the proposed detention basin is shown in **Figure 3-2**.

### 3.5.7 Utilities

As stated above in **Section 3.5.3**, the proposed Project would comply with the UC Sustainability Policy and the Campus's sustainable practice design guidelines. All major utilities (water, wastewater, electricity, heating and chilled water) are available close to the project site, between the project site and existing Biomedical Sciences and Physics building to the north and Arts and Computational Sciences building to the west. The proposed Project would not require natural gas aside from potential limited uses in research laboratories, which would be provided in canisters. While there is sufficient electrical capacity in the switchgear at UC Merced's Central Plant to serve the UCM-ME Building, the proposed Project includes minor upgrades to the Central Plant involving the installation of two new electrical feeds that would be installed within the existing facilities and vaults.

#### 3.5.7.1 Potable and Fire Suppression Water

Potable water service (including water for fire suppression) for the proposed Project would be supplied from an existing high pressure domestic water line adjacent to the northwest corner of the Arts and Computational Science Building immediately north of the proposed building site. The

Project's annual water demand is estimated to be about 15.1<sup>6</sup> million gallons or about 46 acre-feet per year based on the net new population that would occupy the building. The Project's annual water demand would be about 34.4 million gallons or about 105.6 acre-feet per year based on the total population associated with the proposed building. These estimates include demand for domestic water, fire water, laboratory water including de-ionized water, and outdoor water use for irrigation. The proposed Project would include high-efficiency water fixtures, low-flow urinals, and drought-tolerant, low water use landscaping which would reduce water demand.

### 3.5.7.2 Wastewater

The proposed Project would include wastewater lateral infrastructure that would connect to the existing 21-inch diameter wastewater main located in the intersection of Muir Pass Road and Scholar's Lane on the UC Merced campus. From the campus, wastewater would discharge into the City-owned 27-inch sewer main located in Bellevue Road. The Project's average daily wastewater discharge is estimated to be 18,118 gallons per day (gpd) based on the net new population and about 41,386 gallons per day based on the total population associated with the building.<sup>7</sup>

### 3.5.7.3 Chilled and Hot Water Systems

Chilled water would be used for cooling building space and for laboratory use. Chilled and hot water would be piped to the UCM-ME Building from the existing Central Plant, which UC Merced has determined has adequate hot water capacity to serve the proposed building, although improvements to two of the seven chillers in the Central Plant and other steps to optimize the operation of the existing chillers and Thermal Energy Storage (TES) tank would be needed to provide chilled water to the new building.<sup>8</sup> All of the modifications would be internal to the Central Plant and would involve equipment upgrades.

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<sup>6</sup> The water use rate of 31.4 gallons per capita per day was estimated in the 2020 LRDP SEIR Water Supply Evaluation (WSE) based on campus water usage data from 2008 through 2017. Two estimates of water demand associated with the proposed project were developed. The first estimate was based on the net new population of 1,318 persons associated with the UCM-ME Building and a water use rate of 31.4 gallons per capita per day (the net new population was used in this calculation because the rest of the population that would relocate from other buildings into the new building is already on the campus and that population's water usage is accounted for in the existing water demand at the campus). The second more conservative estimate was developed for a total population of 2,999 persons who would occupy the new building (this number includes the new population as well as existing population that would relocate from other buildings). The water usage associated with the UCM-ME Building (both estimates) is within the water demand projections estimated and reported in the 2020 LRDP SEIR WSE.

<sup>7</sup> Based on 2018-meter readings of wastewater flows from the campus, the Campus generates about 13.8 gallons of wastewater per capita per day. If this rate is applied to the new persons that would be accommodated on the campus by the proposed Project (about 1,318 students, faculty and staff), the proposed Project would generate 18,188 gallons of wastewater per day or 0.02 mgd. If this rate is applied to the total population of 2,999 persons that would occupy the building, the proposed project would generate about 41,386 gallons per day or 0.04 mgd.

<sup>8</sup> Affiliated Engineers, Inc. (AEI). 2021. Draft UC Merced Central Plant Study. March 15.

#### 3.5.7.4 Energy Systems

**Electricity.** The campus is located in the Pacific Gas and Electric Company's (PG&E) service area. Electrical power to the campus is supplied by a mix of renewable and non-renewable electricity sources located both on-campus and off-campus. A large 1 megawatt (MW) solar array network is located in the southeastern portion of the campus and additional solar arrays are located on several building rooftops. Power from the grid is delivered via two 12.47-kilovolt (kV) electrical service feeds to the Central Plant. Incoming electricity from the regional network and on-campus solar power is managed and distributed to the campus buildings from the Central Plant. The Project would require approximately 4.65 MW of electricity. If the Project's demand is added to the campus existing maximum demand/load of about 7.86 MW, the total demand would be 12.51 MW. According to an analysis conducted by the Campus, there is sufficient electrical capacity in the switchgear at UC Merced's Central Plant to serve the proposed Project. The roof of the building would be designed to allow for the installation of solar arrays.

Standby electrical power would be provided through a back-up generator. A 1,500-kilowatt (kW) diesel generator with a fuel storage tank would provide electricity to the building for a minimum of 16 hours continuous run-time at full load. The generator would be equipped with a silencer and located in a sound-attenuated enclosure to control noise. A Diesel Particulate Filter (DPF) with an efficiency of 85 percent would be installed to reduce the diesel particulate matter (DPM) emissions from the generator.

While there is sufficient electrical capacity in the switchgear at UC Merced's Central Plant to serve the UCM-ME Building, the proposed Project also includes minor upgrades to the Central Plant involving the installation of two new electrical feeds that would be installed within the existing facilities and vaults. No new ground disturbance would occur as a result of the upgrades to Central Plant and the new electrical feed installation.

**Natural Gas.** Natural gas would be required for use in the wet laboratories in small quantities and would be provided in cannisters. Piped natural gas would not be supplied to the proposed building.

**Exhaust.** All air exhausts would be located on the roof of the building. Exhaust stack height and velocity would be designed to eliminate the health hazard of fumes migrating to occupied spaces or other building outside air intakes. Exhaust stack heights would be consistent with the heights of exhaust stacks on other campus buildings. There would be an approximately 5-foot parapet wall around the roof enclosing the exhaust system.

A fume hood would be installed in the UCM-ME Building laboratories where chemical use would occur. The fume hood would be equipped with an airflow sensor. Flammables and corrosives storage would take place in cabinets made for this service either beneath or adjacent to a fume hood, and cabinet vents would be connected to the hood exhaust system. Discharge from the fume hood exhaust would meet all applicable vertical velocity and stack height requirements.

Air intakes for the proposed Project would be located in different areas along the roof. Potential air re-entrainment from the proximity of air exhausts and air intakes would be avoided through specific engineering and design.

#### 3.5.7.5 Storm Drainage

As described in **Section 3.5.6** above, the proposed Project would involve the construction of new storm drain infrastructure to collect runoff from the proposed building site and convey to the proposed storm water detention basin. The storm drains would be located within road right-of-way.

### 3.5.8 Hazardous Materials and Waste

#### 3.5.8.1 Chemicals and Research Materials On-Site

The proposed Project would include laboratory research and the use of hazardous chemicals as well as radioactive materials; animal testing procedures would also be included in the laboratory research work. The UCM-ME Building would be built to safety standards that exceed the minimum requirements for the handling and storage of hazardous materials, including biohazardous materials. In all portions of the building where hazardous materials would be used, primary and secondary barriers would be installed to reduce or eliminate exposure of the laboratory environment and the outside environment to potentially hazardous agents. Primary barriers (biosafety cabinets and fume hoods) are designed to protect personnel and the laboratory environment from exposure to hazardous agents. Facility design criteria provide secondary barriers as a protection for personnel inside and outside the laboratory. Air changes would be implemented for worker safety. All wet lab facilities would maintain negative pressure, which would control the release of any airborne materials to non-wet lab areas via doors and other openings. The laboratory staff and researchers would be trained in the use of certified biosafety cabinets, autoclaving, and other specialized disinfection techniques, and biological materials handling protocols. The storage, handling, use, and disposal of all hazardous materials, hazardous wastes and other scientific materials within the UCM-ME Building would be subject to UC Merced Environmental Health and Safety (EHS) program requirements.

#### 3.5.8.2 Hazardous Waste

Hazardous wastes generated in the proposed UCM-ME Building would be managed in ground floor storage areas prior to packaging and preparation for transport by a licensed vendor directly to a Treatment, Storage, and Disposal Facility (TSDF) or alternatively transported to the central waste storage facility on campus. Waste management activities would be conducted in full compliance with all applicable local, state, and federal regulatory requirements to ensure compliant accumulation, storage, transport, treatment, and disposal. In addition, a variety of best management practices (BMPs) (e.g., building design elements to prevent runoff in the event of a spill or release of liquid waste, weekly inspections of containerized and stored waste, etc.) would be implemented to ensure these activities are conducted with minimal issues.

## 3.6 PROJECT POPULATION

The maximum number of persons accommodated by the proposed building would be 2,811 students and 188 faculty and staff, for a total of about 2,999 persons. Of the 2,811 students, 1,542 are existing under-grad and post-grad students enrolled in the Psychological Sciences and Public Health departments and about 1,269 would be new students. Of the 188 faculty and staff, 139 are existing faculty and staff in the Psychological Sciences and Public Health departments. Thus, 1,681 of the 2,999 persons that would occupy the proposed UCM-ME Building are already enrolled as

students or employed by the Campus as of 2020, and therefore the net new population due to this Project would be on the order of about 1,318 persons.

Because the existing building space in the SSM Building that would be vacated by the Psychological Sciences and Public Health Departments when those departments move to the proposed UCM-ME Building would be backfilled by the Department of Economics and the SSM Building would be ultimately retrofitted into the School of Management, for the purposes of the analyses in this EIR, all students, faculty, and staff were conservatively assumed to be “new” or additional to the existing students and employees on the campus. Therefore, it is conservatively assumed that about a population of 2,999 persons would be associated with the proposed Project. This population is within the population growth projected in the 2020 LRDP and analyzed in the 2020 LRDP SEIR.

The increase in campus population due to the expanded and new programs in the UCM-ME Building would not occur immediately upon the completion of the building but would occur over time, potentially over 10 years after completion of construction. In other words, the estimated 1,269 new students associated with the UCM-ME Building or the total 2,811 students (which include the 1,269 new students and 1,542 existing students due to backfill of vacated space in the SSM Building) would be incrementally added to the campus population over a period of 10 years following project completion. However, for analysis in this EIR, it is assumed that the building would be fully occupied by 2030 and this increase in campus population will be in place by 2030.

### 3.7 PROJECT CONSTRUCTION

#### 3.7.1 Construction Schedule

Project construction is anticipated to occur over a 36-month period between fall 2023 and fall 2026. Construction would take place Monday through Friday and would involve typical construction hours that extend from early morning through mid-afternoon. Project construction hours would be limited to the hours of 7:00 a.m. and 6:00 p.m. on weekdays and Saturdays with no construction on Sundays and holidays for any construction occurring within 500 feet of residential uses.

#### 3.7.2 Construction Access and Staging

Construction access to the project site would be via Bellevue and Lake Roads. As shown in **Figure 3-2**, construction staging would occur within an approximately 17.6-acre portion of the campus that was recently disturbed as part of the 2020 Project. The staging area, which is located east of Cottonwood Loop Road and south of Bellevue Road, is centrally situated adjacent to the proposed building site and the storm water detention basin site. The staging area would be fenced and enclosed.

#### 3.7.3 Site Grading Activities and Construction Traffic

There are no structures on the project site that would require demolition. A portion of the Project site is currently developed with some landscaping that was installed as part of the 2020 Project; some of this landscaping, which comprises shrubs and bushes and some recently planted landscape trees, would be removed. Portions of the project site are currently graded to provide storm water detention basins. The basins would be filled using fill materials stockpiled in the northeastern

portion of the campus site as well as using earth materials excavated at the new storm water detention basin site. Import of fill from off-campus locations would not be required.

Project construction activities would generate daily construction worker trips as well as vehicle trips associated with the delivery of concrete, rebar, form work, structural steel, mechanical and electrical equipment, exterior siding and windows, drywall and studs, pipes and conduits, roofing materials, etc.

### **3.8 REQUIRED APPROVALS**

Necessary Project actions and approvals are anticipated to include, but are not limited to, consideration of the following by The Regents (anticipated in late 2022):

- Certification of the UCM-ME Building Project EIR;
- Approval of the changes to the previously adopted 2020 LRDP MMRP;
- Approval of the UCM-ME Building Project, including the storm water infrastructure and electrical utility upgrade component of the Project.

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## 4.0 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

### APPROACH TO THE ENVIRONMENTAL ANALYSIS

This section of the Draft Environmental Impact Report (EIR) presents potential environmental impacts of the proposed UC Merced Medical Education (UCM-ME) Building Project (“proposed Project” or “Project”). To assist the reader in understanding the manner in which the impact analysis has been conducted in **Sections 4.1** through **4.6**, this introductory section presents the definitions of key terms used in the EIR and key attributes of the analytical approach to impact assessment.

#### 4.0.1 Determination of Impact Significance and related Terminology

Under California Environmental Quality Act (CEQA) Public Resources Code Section 21068, a significant effect is defined as a substantial, or potentially substantial, adverse change in the environment. The “environment” means the physical conditions, which exist in the area including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic importance. Each impact evaluation in this section is prefaced by significance criteria, which are the thresholds used in this EIR for determining whether an impact is significant. The significance criteria used in this EIR are based on Appendix G of the *State CEQA Guidelines*.

The EIR uses a variety of terms to describe the levels of significance of adverse impacts identified during the course of the environmental analysis. The following are definitions of terms used in this document:

- **Significant and Unavoidable Impact.** Impacts that exceed the defined standards of significance and cannot be eliminated or reduced to a less than significant level through the implementation of feasible mitigation measures. These can include significant impacts that are unavoidable because available mitigation is not adequate to reduce the impact fully. These can also include significant impacts that are unavoidable because the mitigation measure is within the responsibility and jurisdiction of another public agency, and the University cannot assure the timely implementation of the mitigation measure.
- **Significant Impact.** Impacts that exceed the defined standards of significance and that can be eliminated or reduced to a less than significant level through the implementation of feasible mitigation measures.
- **Potentially Significant Impact.** Potentially Significant Impacts are impacts about which there is not enough information to draw a firm conclusion; however, for the purpose of this EIR, they are considered significant. Such impacts are equivalent to Significant Impacts and require the identification of feasible mitigation measures.
- **Less Than Significant Impact.** Impacts that are adverse but that do not exceed the specified standards of significance.
- **No Impact.** The Project would not create an impact.

#### 4.0.2 Definition of Baseline Conditions

In determining whether a project's impacts are significant, an EIR ordinarily compares the environmental conditions associated with a project with existing environmental conditions, which are referred to as the "baseline" for the impact analysis. This EIR compares the potential environmental impacts of the proposed Project with the baseline environmental conditions in existence at the time that the Notice of Preparation (NOP) was published, on April 2, 2021, with the exception of the transportation (vehicle miles travelled) analysis.

For transportation and transportation-related environmental impacts (i.e., air quality), trip generation estimates and travel behavior are based on early 2020 pre-COVID-19 enrollment and student resident population numbers, because very small numbers of students and employees were present on the campus in the Spring of 2021, and any transportation analysis based on those numbers would not be representative of normal conditions.

It is also acknowledged that the new normal in the post pandemic world may not be the same as what was considered normal in early 2020 before the pandemic. It is likely that there could be permanent changes in the ways humans live and behave in the post pandemic world, including more telework, remote learning, and on-line shopping. As with humans, institutions such as UC Merced are also expected to make changes to the manner in which they operate. The net effect of the pandemic on UC Merced development and operations cannot be predicted at this point in time as the Campus continues to examine the potential for continued telework and remote learning. However, the analysis presented in this EIR reflects a good faith and reasonable effort to analyze the Project's transportation impacts and is considered conservative because more remote learning, remote working, and online shopping will likely bring vehicle travel down in the future, both for the campus and the region.

#### 4.0.3 Structure of Resource Topic Sections

Each resource topic evaluated in this section of the EIR is addressed under seven primary subsections: Introduction; Environmental Setting; Regulatory Considerations; and Impacts and Mitigation Measures, which include Significance Criteria, Methodology, Impact Analysis, Cumulative Impacts, and References. An overview of the information included in these sections is provided below.

##### Introduction

The introduction section describes the topic to be analyzed and the contents of the analysis. It also provides the sources used to evaluate the potential impacts of the proposed Project.

##### Environmental Setting

This section describes the existing conditions on and in the vicinity of the campus and Project site.

## Regulatory Considerations

This section presents relevant UC plans and policies, and relevant federal, state, and local laws, regulations, plans, and policies. Only those laws, regulations, and policies that are pertinent to the impact analysis are included.

## Impacts and Mitigation Measures

This section sets forth the significance criteria used in this EIR to evaluate impacts, along with the analytical methods, Project impacts, and mitigation measures.

## Significance Criteria

This subsection presents the significance criteria used in this EIR to evaluate impacts. This EIR uses significance criteria derived from Appendix G of the *State CEQA Guidelines* regarding the determination of environmental consequences to identify impacts and underlying statutory authority to the extent applicable.

## Issues Not Discussed Further

This subsection identifies the resource topic significance criteria that are not discussed in the EIR section as they have been screened out in the Initial Study (**Appendix 1.0**) as involving no impact or a less than significant impact.

## Methodology

This subsection summarizes the methodology used to evaluate effects. Impacts are evaluated quantitatively where possible and qualitatively where quantification is not feasible.

## Project Impacts and Mitigation Measures

This subsection presents the environmental effects from implementation of the proposed Project, using the Appendix G CEQA checklist to identify each impact.

This EIR identifies all environmental impacts with an alpha-numeric designation that corresponds to the environmental resource topic (e.g., Air Quality impacts are labeled AQ, whereas Transportation impacts are labeled TRANS, etc.). The resource identifier is followed by a number that indicates the sequence in which the impact statement occurs within the section. Therefore, ME Impact AQ-1 refers to the first impact under Air Quality. For each impact, a summary statement of the impact is presented in bold type along with a conclusion with respect to the impact's significance before mitigation and its significance after mitigation (in ***bold italics***). Mitigation measures are referenced as appropriate.

## Cumulative Impacts and Mitigation Measures

This section presents the cumulative impacts of the proposed Project in conjunction with past, present, and reasonably foreseeable future development in the project area. The approach to the analysis of cumulative impacts is described in further detail in Section 4.0.4 below.

#### 4.0.4 Approach to Cumulative Impact Analysis

CEQA defines cumulative as “two or more individual effects which, when considered together, are considerable, or which can compound to increase other environmental impacts.” Section 15130 of the *State CEQA Guidelines* requires that an EIR evaluate potential environmental impacts when the project's incremental effect is cumulatively considerable. “Cumulatively considerable” means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. These impacts can result from a combination of the proposed project together with other projects causing related impacts. The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

Cumulative impacts are evaluated in this Draft EIR for two timelines: short-term cumulative impacts that could result during the construction of the proposed Project from the concurrent construction of the Project and other projects in the vicinity of the proposed Project, and long-term cumulative impacts that could result from the completion and occupancy of the proposed building in conjunction with the completion and occupancy of other development in the project area. As noted in **Chapter 1.0, Introduction**, the proposed Project is within the scope of growth and development analyzed in the 2020 LRDP SEIR, both in terms of the building space and the population it would accommodate. As the Project is within the scope of LRDP development, it is appropriate under CEQA for the University to conduct an analysis for this Project that is tiered from the 2020 LRDP SEIR and the 2009 LRDP EIS/EIR as appropriate. Under the tiering provisions of CEQA, the University may rely on the previously certified program EIRs such as the 2020 LRDP SEIR and the 2009 LRDP EIS/EIR for certain environmental analyses, including the analysis of cumulative impacts. The approach used to analyze short- and long-term cumulative impacts is described below.

##### Short-Term (Construction Phase) Cumulative Scenario

The 2020 LRDP SEIR presents the cumulative impacts of campus growth and development through 2035, but it evaluates construction-phase impacts of future development at a programmatic level. To confirm that the Project would not result in construction-phase cumulative impacts that were not disclosed previously, this EIR considers reasonably foreseeable projects that would be constructed on or immediately adjacent to the campus in the same general timeframe as the proposed Project for the construction-phase cumulative impacts.

The proposed Project would be constructed between Fall 2023 and Fall 2026. **Table 4-1** lists reasonably foreseeable near-term projects that would likely be constructed or completed within approximately 2 miles of the UC Merced campus in the same general timeframe as the proposed Project.<sup>1 2</sup> The projects listed in **Table 4-1** would have the potential for short-term construction-phase cumulative impacts because their construction would occur between 2023 and 2026, similar to the proposed Project.

<sup>1</sup> Merced County. Gray, Al, Planning Technician. March 2, 2021. Email communication with Fehr & Peers.

<sup>2</sup> City of Merced. Espinosa, Kim, Planning Manager. February 26, 2021. Email communication with UC Merced.

**Table 4-1: Near-Term Cumulative Projects**

Project	Location	Description	Use	Area (acres)	Status
Virginia Smith Trust (VST) Specific Plan Project, Phase 1A <sup>1</sup>	South of UC Merced Campus at Lake Road and Cardella Road	Mixed Use Development	Residential Housing and Commercial	200 acres	Design
Regency Court Apartments	North of Merrill Drive (extended), East of G Street	Apartments	Multi-family Housing	10 acres	Approved
Sage Creek Apartments	Southeast Corner of Cardella Road (extended) and Horizons Avenue (extended)	Apartments	Multi-family Housing	14 acres	Pending

<sup>1</sup> The VST Specific Plan Project includes Phases 1A through 1C, as well as subsequent phases. Only Phase 1A would have the potential to overlap with the construction of the proposed Project and is therefore considered in the analysis of near-term (construction) cumulative impacts. For the analysis of long-term (operational) cumulative impacts, including the VMT analysis, Phases 1A through 1C of the VST Specific Plan Project are considered.

These projects are considered in each resource section, as applicable, for potential near-term construction-phase cumulative impacts.<sup>3</sup>

#### Long-Term (Operational Phase) Cumulative Scenario

The proposed Project is within the scope of the campus growth and development anticipated and analyzed in the 2020 LRDP SEIR, a program-level EIR that evaluated the cumulative effects of campus development and growth under the 2020 LRDP for a period of 10 years (2020 through 2030). LRDP build-out impacts were analyzed in the 2020 LRDP SEIR for the year 2030, and cumulative impacts were assessed for the year 2035, representing approximately 15 years of growth in the Project area. Under CEQA, new analysis of cumulative impacts is not required for a project that within the scope of the previously analyzed program, but to aid the reader and decision makers in understanding the nature of previously analyzed cumulative impacts, each resource section in this EIR summarizes the applicable cumulative impacts originally presented in the 2020 LRDP SEIR.

With respect to cumulative transportation impacts, as noted in **Chapter 1.0, Introduction**, in order to comply with the current *State CEQA Guidelines*, transportation impacts of the 2020 LRDP were reevaluated using VMT metrics. The updated analysis in **Chapter 7.0** of this EIR presents the cumulative transportation impacts of the 2020 LRDP, including the proposed Project.

<sup>3</sup> Lists of reasonably foreseeable projects in the vicinity of the campus were obtained from the City and the County shortly after the NOP was issued for this EIR and the environmental analysis was commenced. The University notes that additional land development projects have since been proposed near the campus, the construction of which may overlap with the proposed Project. With regard to long-term operational cumulative impacts, all of the land development growth in the area is accounted for in the long-term cumulative impact analysis completed for the 2020 SEIR and in the current EIR.

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## 4.1 AIR QUALITY

### 4.1.1 Introduction

This section of the Draft Environmental Impact Report (EIR) evaluates the potential effects of the proposed UC Merced Medical Education (UCM-ME) Building Project (“proposed Project” or “Project”) on air quality, including the effects of construction and operational traffic associated with the proposed Project on regional pollutant levels and health risks. The section has been prepared using the methodologies and guidance contained in the San Joaquin Valley Air Pollution Control District’s (SJVAPCD) *Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI)*.<sup>1</sup> The analysis is based on the anticipated construction and occupancy of the proposed Project as described in **Chapter 3.0, Project Description**. Mitigation measures to reduce potentially significant air quality impacts are identified, as necessary.

### 4.1.2 Environmental Setting

#### 4.1.2.1 Regional Setting

The California Air Resources Board (CARB) has divided California into regional air basins according to topographic features. The proposed Project is located in Merced County, which is located in 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 sections provide a description of key air pollutants that affect air quality, and the existing environment as it relates to climate, meteorological conditions, and ambient air quality conditions of the SJVAB.

#### 4.1.2.2 Air Pollutants and Health Effects

Air pollutants of concern in the SJVAB are primarily generated by three categories of sources: mobile, stationary, and area sources. Mobile sources refer to operational and evaporative emissions from motor vehicles. Stationary sources include “point sources” which have one or more emission sources at a single facility. Point sources are usually associated with manufacturing and industrial uses and include sources such as refinery boilers or combustion equipment that produces electricity or process heat. Area sources include sources that produce widely distributed emissions. Examples of area sources include residential water heaters, painting operations, lawn mowers, agricultural fields, landfills, and consumer products, such as lighter fluid or hair spray.

Both State and federal governments have established health-based Ambient Air Quality Standards for six criteria air pollutants: carbon monoxide (CO), ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), lead (Pb), and suspended particulate matter. In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety. Two criteria pollutants, O<sub>3</sub> and NO<sub>2</sub>, are considered regional pollutants because they (or their precursors)

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<sup>1</sup> San Joaquin Valley Air Pollution Control District. 2015. *Guidance for Assessing and Mitigating Air Quality Impacts*. March 19. Website: [www.valleyair.org/transportation/ceqa\\_idx.htm](http://www.valleyair.org/transportation/ceqa_idx.htm) (accessed June 2021).

affect air quality on a regional scale. Pollutants such as CO, SO<sub>2</sub>, and Pb are considered local pollutants that tend to accumulate in the air locally and affect air quality in the vicinity of where they are emitted.

Air pollutants and their health effects, and other air pollution-related considerations are summarized in **Table 4.1-1, Sources and Health Effects of Air Pollutants**, and are described in more detail below.

**Table 4.1-1: Sources and Health Effects of Air Pollutants**

Pollutants	Sources	Primary Effects
Carbon Monoxide (CO)	<ul style="list-style-type: none"> <li>Incomplete combustion of fuels and other carbon-containing substances, such as motor exhaust.</li> <li>Natural events, such as decomposition of organic matter.</li> </ul>	<ul style="list-style-type: none"> <li>Reduced tolerance for exercise.</li> <li>Impairment of mental function.</li> <li>Impairment of fetal development.</li> <li>Death at high levels of exposure.</li> <li>Aggravation of some heart diseases (angina).</li> </ul>
Nitrogen Dioxide (NO <sub>2</sub> )	<ul style="list-style-type: none"> <li>Motor vehicle exhaust.</li> <li>High temperature stationary combustion.</li> <li>Atmospheric reactions.</li> </ul>	<ul style="list-style-type: none"> <li>Aggravation of respiratory illness.</li> <li>Reduced visibility.</li> <li>Reduced plant growth.</li> <li>Formation of acid rain.</li> </ul>
Ozone (O <sub>3</sub> )	<ul style="list-style-type: none"> <li>Atmospheric reaction of organic gases with nitrogen oxides in sunlight.</li> </ul>	<ul style="list-style-type: none"> <li>Aggravation of respiratory and cardiovascular diseases.</li> <li>Irritation of eyes.</li> <li>Impairment of cardiopulmonary function.</li> <li>Plant leaf injury.</li> </ul>
Lead (Pb)	<ul style="list-style-type: none"> <li>Contaminated soil.</li> </ul>	<ul style="list-style-type: none"> <li>Impairment of blood functions and nerve construction.</li> <li>Behavioral and hearing problems in children.</li> </ul>
Suspended Particulate Matter (PM <sub>2.5</sub> and PM <sub>10</sub> )	<ul style="list-style-type: none"> <li>Stationary combustion of solid fuels.</li> <li>Construction activities.</li> <li>Industrial processes.</li> <li>Atmospheric chemical reactions.</li> <li>Soil/Dust</li> </ul>	<ul style="list-style-type: none"> <li>Reduced lung function.</li> <li>Aggravation of the effects of gaseous pollutants.</li> <li>Aggravation of respiratory and cardiorespiratory diseases.</li> <li>Increased cough and chest discomfort.</li> <li>Reduced visibility.</li> </ul>
Sulfur Dioxide (SO <sub>2</sub> )	<ul style="list-style-type: none"> <li>Combustion of sulfur-containing fossil fuels.</li> <li>Smelting of sulfur-bearing metal ores.</li> <li>Industrial processes.</li> </ul>	<ul style="list-style-type: none"> <li>Aggravation of respiratory diseases (asthma, emphysema).</li> <li>Reduced lung function.</li> <li>Irritation of eyes.</li> <li>Reduced visibility.</li> <li>Plant injury.</li> <li>Deterioration of metals, textiles, leather, finishes, coatings, etc.</li> </ul>

Source: California Air Resources Board (2015).

**Ozone.** O<sub>3</sub> is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and nitrogen oxides (NO<sub>x</sub>). The main sources of ROG and NO<sub>x</sub>, often referred to as O<sub>3</sub> precursors, are combustion processes (including combustion in motor vehicle engines) and the evaporation of solvents, paints, and fuels. Automobiles are the single largest source of O<sub>3</sub> precursors. O<sub>3</sub> is referred to as a regional air pollutant because its precursors are transported and diffused by wind concurrently with O<sub>3</sub>.



production through the photochemical reaction process.  $O_3$  causes eye irritation, airway constriction, and shortness of breath and can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

**Carbon Monoxide.** CO is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicles. CO transport is limited; it disperses with distance from the source under normal meteorological conditions. However, under certain extreme meteorological conditions, CO concentrations near congested roadways or intersections may reach unhealthful levels that adversely affect local sensitive receptors (e.g., residents, schoolchildren, the elderly, and hospital patients). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service (LOS) or with extremely high traffic volumes. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, and fatigue, impair central nervous system function, and induce angina (chest pain) in persons with serious heart disease. Extremely high levels of CO, such as those generated when a vehicle is running in an unventilated garage, can be fatal.

**Particulate Matter.** Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particulates are those that are 10 microns or less in diameter, or  $PM_{10}$ . Fine, suspended particulate matter are those with an aerodynamic diameter of 2.5 microns or less, or  $PM_{2.5}$ . Nitrates, sulfates, dust, and combustion particulates are major components of  $PM_{10}$  and  $PM_{2.5}$ . These small particles can be directly emitted into the atmosphere as byproducts of fuel combustion; through abrasion, such as tire or brake lining wear; or through fugitive dust (wind or mechanical erosion of soil). They can also be formed in the atmosphere through chemical reactions. Particulates may transport carcinogens and other toxic compounds that adhere to the particle surfaces and can enter the human body through the lungs. According to CARB, studies in the United States and elsewhere have demonstrated a strong link between elevated particulate levels and premature deaths, hospital admissions, emergency room visits, and asthma attacks, and studies of children's health in California have demonstrated that particle pollution may significantly reduce lung function growth in children.<sup>2</sup> Statewide attainment of particulate matter standards could reduce premature deaths, hospital admissions for cardiovascular and respiratory disease and asthma-related emergency room visits, and episodes of respiratory illness in California.

**Nitrogen Dioxide.**  $NO_2$  is a reddish brown gas that is a byproduct of combustion processes. Automobiles and industrial operations are the main sources of  $NO_2$ . Aside from its contribution to ozone formation,  $NO_2$  also contributes to other pollution problems, including a high concentration of fine particulate matter, poor visibility, and acid deposition.  $NO_2$  may be visible as a coloring component on high pollution days, especially in conjunction with high ozone levels.  $NO_2$  decreases lung function and may reduce resistance to infection.

**Sulfur Dioxide.**  $SO_2$  is a colorless, irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous  $SO_2$  levels in the region.  $SO_2$

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<sup>2</sup> California Air Resources Board (CARB). 2020. *Inhalable Particulate Matter and Health ( $PM_{2.5}$  and  $PM_{10}$ )*. Website: [ww2.arb.ca.gov/resources/inhalable-particulate-matter-and-health](http://ww2.arb.ca.gov/resources/inhalable-particulate-matter-and-health) (accessed July 2022).

irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter, and reduces visibility and the level of sunlight.

**Lead.** Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phase-out of leaded gasoline, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery factories. Twenty years ago, mobile sources were the main contributor to ambient lead concentrations in the air. In the early 1970s, the United States Environmental Protection Agency (USEPA) established national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. The USEPA banned the use of leaded gasoline in highway vehicles in December 1995. As a result of the USEPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector and levels of lead in the air decreased dramatically.

**Toxic Air Contaminants.** In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are another group of pollutants of concern. Some examples of TACs include benzene, butadiene, formaldehyde, and hydrogen sulfide. The identification, regulation, and monitoring of TACs is relatively recent compared to that for criteria pollutants. TACs are injurious in small quantities. TACs do not have ambient air quality standards, but are regulated by the USEPA, CARB, and the SJVAPCD.

In 1998, the CARB identified particulate matter from diesel-fueled engines as a TAC. The CARB has completed a risk management process that identified potential cancer risks for a range of activities using diesel-fueled engines.<sup>3</sup> High-volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic (e.g., distribution centers and truck stops) were identified as posing the highest risk to adjacent receptors. Other facilities associated with increased risk include warehouse distribution centers, large retail or industrial facilities, high-volume transit centers, and schools with a high volume of bus traffic. Health risks from TACs are a function of both concentration and duration of exposure.

Unlike TACs emitted from industrial and other stationary sources noted above, most diesel particulate matter (DPM) is emitted from mobile sources—primarily “off-road” sources such as construction and mining equipment, agricultural equipment, and truck-mounted refrigeration units, as well as trucks and buses traveling on freeways and local roadways.

Although not specifically monitored, recent studies indicate that exposure to DPM may contribute significantly to a cancer risk (a risk of approximately 500 to 700 cancer cases in 1,000,000) that is greater than all other measured TACs combined.<sup>4</sup> The technology for reducing DPM emissions from heavy-duty trucks is well established, and both State and Federal agencies are moving aggressively to regulate engines and emission control systems to reduce and remediate diesel emissions. The CARB anticipated that in 2020, average statewide DPM concentrations will decrease by 85 percent from

<sup>3</sup> California Air Resources Board. 2000. Stationary Source Division and Mobile Source Control Division. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. October.

<sup>4</sup> Ibid.

levels in 2000 with full implementation of the CARB's Diesel Risk Reduction Plan,<sup>5</sup> meaning that the statewide health risk from DPM is expected to decrease from 540 cancer cases in 1,000,000 to 21.5 cancer cases in 1,000,000. It is likely that cancer risk in the SJVAB from DPM has decreased by a similar factor by 2020.

#### 4.1.2.3 Regional Topography and Meteorology

Air quality is a function of both local climate, meteorology, and local sources of air pollution. The amount of a given pollutant in the atmosphere is determined by the amount of the pollutant released and the atmosphere's ability to transport and dilute the pollutant. The major determinants of transport and dilution are wind, atmospheric stability, terrain, and for photochemical pollutants, sunshine.

The proposed Project is located within the SJVAB and is under the jurisdiction of the SJVAPCD. A region's topographic features have a direct correlation with air pollution flow and therefore are used to determine the boundary of air basins. The SJVAB is comprised of approximately 25,000 square miles and covers eight counties, including Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus and Tulare, and the western portion of Kern. The SJVAB is defined by the Sierra Nevada mountains in the east (8,000 to 14,000 feet in elevation), the Coast Ranges in the west (averaging 3,000 feet in elevation), and the Tehachapi mountains in the south (6,000 to 8,000 feet in elevation). The valley is basically flat with a slight downward gradient to the northwest. The valley opens to the sea at the Carquinez Straits where the San Joaquin-Sacramento Delta empties into San Francisco Bay. An aerial view of the SJVAB would simulate a "bowl" opening only to the north. These topographic features restrict air movement through and out of the basin.

Although marine air generally flows into the basin from the San Joaquin River Delta, the Coast Range hinders wind access into the SJVAB from the west, the Tehachapi Mountains prevent southerly passage of air flow, and the high Sierra Nevada range is a significant barrier to the east. These topographic features result in weak air flow which becomes blocked vertically by high barometric pressure over the SJVAB. As a result, the SJVAB is highly susceptible to pollutant accumulation over time. Most of the surrounding mountains are higher than the normal height of summer inversion layers (1,500 to 3,000 feet).

Local climatological effects, including wind speed and direction, temperature, inversion layers, precipitation and fog, can exacerbate the air quality in the SJVAB. Wind speed and direction play an important role in dispersion and transport of air pollutants. Wind at the surface and aloft can disperse pollution by mixing vertically and by transporting it to other locations. For example, in the summer, wind usually originates at the north end of the SJVAB and flows in a south-southeasterly direction through the SJVAB, through Tehachapi pass, into the Southeast Desert Air Basin. In the winter, wind direction is reversed and flows in a north-northwesterly direction. In addition to the seasonal wind flow, a sea breeze flows into SJVAB during the day and a land breeze flowing out of the SJVAB at night. The diversified wind flow enhances the pollutant transport capability within SJVAB.

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<sup>5</sup> California Air Resources Board. 2000, op. cit.

The annual average temperature varies throughout the SJVAB, ranging from the low 40s to high 90s, measured in degrees Fahrenheit (°F). With a more pronounced valley influence, inland areas show more variability in annual minimum and maximum temperatures than coastal areas. The climatological station closest to the site is the Merced (045532) Airport Station. The monthly average maximum temperature recorded at this station from June 1899 to June 2016 ranged from 54.9°F in January to 97.1°F in July, with an annual average maximum of 76.3°F. The monthly average minimum temperature recorded at this station ranged from 35.6°F in December to 60.9°F in July, with an annual average minimum of 47.1°F.<sup>6</sup> These levels are representative of the project area. January and December are typically the coldest months and July and August are typically the warmest month in this area of the SJVAB.

The majority of annual rainfall in the SJVAB occurs between November and April. Summer rainfall is minimal and is generally limited to scattered thundershowers in desert regions and slightly heavier showers near the lower portion of the Basin and along the Sierra Nevada mountains to the east. Average monthly rainfall during that period varies from 0.01 inches in July to 2.46 inches in January, with an annual total of 12.27 inches.<sup>7</sup> Patterns in monthly and yearly rainfall totals are predictable due to the recognizable differences in seasons within the valley.

The vertical dispersion of air pollutants in the SJVAB is limited by the presence of persistent temperature inversions. Because of cooling of the atmosphere, air temperature usually decreases with altitude. A reversal of this atmospheric state, where the air temperature increases with height, is termed an inversion. Inversions can exist at the surface, or at any height above the ground. The height of the base of the inversion is known as the “mixing height.” This is the level within which pollutants can mix vertically. Air above and below the inversion base does not mix because of the differences in air density. Semi-permanent systems of high barometric pressure fronts frequently establish themselves over the SJVAB, preventing low pressure systems that might otherwise bring rain and winds that clean the air.

Inversion layers are significant in determining ozone formation, and CO and PM<sub>10</sub> concentrations. O<sub>3</sub> and its precursors will mix and react to produce higher ozone concentrations under an inversion. The inversion will also simultaneously trap and hold directly emitted pollutants such as CO. PM<sub>10</sub> is both directly emitted and created in the atmosphere as a chemical reaction. Concentration levels of pollutants are directly related to inversion layers due to the limitation of mixing space.

Surface or radiation inversions are formed when the ground surface becomes cooler than the air above it during the night. The earth’s surface goes through a radiative process on clear nights, where heat energy is transferred from the ground to a cooler night sky. As the earth’s surface cools during the evening hours, the air directly above it also cools, while air higher up remains relatively warm. The inversion is destroyed when heat from the sun warms the ground, which in turn heats

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<sup>6</sup> Western Regional Climate Center. n.d. Merced Airport, California (045532), Period of Record Monthly Climate Summary. Website: <https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca5532> (accessed June 2021).

<sup>7</sup> Ibid.

the lower layers of air; this heating stimulates the ground level air to float up through the inversion layer.

The combination of stagnant wind conditions and low inversions produces the greatest pollutant concentrations. On days of no inversion or high wind speeds, ambient air pollutant concentrations are lowest. Periods of low inversions and low wind speeds are conditions favorable to high concentrations of CO and PM<sub>10</sub>. In the winter, the greatest pollution problems are CO and NO<sub>x</sub> (an O<sub>3</sub> precursor) because of extremely low inversions and air stagnation during the night and early morning hours. In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and oxides of nitrogen to form photochemical smog.

#### 4.1.2.4 Ambient Air Quality Standards

Both the USEPA and the CARB have established ambient air quality standards for the following common pollutants: CO, O<sub>3</sub>, NO<sub>2</sub>, SO<sub>2</sub>, Pb, and suspended particulate matter. In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety. These ambient air quality standards are levels of contaminants that avoid specific adverse health effects associated with each pollutant. Federal standards include both primary and secondary standards. Primary standards establish limits to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, and damage to animals, crops, vegetation, and buildings.<sup>8</sup> **Table 4.1-2, Federal and State Ambient Air Quality Standards**, presents a summary of State and federal ambient air quality standards (AAQS).

#### 4.1.2.5 Attainment Status

The CARB is required to designate areas of the State as attainment, nonattainment or unclassified for all State standards. An *attainment* designation for an area signifies that pollutant concentrations did not violate the standard for that pollutant in that area. A *nonattainment* designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. An *unclassified* designation signifies that data does not support either an attainment or nonattainment status. The California Clean Air Act divides nonattainment districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

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<sup>8</sup> United States Environmental Protection Agency. 2017. Criteria Air Pollutants. Website: [www.epa.gov/criteria-air-pollutants](http://www.epa.gov/criteria-air-pollutants) (accessed June 2021). October.

**Table 4.1-2: Federal and State Ambient Air Quality Standards**

Pollutant	Averaging Time	California Standards <sup>a</sup>		Federal Standards <sup>b</sup>		
		Concentration <sup>c</sup>	Method <sup>d</sup>	Primary <sup>c,e</sup>	Secondary <sup>c,f</sup>	Method <sup>g</sup>
Ozone (O <sub>3</sub> ) <sup>h</sup>	1-Hour	0.09 ppm (180 µg/m <sup>3</sup> )	Ultraviolet Photometry	–	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.07 ppm (137 µg/m <sup>3</sup> )		0.070 ppm (137 µg/m <sup>3</sup> )		
Respirable Particulate Matter (PM <sub>10</sub> ) <sup>i</sup>	24-Hour	50 µg/m <sup>3</sup>	Gravimetric or Beta Attenuation	150 µg/m <sup>3</sup>	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m <sup>3</sup>		–		
Fine Particulate Matter (PM <sub>2.5</sub> ) <sup>i</sup>	24-Hour	-		35 µg/m <sup>3</sup>	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m <sup>3</sup>	Gravimetric or Beta Attenuation	12.0 µg/m <sup>3</sup>		
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m <sup>3</sup> )	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m <sup>3</sup> )	–	Non-Dispersive Infrared Photometry (NDIR)
	1-Hour	20 ppm (23 mg/m <sup>3</sup> )		35 ppm (40 mg/m <sup>3</sup> )		
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m <sup>3</sup> )		–	–	
Nitrogen Dioxide (NO <sub>2</sub> ) <sup>j</sup>	Annual Arithmetic Mean	0.03 ppm (57 µg/m <sup>3</sup> )	Gas Phase Chemi-luminescence	53 ppb (100 µg/m <sup>3</sup> )	Same as Primary Standard	Gas Phase Chemi-luminescence
	1-Hour	0.18 ppm (339 µg/m <sup>3</sup> )		100 ppb (188 µg/m <sup>3</sup> )	-	
Lead (Pb) <sup>l,m</sup>	30-Day Average	1.5 µg/m <sup>3</sup>	Atomic Absorption	–	–	High-Volume Sampler and Atomic Absorption
	Calendar Quarter	–		1.5 µg/m <sup>3</sup> (for certain areas) <sup>l</sup>	Same as Primary Standard	
	Rolling 3-Month Average <sup>i</sup>	–		0.15 µg/m <sup>3</sup>		
Sulfur Dioxide (SO <sub>2</sub> ) <sup>k</sup>	24-Hour	0.04 ppm (105 µg/m <sup>3</sup> )	Ultraviolet Fluorescence	0.14 ppm (for certain areas)	–	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3-Hour	–		–	0.5 ppm (1300 µg/m <sup>3</sup> )	
	1-Hour	0.25 ppm (655 µg/m <sup>3</sup> )		75 ppb (196 µg/m <sup>3</sup> ) <sup>k</sup>	–	
	Annual Arithmetic Mean	–		0.030 ppm (for certain areas) <sup>k</sup>	–	
Visibility-Reducing Particles <sup>l</sup>	8-Hour	See footnote n	Beta Attenuation and Transmittance through Filter Tape.	No Federal Standards		
Sulfates	24-Hour	25 µg/m <sup>3</sup>	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m <sup>3</sup> )	Ultraviolet Fluorescence			
Vinyl Chloride <sup>l</sup>	24-Hour	0.01 ppm (26 µg/m <sup>3</sup> )	Gas Chromatography			

Source: California Air Resources Board (2016).

- <sup>a</sup> California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, and particulate matter (PM<sub>10</sub>, PM<sub>2.5</sub>, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
- <sup>b</sup> National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM<sub>10</sub>, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m<sup>3</sup> is equal to or less than one. For PM<sub>2.5</sub>, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact USEPA for further clarification and current national policies.
- <sup>c</sup> Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
- <sup>d</sup> Any equivalent measurement method which can be shown to the satisfaction of the CARB to give equivalent results at or near the level of the air quality standard may be used.
- <sup>e</sup> National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
- <sup>f</sup> National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
- <sup>g</sup> Reference method as described by the USEPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the USEPA.
- <sup>h</sup> On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
- <sup>i</sup> On December 14, 2012, the national annual PM<sub>2.5</sub> primary standard was lowered from 15 µg/m<sup>3</sup> to 12.0 µg/m<sup>3</sup>. The existing national 24-hour PM<sub>2.5</sub> standards (primary and secondary) were retained at 35 µg/m<sup>3</sup>, as was the annual secondary standard of 15 µg/m<sup>3</sup>. The existing 24-hour PM<sub>10</sub> standards (primary and secondary) of 150 µg/m<sup>3</sup> also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
- <sup>j</sup> To attain the 1-hour national standard, the 3-year average of the annual 98<sup>th</sup> percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
- <sup>k</sup> On June 2, 2010, a new 1-hour SO<sub>2</sub> standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99<sup>th</sup> percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO<sub>2</sub> national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.  
Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
- <sup>l</sup> The CARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
- <sup>m</sup> The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 µg/m<sup>3</sup> as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
- <sup>n</sup> In 1989, the CARB converted both the general Statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the Statewide and Lake Tahoe Air Basin standards, respectively.

°C = degrees Celsius

CARB = California Air Resources Board

USEPA = United States Environmental Protection Agency

ppb = parts per billion

ppm = parts per million

mg/m<sup>3</sup> = milligrams per cubic meter

µg/m<sup>3</sup> = micrograms per cubic meter



The USEPA also designates areas as attainment, nonattainment, or classified. The air quality data are also used to monitor progress in attaining air quality standards. **Table 4.1-3, Attainment Status of the San Joaquin Valley Air Basin**, provides a summary of the attainment status for the SJVAB with respect to national and State ambient air quality standards.

**Table 4.1-3: Attainment Status of the San Joaquin Valley Air Basin**

Pollutant	State	Federal
O <sub>3</sub> 1-hour	Nonattainment/Severe	No Federal Standard <sup>1</sup>
O <sub>3</sub> 8-hour	Nonattainment	Extreme Nonattainment <sup>2</sup>
PM <sub>10</sub>	Nonattainment	Attainment <sup>3</sup>
PM <sub>2.5</sub>	Nonattainment	Nonattainment <sup>4</sup>
CO	Attainment/Unclassified	Attainment/Unclassified
NO <sub>2</sub>	Attainment	Attainment/Unclassified
SO <sub>2</sub>	Attainment	Attainment/Unclassified
Lead	Attainment	No Designation/Classification
All others	Attainment/Unclassified	N/A

Source: Ambient Air Quality Standards and Valley Attainment Status (SJVAPCD 2020).

<sup>1</sup> Effective June 15, 2005, the U.S. Environmental Protection Agency (USEPA) revoked the federal 1-hour ozone standard, including associated designations and classifications. USEPA had previously classified the SJVAB as extreme nonattainment for this standard. USEPA approved the 2004 Extreme Ozone Attainment Demonstration Plan on March 8, 2010 (effective April 7, 2010). Many applicable requirements for extreme 1-hour ozone nonattainment areas continue to apply to the SJVAB.

<sup>2</sup> Though the Valley was initially classified as serious nonattainment for the 1997 8-hour ozone standard, USEPA approved Valley reclassification to extreme nonattainment in the Federal Register on May 5, 2010 (effective June 4, 2010).

<sup>3</sup> On September 25, 2008, USEPA re-designated the San Joaquin Valley to attainment for the PM<sub>10</sub> National Ambient Air Quality Standard (NAAQS) and approved the PM<sub>10</sub> Maintenance Plan.

<sup>4</sup> The Valley is designated nonattainment for the 1997 PM<sub>2.5</sub> NAAQS. USEPA designated the Valley as nonattainment for the 2006 PM<sub>2.5</sub> NAAQS on November 13, 2009 (effective December 14, 2009).

CO = carbon monoxide

PM<sub>10</sub> = particulate matter less than 10 microns in size

N/A = not applicable

PM<sub>2.5</sub> = particulate matter less than 2.5 microns in size

NO<sub>2</sub> = nitrogen dioxide

SO<sub>2</sub> = sulfur dioxide

O<sub>3</sub> = ozone

#### 4.1.2.6 Ambient Air Monitoring

Air quality monitoring stations are located throughout the nation and maintained by the local air pollution control district and state air quality regulating agencies. Ambient air quality data collected at permanent monitoring stations are used by the USEPA to identify regions as attainment or nonattainment depending on whether the regions met the requirements stated in the primary NAAQS. Attainment areas are required to maintain their status through moderate, yet effective air quality maintenance plans. Nonattainment areas are imposed with additional restrictions as required by the USEPA. In addition, different classifications of attainment such as marginal, moderate, serious, severe, and extreme are used to classify each air basin in the state on a pollutant-by-pollutant basis. Different classifications have different mandated attainment dates and are used as guidelines to create air quality management strategies to improve air quality and comply with the NAAQS by the attainment date.

The SJVAPCD, together with CARB, maintains ambient air quality monitoring stations in the SJVAB. The air quality monitoring station closest to the site is the 2334 M Street, Merced monitoring station, approximately 4.5 miles southwest of the project site. The air quality trends from this



station are used to represent the ambient air quality in the project area. Ambient air quality in the project area from 2018 to 2020 is shown in **Table 4.1-4, Ambient Air Quality at the 2334 M Street, Merced Monitoring Station**. The pollutants monitored were PM<sub>2.5</sub> and PM<sub>10</sub>. Air quality trends for O<sub>3</sub>, NO<sub>2</sub>, CO, and SO<sub>2</sub> are not monitored at this air quality monitoring station; therefore, O<sub>3</sub> and NO<sub>2</sub> data were obtained from the 385 S. Coffee Avenue, Merced County monitoring station and CO data were obtained from the 814 14th Street, Modesto monitoring station. SO<sub>2</sub> data was not available at any of these monitoring stations.

As indicated in the monitoring results, the State 1-hour O<sub>3</sub> standard was exceeded 4 times in 2018 and an unknown number of times in 2020.<sup>9</sup> In addition, the State 8-hour O<sub>3</sub> standard was exceeded 23 times in 2018, six times in 2019, and 20 times in 2020 and the federal 8-hour O<sub>3</sub> standard was exceeded 21 times in 2018, six times in 2019, and 20 times in 2020. The State PM<sub>10</sub> standard was exceeded 10 times in 2018, nine times in 2019, and an unknown number of times in 2020 and the federal PM<sub>10</sub> standard was exceeded once in 2020. The federal PM<sub>2.5</sub> standard was exceeded 10 times in 2018, once in 2019, and an unknown number of times in 2020. The CO and NO<sub>2</sub> standards were not exceeded in this area during the 3-year period.

#### 4.1.2.7 Sensitive Receptors

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,” which include hospitals, schools, convalescent facilities, and residential areas as examples of sensitive receptors.<sup>10</sup> Sensitive receptors that are near localized sources of toxic air contaminants and CO are of particular concern. For the purposes of impact assessment, the definition of sensitive receptors is typically expanded to include residences (where elderly and young children may reside), playgrounds, rehabilitation centers, and athletic facilities.

Based on site reconnaissance and available information, sensitive receptors (as defined by SJVAPCD) are located within 0.25 mile of the Project site. These include single-family residential units located on East Bellevue Road and Lake Road (southwest of the site). Lake Yosemite Regional Park is located about 0.5 mile to the northwest of the campus but is not considered a sensitive receptor under the SJVAPCD definition. Student housing on the campus is not treated as a sensitive receptor due to the age of the occupants and the short duration (typically 4 to 5 years) that the occupants typically are in student housing on a campus.

<sup>9</sup> The number of exceedances of State standards in 2020 are currently unknown as the California Air Resource Board (CARB) has not published the data for 2020 yet. The U.S. Environmental Protection Agency (USEPA) only identifies the number of exceedances of the federal standards.

<sup>10</sup> SJVAPCD, 2015. op. cit.

**Table 4.1-4: Ambient Air Quality at the 2334 M Street, Merced Monitoring Station**

Pollutant	Standard	2018	2019	2020
<b>Carbon Monoxide (CO)<sup>b</sup></b>				
Maximum 1-hour concentration (ppm)		2.7	1.8	2.9
Number of days exceeded:	State: > 20 ppm	0	0	0
	Federal: > 35 ppm	0	0	0
Maximum 8-hour concentration (ppm)		2.1	1.3	1.9
Number of days exceeded:	State: > 9 ppm	0	0	0
	Federal: > 9 ppm	0	0	0
<b>Ozone (O<sub>3</sub>)<sup>a</sup></b>				
Maximum 1-hour concentration (ppm)		0.104	0.087	0.100
Number of days exceeded:	State: > 0.09 ppm	4	0	ND
Maximum 8-hour concentration (ppm)		0.084	0.077	0.087
Number of days exceeded:	State: > 0.07 ppm	23	6	20
	Federal: > 0.07 ppm <sup>c</sup>	21	6	20
<b>Coarse Particulates (PM<sub>10</sub>)</b>				
Maximum 24-hour concentration (µg/m <sup>3</sup> )		142.7	99.1	210.0
Number of days exceeded:	State: > 50 µg/m <sup>3</sup>	10	9	ND
	Federal: > 150 µg/m <sup>3</sup>	0	0	1
Annual arithmetic average concentration (µg/m <sup>3</sup> )		34.6	29.8	ND
Exceeded for the year:	State: > 20 µg/m <sup>3</sup>	Yes	Yes	ND
	Federal: > 50 µg/m <sup>3</sup>	No	No	ND
<b>Fine Particulates (PM<sub>2.5</sub>)</b>				
Maximum 24-hour concentration (µg/m <sup>3</sup> )		94.7	41.6	86.0
Number of days exceeded:	Federal: > 35 µg/m <sup>3</sup>	10	1	ND
Annual arithmetic average concentration (µg/m <sup>3</sup> )		14.2	9.6	15.5
Exceeded for the year:	State: > 12 µg/m <sup>3</sup>	Yes	No	Yes
	Federal: > 15 µg/m <sup>3</sup>	No	No	Yes
<b>Nitrogen Dioxide (NO<sub>2</sub>)<sup>a</sup></b>				
Maximum 1-hour concentration (ppm)		0.046	0.039	0.039
Number of days exceeded:	State: > 0.250 ppm	0	0	0
Annual arithmetic average concentration (ppm)		0.007	0.006	0.007
Exceeded for the year:	Federal: > 0.053 ppm	No	No	No
<b>Sulfur Dioxide (SO<sub>2</sub>)</b>				
Maximum 1-hour concentration (ppm)		ND	ND	ND
Number of days exceeded:	State: > 0.25 ppm	ND	ND	ND
Maximum 24-hour concentration (ppm)		ND	ND	ND
Number of days exceeded:	State: > 0.04 ppm	ND	ND	ND
	Federal: > 0.14 ppm	ND	ND	ND
Annual arithmetic average concentration (ppm)		ND	ND	ND
Exceeded for the year:	Federal: > 0.030 ppm	ND	ND	ND

Source: CARB and USEPA (2021).

<sup>a</sup> Data from the 385 S. Coffee Avenue, Merced County monitoring station.

<sup>b</sup> Data from the 814 14th Street, Modesto monitoring station.

<sup>c</sup> State and national statistics may differ due to data rounding and the criteria for ensuring that data are sufficiently complete.

ppm = parts per million

µg/m<sup>3</sup> = micrograms per cubic meter

ND = No data. There was insufficient (or no) data to determine the value.

### 4.1.3 Regulatory Considerations

Air quality within the SJVAB is addressed through the efforts of various federal, State, regional, and local government agencies. These agencies work individually, as well as jointly, to improve air quality through legislation, regulations, planning, policy making, education, and a variety of other programs. The agencies primarily responsible for improving the air quality within the SJVAB include the USEPA, CARB, SJVAPCD, and the Regional Council of Governments. These agencies, their laws, regulations, rules, plans, and policies as they pertain to air quality and the proposed project are discussed below.

#### 4.1.3.1 Federal Regulations

**U.S. Environmental Protection Agency.** At the federal level, the USEPA has been charged with implementing national air quality programs. USEPA air quality mandates are drawn primarily from the Federal Clean Air Act (CAA), which was enacted in 1963. The CAA was amended in 1970, 1977, and 1990.

The CAA required the USEPA to establish primary and secondary NAAQS and required each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The CAA Amendments of 1990 added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. The USEPA has responsibility to review all state SIPs to determine conformity with the mandates of the CAA and determine if implementation will achieve air quality goals. If the USEPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) may be prepared for the nonattainment area, which imposes additional control measures. Failure to submit an approvable SIP or to implement the plan within the mandated timeframe may result in sanctions on transportation funding and stationary air pollution sources in the air basin.

The USEPA is also required to develop National Emission Standards for Hazardous Air Pollutants, which are defined as those which may reasonably be anticipated to result in increased deaths or serious illness, and which are not already regulated. An independent science advisory board reviews the health and exposure analyses conducted by the USEPA on suspected hazardous pollutants prior to regulatory development.

#### 4.1.3.2 State Regulations

**California Air Resources Board.** The CARB is the agency responsible for the coordination and oversight of State and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA), adopted in 1988. The CCAA requires that all air districts in the State achieve and maintain the California Ambient Air Quality Standards (CAAQS) by the earliest practical date. The CCAA specifies that air districts should focus on reducing the emissions from transportation and air-wide emission sources and provides districts with the authority to regulate indirect sources.

The CARB is also primarily responsible for developing and implementing air pollution control plans to achieve and maintain the NAAQS. The CARB is primarily responsible for Statewide pollution

sources and produces a major part of the SIP. Local air districts provide additional strategies for sources under their jurisdiction. The CARB combines this data and submits the completed SIP to the USEPA.

Other CARB duties include monitoring air quality (in conjunction with air monitoring networks maintained by air pollution control and air quality management districts), establishing CAAQS (which are more stringent than the NAAQS), determining and updating area designations and maps, and setting emissions standards for mobile sources, consumer products, small utility engines, and off-road vehicles. The CARB Diesel Risk Reduction Plan is intended to substantially reduce DPM emissions and associated health risks through introduction of ultra-low-sulfur diesel fuel – a step already implemented – and cleaner-burning diesel engines.<sup>11</sup>

Because of the robust evidence relating proximity to roadways and a range of non-cancer and cancer health effects, the CARB also created guidance for avoiding air quality conflicts in land use planning in its Air Quality and Land Use Handbook: A Community Health Perspective.<sup>12</sup> In its guidance, the CARB advises that new sensitive uses (e.g., residences, schools, day care centers, playgrounds, and hospitals) not be located within 500 feet of a freeway or urban roads carrying 100,000 vehicles per day, or within 1,000 feet of a distribution center (warehouse) that accommodates more than 100 trucks or more than 90 refrigerator trucks per day.

The CARB guidance suggests that the use of these guidelines be customized for individual land use decisions and take into account the context of proposed development projects. The Air Quality and Land Use Handbook specifically states that these recommendations are advisory and acknowledges that land use agencies must balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.

#### 4.1.3.3 Regional Plans and Policies

The SJVAPCD has jurisdiction over most air quality matters<sup>13</sup> within the SJVAB, which includes San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, and Tulare Counties and the valley portion of Kern County. The district regulates most air pollutant sources in the air basin, maintains ambient air quality monitoring stations at numerous locations throughout the air basin, and prepares the air quality management/attainment plans for the SJVAB that are required under the CAA and CCAA.

**Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI).** The SJVAPCD prepared the GAMAQI to assist lead agencies and project applicants in evaluating the potential air quality impacts of projects in the SJVAB. The GAMAQI provides SJVAPCD-recommended procedures for evaluating potential air quality impacts during the CEQA environmental review process. The GAMAQI provides guidance on evaluating short-term (construction) and long-term (operational) air emissions. The

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<sup>11</sup> California Air Resources Board. 2000b, op. cit.

<sup>12</sup> California Environmental Protection Agency and California Air Resources Board. 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*. Available online at: [www.arb.ca.gov/ch/handbook.pdf](http://www.arb.ca.gov/ch/handbook.pdf) (accessed June 2021). April.

<sup>13</sup> SJVAPCD does not regulate air pollutants from motor vehicles, locomotives, aircraft, agriculture equipment, and marine vessels.

most recent version of the GAMAQI, adopted March 19, 2015, was used in this evaluation. It contains guidance on the following:

- Criteria and thresholds for determining whether a project may have a significant adverse air quality impact;
- Specific procedures and modeling protocols for quantifying and analyzing air quality impacts;
- Methods to mitigate air quality impacts; and
- Information for use in air quality assessments and environmental documents, including air quality, regulatory setting, climate, and topography data.

**Current Air Quality Plans.** The SJVAPCD is responsible for formulating and implementing the Air Quality Management Plan (AQMP) for the Basin. The main purpose of an AQMP is to bring the area into compliance with federal and State air quality standards. The SJVAPCD does not have one single AQMP for criteria pollutants, rather the SJVAPCD address each criteria pollutant with its own Plan. The SJVAPCD has the following AQMPs:

- 2018 Plan for the 1997, 2006, and 2012 PM<sub>2.5</sub> Standards
- 2016 Moderate Area Plan for the 2012 PM<sub>2.5</sub> Standard
- 2016 Plan for the 2008 8-Hour Ozone Standard
- 2013 Plan for the Revoked 1-Hour Ozone Standard
- 2007 PM<sub>10</sub> Maintenance Plan
- 2004 Revision to the California State Implementation Plan for Carbon Monoxide

The SJVAPCD's AQMPs incorporate the latest scientific and technological information and planning assumptions, including updated emission inventory methodologies for various source categories. The SJVAPCD's AQMPs included the integrated strategies and measures needed to meet the NAAQS, implementation of new technology measures, and demonstrations of attainment of the 1-hour and 8-hour ozone NAAQS as well as the latest 24-hour and annual PM<sub>2.5</sub> standards.

The SJVAPCD's current air quality plans are discussed below.

**Ozone Plans.** The SJVAPCD's Governing Board approved the 2016 Plan for the 2008 8-Hour Ozone Standard on June 16, 2016. The comprehensive strategy in this plan will reduce NO<sub>x</sub> emissions by over 60 percent between 2012 and 2031, and will bring the SJVAB into attainment of USEPA's 2008 8-hour ozone standard as expeditiously as practicable, no later than December 31, 2031.

**Particulate Matter Plans.** The SJVAPCD adopted the 2007 PM<sub>10</sub> Maintenance Plan in September 2007 to assure the SJVAB's continued attainment of the USEPA's PM<sub>10</sub> standard. The USEPA designated the valley as an attainment/maintenance area for PM<sub>10</sub>.

The 2008 PM<sub>2.5</sub> Plan builds upon the comprehensive strategy adopted in the 2007 Ozone Plan to bring the Basin into attainment of the 1997 national standards for PM<sub>2.5</sub>. The USEPA has

identified NO<sub>x</sub> and SO<sub>2</sub> as precursors that must be addressed in air quality plans for the 1997 PM<sub>2.5</sub> standards. The 2008 PM<sub>2.5</sub> Plan is a continuation of the SJVACPD's strategy to improve the air quality in the SJVAB.

The SJVAPCD prepared the 2012 PM<sub>2.5</sub> Plan to bring the San Joaquin Valley into attainment of the USEPA's most recent 24-hour PM<sub>2.5</sub> standard of 35 µg/m<sup>3</sup>. The CARB approved the SJVAPCD's 2012 PM<sub>2.5</sub> Plan at a public hearing on January 24, 2013. The plan, approved by the SJVAPCD Governing Board on December 20, 2012, will bring the Valley into attainment of USEPA's 1997 PM<sub>2.5</sub> standard as expeditiously as practicable, but no later than, December 31, 2020.

The SJVAPCD adopted the 2018 Plan for the 1997, 2006, and 2012 PM<sub>2.5</sub> Standards on November 15, 2018. This plan addresses the USEPA federal 1997 annual PM<sub>2.5</sub> standard of 15 µg/m<sup>3</sup> and 24-hour PM<sub>2.5</sub> standard of 65 µg/m<sup>3</sup>; the 2006 24-hour PM<sub>2.5</sub> standard of 35 µg/m<sup>3</sup>; and the 2012 annual PM<sub>2.5</sub> standard of 12 µg/m<sup>3</sup>. This plan demonstrates attainment of the federal PM<sub>2.5</sub> standards as expeditiously as practicable.

**Rules and Regulations.** The SJVAPCD's primary means of implementing its attainment plans is through its adopted rules and regulations. The proposed Project would be subject to the following rules adopted by the SJVAPCD that are designed to reduce and control pollutant emissions throughout the basin.

- Rule 3135 (Dust Control Plan Fee) – This rule recovers District costs for reviewing Dust Control Plan and conducting site inspections. Should a Dust Control Plan be deemed necessary to minimize air quality impacts, the campus could be subject to this rule.
- Rule 3180 (Administrative Fees for Indirect Source Review) – This rule applies to development projects subject to Rule 9510 regarding Indirect Source review. When the developer submits an Air Impact Assessment, in accordance with Rule 9510, an application fee, and potentially an evaluation fee, must be paid to recover District's costs for administering Rule 9510.
- Rule 4102 (Nuisance) – This rule applies to any source operation that emits or may emit air contaminants or other materials. In the event that the project or construction of the project creates a public nuisance, it could be in violation and subject to district enforcement action.
- Rule 4601 (Architectural Coatings) – This rule limits VOCs from architectural coatings by specifying architectural coatings storage, cleanup, and labeling requirements and applies to any person who supplies, sells, offers for sale, applies, or solicits the application of any architectural coating.
- Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving, and Maintenance Operations) – Asphalt paving operations are subject to Rule 4641. This rule applies to the manufacture and use of rapid and medium cure cutback asphalt, slow cure asphalt, and emulsified asphalt for paving and maintenance operations. The user or manufacturer of cutback, slow cure, and emulsified asphalt must comply with the recordkeeping requirements specified in Rule 4641.

- Rule 4702 (Internal Combustion Engines – Phase 2) – This rule limits the emissions of NO<sub>x</sub>, CO, and VOCs emitted from internal combustion engines. The rule is applicable to any internal combustion engine with a rated brake horsepower greater than 50 horsepower. Emission standards for the three pollutants are specified for each category of engine along with compliance dates for each standard. The source must also comply with the monitoring methods and other requirements specified in the rule.
- Rule 8021 (Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities) – This rule limits fugitive dust emissions from construction, demolition, excavation, extraction, and other earthmoving activities.
- Rule 8031 (Bulk Materials) – This rule details steps to be followed when handling bulk materials, such as utilizing wind barriers, applying water or stabilizers to limit Visible Dust Emissions (VDE), and covering materials when storing. This rule is intended to limit fugitive dust emissions from the outdoor handling, storage, and transport of bulk materials.
- Rule 8041 (Carryout and Trackout) – This rule applies to sites where carryout and trackout will occur. Earthmoving activities, moving bulk materials, and unpaved roads/and traffic areas subjects the project to this rule, which limits vehicle trips and mandates cleanup of carryout and a Dust Control Plan.
- Rule 8051 (Open Areas) – This rule applies to any open area having 0.5 acres or more in urban areas or 3.0 or more acres in rural areas, and therefore applies to the proposed Project. To limit fugitive dust emissions, the rule mandates at least one of the following: the application of water or dust suppressants, the establishment of vegetation on disturbed areas, and/or the paving, graveling, or application of stabilizers to unvegetated areas.
- Rule 8061 (Paved and Unpaved Roads) – This rule limits fugitive dust in relation to roads, requiring compliance with the American Association of State Highway and Transportation Officials (AASHTO) guidelines.
- Rule 8071 (Unpaved Vehicle/Equipment Traffic Areas) – In order to limit fugitive dust emissions from unpaved areas, this rule requires compliance with Regulation VIII to limit VDE. The rule also mandates restricted access on disturbed surfaces and reducing such surfaces through vegetative materials, watering, graveling, paving, etc.
- Rule 9510 (Indirect Source Review) – This rule fulfills the district's emission reduction commitments in the PM<sub>10</sub> and O<sub>3</sub> attainment plans. Applicants developing property over the limits specified in the rule (e.g., 50 or more residential units) or nonresidential projects emitting more than 2 tons per year of operational NO<sub>x</sub> or PM<sub>10</sub> are subject to this rule and must file an Air Impact Assessment (AIA) application prior to applying for a final discretionary approval from a lead agency (e.g., tentative tract map). This rule is discussed in more detail below.

Indirect sources are land uses that attract or generate motor vehicles trips. Indirect source emissions contain many pollutants, principally PM<sub>10</sub>, ROG, and NO<sub>x</sub>. The SJVAPCD included a requirement in the adopted 2003 PM<sub>10</sub> Plan and the Extreme Ozone Attainment Demonstration Plan



to develop and implement an indirect source rule (ISR) by July 2004, with implementation to begin in 2005. The SJVAPCD adopted Rule 9510 (Indirect Source Review) on December 15, 2005, and it became effective in March 2006.

The purpose of Rule 9510 is to reduce emissions of NO<sub>x</sub> and PM<sub>10</sub> from new development projects. The rule applies to projects that, upon full buildout, will include any one of the following:

- 50 residential units
- 2,000 square feet of commercial space
- 25,000 square feet of light industrial space
- 20,000 square feet of medical or recreational space
- 39,000 square feet of general office space
- 100,000 square feet of heavy industrial space
- 9,000 square feet of educational space
- 10,000 square feet of government space
- 9,000 square feet of any land use not identified above

Several sources are exempt from the rule, including transportation projects, transit projects, reconstruction projects that result from a natural disaster, and development projects that have primary sources of emissions that are subject to SJVAPCD Rule 2201 (New and Modified Stationary Source Review) and Rule 2010 (Permits Required). Any development project that has a mitigated baseline below 2 tons per year for NO<sub>x</sub> and 2 tons per year for PM<sub>10</sub> is also exempted from the mitigation requirements of the rule.

#### 4.1.3.4 Local Plans and Policies

Local governments have the authority and responsibility to reduce air pollution through their police power and land use decision-making authority. In general, a first step toward implementation of a local government's responsibility is accomplished by identifying air quality goals, policies, and implementation measures in its general plan. Local jurisdictions are also encouraged by the SJVAPCD to incorporate air quality elements in local plans. In 1994, SJVAPCD published Air Quality Guidelines for General Plans, which was subsequently revised in June 2005. The guidelines provide assistance to local governments for developing policies and implementing strategies at the local level that are consistent with regional efforts to manage air quality. In 2009, the Guidelines were supplemented with the Assembly Bill (AB) 170 Requirements for General Plans and an Emissions Inventory Data Guide.

Through capital improvement programs, local governments can fund infrastructure that contributes to improved air quality. Examples of infrastructure improvements include bus turnouts, energy-efficient streetlights, and synchronized traffic signals.

Finally, CEQA requires local governments to assess air quality impacts, and recommend and enforce feasible mitigation of significant air quality impacts by conditioning discretionary permits, and by monitoring and ensuring implementation of the mitigation. As discussed above, to facilitate compliance with CEQA requirements, the SJVAPCD prepared the GAMAQI, which is an advisory document that provides local jurisdictions with procedures for addressing air quality impacts in

environmental documents. The guide provides methods for assessing air quality impacts, thresholds of significance recommended in the State CEQA Guidelines and those adopted by the SJVAPCD, and recommended mitigation measures.

The SJVAPCD requires all local governments within its eight-county jurisdiction to adopt resolutions as part of the Extreme Ozone Attainment Demonstration Plan. The resolutions, which must be approved by the USEPA, must describe reasonably available control measures that each jurisdiction will implement in order to reduce ozone-causing emissions from transportation sources. The SJVAPCD has also developed plans regarding PM to maintain healthy levels of PM<sub>10</sub> (PM<sub>10</sub> Plan, 2007) and to attain 1997 federal standards for PM<sub>2.5</sub> (2016 Moderate Area Plan).

To ensure a coordinated approach between the SJVAPCD, local governments, and regional transportation plans, the air district entered into a memorandum of understanding with the Merced County Association of Governments (MCAG), which includes the City and County of Merced. As a regional transportation planning agency, one of the purposes of MCAG is to inform and advise member agencies on air quality issues and policies; to ensure that MCAG's transportation plans, programs, and projects conform to the most recent air quality requirements, and to coordinate effectively with other government agencies on these matters.

#### 4.1.4 Impacts and Mitigation Measures

##### 4.1.4.1 Significance Criteria

This EIR uses significance criteria derived from Appendix G of the State *CEQA Guidelines*. For the purposes of this EIR, impacts related to air quality would be significant if implementation of the proposed Project would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard; or
- Expose sensitive receptors to substantial pollutant concentrations.

A threshold of significance is defined by the SJVAPCD in its GAMAQI<sup>14</sup> as an identifiable quantitative, qualitative, or performance level of a particular environmental effect. Non-compliance with a threshold of significance means the effect will normally be determined to be significant. Compliance with a threshold of significance means the effect normally will be determined to be less than significant. The SJVAPCD has established quantitative thresholds of significance for the evaluation of criteria pollutant emissions generated during construction and operation of projects as shown in **Table 4.1-5, SJVAPCD Significance Thresholds**, below. Significance thresholds established by an air district are used to manage total regional and local emissions within an air basin based on the air basin's attainment status for criteria pollutants. These emission thresholds were established for individual development projects that would contribute to regional and local emissions and could

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<sup>14</sup> San Joaquin Valley Air Pollution Control District. 2015, op. cit.

**Table 4.1-5: SJVAPCD Significance Thresholds**

Mass Emissions Thresholds	
Pollutant	Construction/Operation (tons per year)
NO <sub>x</sub>	10
ROG	10
PM <sub>10</sub>	15
PM <sub>2.5</sub>	15
SO <sub>x</sub>	27
CO	100
Lead	—
Toxic Air Contaminants and Odor Thresholds	
TACs	Probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds 20 in 1 million; or Ground-level concentrations of non-carcinogenic toxic air contaminants would result in a Hazard Index equal or greater than 1 for the MEI.
Odor	More than one confirmed complaint per year averaged over a three-year period or three unconfirmed complaints per year averaged over a three-year period.
Ambient Air Quality for Attainment Criteria Pollutants of Concern	
NO <sub>2</sub> 1-hour average annual average	In attainment; significant if project causes or contributes to an exceedance of either of the following standards: 0.18 parts per million (state) 0.03 parts per million (state)
CO 1-hour average 8-hour average	In attainment; significant if project causes or contributes to an exceedance of either of the following standards: 20 parts per million (state) 9.0 parts per million (state)

Source: SJVAPCD, Air Quality Significance Thresholds – Criteria Pollutants, 2015. <http://www.valleyair.org/transportation/0714-GAMAQI-Criteria-Pollutant-Thresholds-of-Significance.pdf>; SJVAPCD, Air Quality Thresholds of Significance – Toxic Air Contaminants, 2015. <http://www.valleyair.org/transportation/0714-GAMAQI-TACs-Thresholds-of-Significance.pdf>

Note: The SJVAPCD's approach to analyses of construction impacts is to require implementation of effective and comprehensive control measures rather than to require detailed quantification of emission concentrations for modeling of direct impacts. The SJVAPCD has determined that compliance with Regulation VIII for all sites and implementation of all other control measures indicated in Tables 6-2 and 6-3 of the GAMAQI (as appropriate, depending on the size and location of the project site) would constitute sufficient mitigation to reduce PM<sub>10</sub> impacts to a level considered less than significant.

adversely affect or delay the air basin's projected attainment goals for nonattainment criteria pollutants. As noted earlier, the SJVAB is designated as non-attainment for O<sub>3</sub> and PM<sub>2.5</sub> for federal standards and non-attainment for O<sub>3</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> for State standards. The SJVAPCD's nonattainment status is attributed to the region's development history. Past, present, and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant.

In developing thresholds of significance for air pollutants, the SJVAPCD considered the emission levels at which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable,

resulting in significant adverse air quality impacts to the region's existing air quality conditions. Therefore, additional analysis to assess cumulative impacts is unnecessary.

Because of the conservative nature of the significance thresholds, and the basin-wide context of individual development project emissions, there is no direct correlation between a single project and localized air quality-related health effects. One individual project that generates emissions exceeding a threshold does not necessarily result in adverse health effects for residents in the project vicinity. This condition is especially true when the criteria pollutants exceeding thresholds are those with regional effects, such as O<sub>3</sub> precursors like NO<sub>x</sub> and ROG.

#### 4.1.4.2 Issues Not Discussed Further

As discussed in Section 5.5, Air Quality, of the Initial Study (**Appendix 1.0, Section 5.5**), the short-term construction and long-term operation of the proposed Project would not create odors that could affect a substantial number of persons, nor would the proposed Project expose Project site occupants to substantial odors, and the impact would be less than significant. Therefore, this issue is not further addressed below.

#### 4.1.4.3 Methodology

**Construction Emissions.** Construction activities can generate a substantial amount of air pollution. Construction activities are considered temporary; however, short-term impacts can contribute to exceedances of air quality standards. Construction activities include site preparation, grading, building construction, paving, and architectural coating. The emissions generated from common construction activities include fugitive dust from soil disturbance, emissions from fuel combustion in mobile heavy-duty diesel and gasoline powered equipment, and emissions from portable auxiliary equipment and worker commute trips. The California Emissions Estimator Model version 2020.4.0 (CalEEMod) computer program was used to calculate emissions from on-site construction equipment use and grading, and emissions from worker and vehicle trips to and from the project site.

Project construction is anticipated to occur over a 36-month period between September 2023 and September 2026 and would involve site preparation (one month), followed by grading (over a period of about 3 months), followed by building construction (over a period of 28 months), which would be followed by paving (about 2 months) and architectural coatings (about 2 months).

Construction would take place Monday through Friday and would involve typical construction hours that extend from early morning through mid-afternoon. Project construction hours would be limited to the hours of 7:00 a.m. and 6:00 p.m. on weekdays and Saturdays with no construction on Sundays and holidays for any construction occurring within 500 feet of residential uses.

In addition, as the project site is currently graded to provide storm water detention basins, the low areas would be filled using fill materials stockpiled by the Campus in the northeastern portion of the campus site as well as using earth materials excavated at the new storm water detention basin site. Cut and fill for the proposed Project is expected to be balanced on the campus site. Project construction activities would generate daily construction worker trips as well as vehicle trips

associated with the delivery of concrete, rebar, form work, structural steel, mechanical and electrical equipment, exterior siding and windows, drywall and studs, pipes and conduits, roofing materials, etc.

As discussed in **Section 4.1.4.4, 2020 LRDP Mitigation Measures included in the Proposed Project**, the 2020 LRDP SEIR presents mitigation measures that are applicable to all development under the 2020 LRDP, including the proposed Project. These approved mitigation measures are a part of the 2020 LRDP and would not be readopted as part of the proposed Project, as implementation of these measures is assumed as part of the Project impact analysis. Therefore, consistent with **2020 LRDP Mitigation Measure AQ-1a**, this analysis assumes that construction of the proposed Project would utilize Tier 4 construction equipment. In addition, consistent with **2020 LRDP Mitigation Measure AQ-1b**, this analysis assumes that the proposed Project would implement fugitive dust control measures consistent with SJVAPCD Regulation VIII. All other construction details are not yet known; therefore, default assumptions (e.g., construction worker and truck trips and fleet activities) from CalEEMod were used.

**Operational Emissions.** The air quality analysis includes estimating emissions associated with long-term operation of the proposed Project. Criteria pollutants with regional impacts would be emitted by mobile (indirect) sources associated with the proposed Project. In addition, localized air quality impacts, (i.e., higher carbon monoxide concentrations or “hot spots”) near intersections or roadway segments in the project vicinity would potentially occur due to project-generated vehicle trips.

Consistent with the SJVAPCD guidance for estimating emissions associated with land use development projects, the CalEEMod computer program was used to calculate the long-term operational emissions associated with the Project. The proposed Project consists of two components: 1) development of the proposed Medical Education Building including a site access road and a parking lot; and 2) filling of the storm water detention basins within Cottonwood Meadow and construction of a new storm water detention basin in the southern portion of the campus.

The analysis was conducted using CalEEMod land use codes *University/College (4 year)*, *Parking Lot*, and *Other Non-Asphalt Surfaces*. Trip generation rates used in CalEEMod for the Project were based on the project’s trip generation estimates, which assume that the existing campus conditions typically generate approximately 13,351 average daily trips and the existing campus plus proposed Project would typically generate approximately 18,219 average daily trips, for a total of 4,868 net new average daily trips. Trip lengths in CalEEMod were revised based on the estimated commute distances of 11.2 miles for students and 22.8 miles for faculty/staff.

As discussed in **Section 4.1.4.4, 2020 LRDP Mitigation Measures included in the Proposed Project**, the 2020 LRDP SEIR presents mitigation measures that would be applicable to the proposed Project. These approved mitigation measures are a part of the 2020 LRDP and would not be readopted as part of the proposed Project, as implementation of these measures is assumed as part of the Project impact analysis. In addition, as discussed in **Chapter 3.0, Project Description**, Project sustainability targets and goals include Leadership in Energy and Environmental Design (LEED) minimum building certification level of Gold under the LEED Green Building Rating System, with incentives for

Platinum. The proposed building would be UC Merced's first fully electrified project. The proposed Project would outperform the California Energy Code by 20 percent or better as required by Sustainability Policy or would meet UC's Whole Building Energy Performance Targets. The 2020 LRDP establishes a "triple zero commitment" to produce zero net emissions, zero waste, and zero net water. Strategies to maintain this commitment would be studied during the design phases of the proposed Project.

Therefore, to account for these energy-saving and sustainability features and consistent with **LRDP 2020 Mitigation Measures AQ-2a and AQ-2b**, the CalEEMod analysis included the following assumptions with respect to the proposed Project:

- Improve pedestrian network for Project site and connecting off-site;
- Use low VOC paint and cleaning supplies;
- Use electric landscape equipment;
- Exceed Title 24 standards by 20 percent;
- Use energy-efficient appliances;
- Install high-efficiency lighting;
- Install low-flow faucets, toilets, and showers;
- Install water-efficient irrigation systems; and
- Divert 90 percent of solid waste consistent with the Sustainability Policy.

In addition, the proposed project would include a 1,500-kilowatt (kW) emergency generator, which would include a Diesel Particulate Filter (DPF) with an efficiency of 85 percent to reduce DPM emissions. When Project-specific data were not available, default assumptions from CalEEMod were used to estimate Project emissions.

#### 4.1.4.4 2020 LRDP Mitigation Measures included in the Proposed Project

The 2020 LRDP Subsequent EIR (SEIR)<sup>15</sup> presents mitigation measures that are applicable to the proposed Project. These previously adopted mitigation measures are a part of the 2020 LRDP and would not be readopted as part of the proposed Project, as implementation of these measures is assumed as part of the Project impact analysis. The following 2020 LRDP mitigation measures are applicable to the proposed Project:

**2020 LRDP MM AQ-1a** The construction contractors shall be required via contract specifications to use construction equipment rated by the U.S. EPA as meeting Tier 4 (model year 2008 or newer) emission limits for engines between 50 and 750 horsepower.

**2020 LRDP MM AQ-1b** UC Merced shall include in all construction contracts the measures specified in SJVAPCD Regulation VIII (as it may be amended for application

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<sup>15</sup> University of California, Merced. 2020. *UC Merced 2020 Long-Range Development Plan Final Subsequent Environmental Impact Report*, March 2020.

to all construction projects generally) to reduce fugitive dust impacts, including but not limited to the following:

- All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, or vegetative ground cover.
- All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions using application of water or by presoaking.
- When materials are transported off-site, all material shall be covered, effectively wetted to limit visible dust emissions, or at least 6 inches of freeboard space from the top of the container shall be maintained.
- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit visible dust emissions. Use of blower devices is expressly forbidden.)
- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, storage piles shall be effectively stabilized of fugitive dust emissions by using sufficient water or chemical stabilizer/suppressant.

**2020 LRDP MM AQ-2a**

UC Merced 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, such as bicycle parking, bicycle lanes, bicycle lockers; and showers and changing facilities for employees.
- Provide preferential carpool and vanpool parking for non-residential uses.



- Provide transit-enhancing infrastructure to promote the use of public transportation, such as covered bus stops and information kiosks.
- Provide facilities, such as electric car charging stations and a CNG refueling station, to encourage the use of alternative-fuel vehicles.
- Improve traffic flows and congestion by timing of traffic signals at intersections adjacent to the campus to facilitate uninterrupted travel.
- Work with campus transit provider to replace CatTracks buses with either electric buses or buses operated on alternative fuels.
- Work with the City of Merced to establish park and ride lots and provide enhanced transit service between the park and ride lots and the campus.
- Replace campus fleet vehicles with electric vehicles or vehicles that operate on alternative fuels.
- Reduce the number of daily vehicle trips by providing more housing on campus.

**2020 LRDP MM AQ-2b** UC Merced shall implement the following measures to reduce emissions from area and energy sources, as feasible:

- Utilize low-VOC cleaning supplies and low-VOC paints (100 grams/liter or less) in building maintenance.
- Utilize electric equipment for landscape maintenance.
- Plant low maintenance landscaping.
- Implement a public information program for resident students to minimize the use of personal consumer products that result in ROG emissions, including information on alternate products.
- Instead of natural gas water heaters, install solar water heating systems.

**Cumulative MM C-AQ-1** Implement LRDP MM AQ-2a and AQ-2b.

#### **4.1.5 Project Impacts and Mitigation Measures**

**UCM-ME Impact AQ-1** The proposed Project would not result in construction emissions that would result in a cumulatively considerable net increase of criteria pollutants for which the air basin is in non-attainment. (*Less than Significant*)

Construction of the proposed Project would require grading, site preparation, building, paving, and architectural coating activities. As the Project site is generally level, substantial cut and fill is not anticipated, and any cut and fill that occurs is expected would be balanced on the campus site. Project construction activities would generate daily construction worker trips as well as vehicle trips associated with the delivery of concrete, rebar, form work, structural steel, mechanical and electrical equipment, exterior siding and windows, drywall and studs, pipes and conduits, roofing materials, etc.

During construction of the proposed Project, short-term degradation of air quality may occur due to the release of PM emissions (i.e., fugitive dust) generated by grading and paving activities. Emissions from construction equipment are also anticipated and would include CO, NO<sub>x</sub>, VOCs, directly emitted PM<sub>2.5</sub> and PM<sub>10</sub>, and TACs, such as DPM.

Construction-related effects on air quality from the proposed Project would be greatest during grading, due to construction activity on unpaved surfaces. If not properly controlled, these activities would temporarily generate particulate emissions. Unless properly controlled, vehicles leaving the site would deposit dirt and mud on local streets, which could be an additional source of airborne dust after it dries. PM<sub>10</sub> emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM<sub>10</sub> emissions would depend on soil moisture, the silt content of soil, wind speed, and the amount of operating equipment. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

In addition to dust-related PM<sub>10</sub> emissions, heavy trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO<sub>2</sub>, NO<sub>x</sub>, VOCs and some soot particulate (PM<sub>2.5</sub> and PM<sub>10</sub>) in exhaust emissions. If construction activities were to increase traffic congestion in the area, CO and other emissions from traffic would increase slightly while those vehicles idle in traffic. These emissions would be temporary in nature and limited to the immediate area surrounding the construction site.

Using the schedule identified in **Section 4.1.4.3, Methodology**, construction emissions were estimated for the proposed Project using CalEEMod. Also as noted in **Section 4.1.4.4**, the modeling assumed that **2020 LRDP Mitigation Measures AQ-1a** and **-1b** are part of the proposed Project and will be implemented during its construction.

Construction-related emissions are shown in **Table 4.1-6, Project Construction Emissions**. CalEEMod output sheets are included in **Appendix 2.0**.

**Table 4.1-6: Project Construction Emissions**

Construction Year	Emissions in Tons per Year					
	ROG	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
2023	<0.1	0.1	1.3	<0.1	0.2	0.1
2024	0.3	1.9	4.9	<0.1	0.9	0.2
2025	0.3	1.9	4.7	<0.1	0.9	0.2
2026	1.7	0.7	2.1	<0.1	0.3	0.1
<b>Maximum Emissions in Any Year</b>	<b>1.7</b>	<b>1.9</b>	<b>4.9</b>	<b>&lt;0.1</b>	<b>0.9</b>	<b>0.2</b>
SJVAPCD Threshold:	10	10	100	27	15	15
<b>Exceeds Threshold?</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

Source: LSA (July 2022).

As shown in **Table 4.1-6, Project Construction Emissions**, construction emissions associated with the proposed Project would not exceed the SJVAPD's thresholds for ROG, NO<sub>x</sub>, CO, SO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> emissions. Therefore, construction emissions associated with the proposed Project would result in a less-than-significant impact on air quality. With implementation of **2020 LRDP Mitigation Measures AQ-1a** and **AQ-1b**, the proposed Project would result in a less-than-significant construction-related air quality impact.

**Mitigation Measures:** No mitigation is required.

**UCM-ME Impact AQ-2 The proposed Project would result in operational emissions that would not involve a cumulatively considerable net increase of criteria pollutants for which the air basin is in non-attainment. (*Less than Significant*)**

As noted in **Chapter 3.0, Project Description**, the proposed Project consists of two components: (1) development of the proposed Medical Education Building including a site access road and a parking lot; and (2) filling of the storm water detention basins within Cottonwood Meadow and the construction of a new storm water detention basin in the southern portion of the campus. An analysis of the proposed Project's operational emissions impact is presented below.

Long-term air pollutant emission impacts that would result from the proposed Project are those that are associated with mobile sources (e.g., vehicle trips), area sources (e.g., architectural coatings, the use of diesel operated landscape maintenance equipment, and the use of natural gas in small quantities in research laboratories), and stationary sources (e.g., the emergency generator).

PM<sub>10</sub> emissions result from running exhaust, tire and brake wear, and the entrainment of dust into the atmosphere from vehicles traveling on paved roadways. Entrainment of PM<sub>10</sub> occurs when vehicle tires pulverize small rocks and pavement, and the vehicle wakes generate airborne dust. The contribution of tire and brake wear is small compared to the other PM emission processes. Gasoline-powered engines have low rates of particulate matter emissions compared with diesel-powered vehicles.

Natural gas emissions result from activities in buildings where natural gas is used for heating and cooling. The proposed Project would not require natural gas aside from potential limited use in research laboratories.

Typically, area source emissions consist of direct sources of air emissions located at the project site, including architectural coatings and the use of landscape maintenance equipment. Area source emissions associated with the proposed Project would include emissions from the use of landscaping equipment and the use of consumer products.

Long-term operational emissions associated with the proposed Project were calculated using CalEEMod. Trip generation rates used in CalEEMod for the Project were based on the Project's trip generation estimates, which indicate that the proposed Project would typically generate approximately 4,868 net new average daily trips. Trip lengths in CalEEMod were revised based on the estimated commute distances of 11.2 miles for students and 22.8 miles for faculty/staff. Also as noted in **Section 4.1.4.4**, the modeling assumed that **2020 LRDP Mitigation Measures AQ-2a** and **-2b** are part of the proposed Project and will be implemented during project operations.

Model results are shown in **Table 4.1-7, Project Operation Emissions**. CalEEMod output sheets are included in **Appendix 2.0**.

**Table 4.1-7: Project Operational Emissions**

Emissions Source	Emissions in Tons per Year					
	ROG	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Area Sources	0.9	<0.1	<0.1	0.0	<0.1	<0.1
Natural Gas Sources	<0.1	0.2	0.1	<0.1	<0.1	<0.1
Mobile Sources	2.0	5.4	21.3	0.1	5.6	1.5
Stationary Sources	0.1	0.3	0.2	<0.1	<0.1	<0.1
<b>Annual Emissions Total</b>	<b>3.0</b>	<b>5.9</b>	<b>21.6</b>	<b>0.1</b>	<b>5.6</b>	<b>1.5</b>
SJVAPCD Threshold	10	10	100	27	15	15
<b>Exceeds Threshold?</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

Source: LSA (July 2022).

The primary emissions associated with the Project are regional in nature, meaning that air pollutants of concern, ROG and NO<sub>x</sub>, are rapidly dispersed on release or, in the case of vehicle emissions associated with the Project, emissions are released in other areas of the Air Basin. The results in **Table 4.1-7, Project Operational Emissions** indicate the Project would not exceed the significance thresholds for ROG, NO<sub>x</sub>, CO, PM<sub>10</sub>, or PM<sub>2.5</sub> emissions; therefore, operational emissions associated with the proposed Project would result in a less-than-significant impact on air quality. Thus, with implementation of **2020 LRDP Mitigation Measures AQ-2a** and **AQ-2b**, operational air quality impacts would be less than significant.

#### Health Effects of Project Emissions

SJVAPCD's project-level thresholds do not reflect particular health impacts to a nearby individual or the region. The reason for this is that the project-level thresholds are in tons/year emitted into the

air, whereas health effects are determined based on the concentration of a pollutant in the air at a particular location (e.g., ppm by volume of air or  $\mu\text{g}/\text{m}^3$  of air). CAAQS and NAAQS were developed to protect the most susceptible population groups from adverse health effects and were established in terms of ppm or  $\mu\text{g}/\text{m}^3$  for the applicable emissions. The results in **Table 4.1-7, Project Operational Emissions**, indicate the Project would not exceed the significance criteria for ROG,  $\text{NO}_x$ , CO,  $\text{PM}_{10}$  or  $\text{PM}_{2.5}$  emissions. This increase in emissions associated with the proposed Project would be a small fraction of the Air Basin's emissions. Therefore, the emissions associated with implementation of the proposed Project would not be expected to exceed the most stringent applicable NAAQS or CAAQS for  $\text{NO}_x$ , CO,  $\text{PM}_{2.5}$ , and  $\text{PM}_{10}$ . It should be noted that the AAQS are developed and represent levels at which the most susceptible persons (children and the elderly) are protected. In other words, the AAQS are purposefully set low to protect children, the elderly, and those with existing respiratory problems.

Furthermore, air quality trends for emissions of  $\text{NO}_x$ , VOCs, and ozone (which is a byproduct of  $\text{NO}_x$  and VOCs) have been trending downward within the SJVAB even as development has increased over the last several years. Therefore, implementation of the proposed Project is not expected to result in any Basin-wide increase in health effects.

As noted in the Brief of Amicus Curiae by the SJVAPCD (2015)<sup>16</sup>, the SJVAPCD has acknowledged that currently available modeling tools are not equipped to provide a meaningful analysis of the correlation between an individual development project's air emissions and specific human health impacts. (See page 4 of the SJVAPCD Brief of Amicus Curiae).

Additionally, the SJVAPCD acknowledges that health effects quantification from ozone, as an example, is correlated with the increases in ambient level of ozone in the air (concentration) that an individual person breathes. The SJVAPCD indicates that it would take a large amount of additional emissions to result in a modeled increase in ambient ozone levels over the entire region. As such, it is not currently possible to accurately quantify ozone-related health impacts caused by  $\text{NO}_x$  or VOC emissions from relatively small projects (defined as projects with a regional scope) due to photochemistry and regional model limitations.

Therefore, the proposed Project's emissions are not sufficiently high enough to use a regional modeling program to correlate health effects on a Basin-wide level. Further, the SJVAPCD acknowledges the same:

"...the Air District is simply not equipped to analyze and to what extent the criteria pollutant emissions of an individual CEQA project directly impact human health in a particular area...even for projects with relatively high levels of emissions of criteria pollutant precursor emissions." (See page 8 of the SJVAPCD Brief of Amicus Curiae.)

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<sup>16</sup> San Joaquin Valley Unified Air Pollution Control District. 2015. *Amicus Curiae Brief of San Joaquin Valley Unified Air Pollution Control District*. April. Available online at: [www.courts.ca.gov/documents/7-s219783-ac-san-joaquin-valley-unified-air-pollution-control-dist-041315.pdf](http://www.courts.ca.gov/documents/7-s219783-ac-san-joaquin-valley-unified-air-pollution-control-dist-041315.pdf) (accessed June 2021).

The SJVAPCD Brief of Amicus Curiae are incorporated by reference into this environmental documentation for the proposed Project.

Current scientific, technological, and modeling limitations prevent the correlation of expected adverse air quality impacts to likely health consequences. Therefore, implementation of the proposed Project is not expected to result in any Basin-wide increase in health effects. As such, impacts are considered less than significant. With implementation of **2020 LRDP Mitigation Measures AQ-2a** and **AQ-2b**, the proposed Project would not result in new significant operation-related air quality impacts.

**Mitigation Measures:** No mitigation is required.

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**UCM-ME Impact AQ-3 Implementation of the proposed Project would not expose sensitive receptors to substantial pollutant concentrations of carbon monoxide. (*Less than Significant*)**

CO emitted by traffic associated with the proposed Project is the criteria pollutant that would have the potential to result in substantial concentrations. The potential for the proposed Project to cause or contribute to high CO concentrations was analyzed using the CO screening guidance provided by the Bay Area Air Quality Management District (BAAQMD). This guidance provides that a project would have a less-than-significant impact with respect to CO levels if the addition of project traffic would not increase the total traffic at any affected intersection to more than 44,000 vehicles per hour. The proposed Project would generate approximately 4,868 average daily trips, with 433 AM peak hour trips and 465 PM peak hour trips. Even with the addition of the proposed Project's peak hour trips, the total traffic volumes at intersections in the vicinity of the Project site would be well below 44,000 vehicles per hour. Therefore, the proposed Project would not result in localized CO concentrations that exceed State or federal standards and this impact would be less than significant.

**Mitigation Measures:** No mitigation is required.

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**UCM-ME Impact AQ-4 Implementation of the proposed Project would not conflict with or obstruct implementation of the applicable air quality plan. (*Less than Significant*)**

The 2020 LRDP SEIR evaluated whether implementation of the 2020 LRDP would conflict with or otherwise obstruct implementation of regional air quality plans. That analysis, which was presented under Impact AQ-4, indicated that the 2009 LRDP projected an enrollment level of 25,000 students by 2030, and the 2020 LRDP projected an enrollment level of 15,000 students by 2030. As such, the 2020 LRDP SEIR found that because a higher level of growth at the campus had been previously accounted for and included in the air quality planning efforts of the region, implementation of the 2020 LRDP would not conflict with or obstruct implementation of the applicable air quality plan and impacts would be less than significant.

The proposed Project would include the development of the approximately 190,000 square foot Medical Education Building and would accommodate a total population of about 2,999 students, faculty and staff. The estimated increase in campus population and total building space associated with the proposed Project are within the growth assumptions used in the 2020 LRDP SEIR analyses. As such, the level of growth due to the proposed Project has also been accounted for and included in the air quality planning efforts of the region. Therefore, as with the 2020 LRDP, implementation of the proposed Project would not conflict with or obstruct implementation of the applicable air quality plan. The impact would be less than significant.

**Mitigation Measures:** No mitigation is required.

#### 4.1.6 Cumulative Impacts and Mitigation Measures

**Cumulative Impact C-AQ-1**      **The construction and operation of the proposed Project, in conjunction with other past, present, and reasonably foreseeable future development in the project area, would not hinder air quality attainment and maintenance efforts for criteria pollutants. (*Less than Significant*)**

As defined in Section 15130 of the *State CEQA Guidelines*, cumulative impacts are the incremental effects of an individual project when viewed in connection with the effects of past, current, and probable future projects within the cumulative impact area for air quality.

The SJVAPCD is currently designated as a nonattainment area for the federal 8-hour ozone standard and PM<sub>2.5</sub> standard and as a nonattainment area for the State ozone, PM<sub>10</sub>, and PM<sub>2.5</sub> standard. SJVAPCD nonattainment status is attributed to the region's development history. Past, present, and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant.

In developing thresholds of significance for air pollutants, the SJVAPCD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions.

Therefore, if the proposed Project's annual emissions of construction- or operational-related criteria air pollutants exceed any applicable threshold established by the SJVAPCD, the proposed Project would result in a considerable contribution to a cumulatively significant impact. As shown in **Table 4.1-6, Project Construction Emissions**, construction emissions of the proposed Project would not exceed SJVAPCD thresholds. Further, as shown in **Table 4.1-7, Project Operational Emissions**, implementation of the proposed Project would not generate significant operational emissions that would exceed SJVAPCD thresholds. As shown in the Project-specific air quality impacts discussion above, the proposed Project would not result in individually significant impacts and therefore the



proposed Project would not result in a cumulatively considerable contribution to regional air quality impacts. Cumulative impacts would be considered less than significant. In summary, with implementation of **2020 LRDP Mitigation Measures AQ-1a, AQ-1b, AQ-2a, and AQ-2b**, the proposed Project would result in a less-than-significant cumulative air quality impact.

**Mitigation Measures:** No mitigation is required.

## 4.2 HYDROLOGY AND WATER QUALITY

### 4.2.1 Introduction

This section of the Draft Environmental Impact Report (EIR) discusses the existing regional hydrology and water quality conditions in the project vicinity and evaluates the potential hydrology and water impacts associated with the implementation of the proposed UC Merced Medical Education (UCM-ME) Building Project (“proposed Project” or “Project”). The primary concerns related to hydrology and water quality addressed in this section are increased urban runoff and the potential of this increased runoff to result in water quality impacts and downstream flooding. The environmental setting and analysis in this section is based on the 2020 Long Range Development Plan (LRDP) Subsequent EIR (SEIR)<sup>1</sup>, UC Merced 2020 Hydrology and Hydraulics Report,<sup>2</sup> and *UC Merced Preliminary Stormwater Analysis*, prepared by Sherwood Design Engineers for the proposed Project (**Appendix 3.0**).<sup>3</sup>

### 4.2.2 Environmental Setting

#### 4.2.2.1 General Climate, Precipitation, and Topography

The San Joaquin Valley is surrounded on the east by the Sierra Nevada, on the south by the San Emigdio and Tehachapi Mountains, west by the Coast Ranges, and on the north by the Sacramento-San Joaquin Delta and Sacramento Valley. The UC Merced campus is located in the central-eastern portion of the San Joaquin Valley, in the eastern portion of Merced County, and northeast of the Merced city limits. The land surrounding the campus consists of gentle rolling hills and flatland primarily used for agriculture. The general slope of this area is to the west and southwest.

The climate of the valley floor around the project region is arid to semi-arid with dry, hot summers and mild winters. Summer temperatures may be higher than 100 degrees Fahrenheit (°F) for extended periods of time; winter temperatures are only occasionally below freezing. The Merced region averages 11 to 13 inches of rain per year increasing eastward. Nearly 80 percent of the annual precipitation falls in the six months between November and March. The winter snowpack, which accumulates above 5,000 feet elevation, primarily in the Sierra Nevada, supplies the vast majority of water in the county. The streams in the western portion of the county contribute little to the water totals in the valley because the Coast Range is too low to accumulate a snowpack and its east slope is subject to a rain shadow phenomenon, therefore producing only seasonal runoff.<sup>4</sup>

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<sup>1</sup> University of California, Merced. 2019. *UC Merced 2020 Long-Range Development Plan Recirculated Draft Subsequent Environmental Impact Report*, December 2019.

<sup>2</sup> Sherwood Design Engineers. 2020. *UC Merced 2020 Hydrology and Hydraulics Report, 100% Construction Documents*. May 22, 2020.

<sup>3</sup> Sherwood Design Engineers. 2022. *UC Merced Preliminary Stormwater Analysis & EIR Assistance*. Memorandum dated July 27, 2022.

<sup>4</sup> University of California, Merced. 2019. op. cit.

#### 4.2.2.2 Surface Water Resources

The San Joaquin River is the principal river within the project region. The San Joaquin River originates in the Sierra Nevada mountains and flows southwesterly to the vicinity of Mendota. It then flows northwesterly to its mouth in the Suisun Bay. Principal tributaries to the San Joaquin River include the Stanislaus, Tuolumne, and Merced Rivers. Bear Creek, Black Rascal Creek, and Fahrens Creek that flow through the City of Merced are tributaries to San Joaquin River. In addition to the rivers and streams, there are many reservoirs, agricultural canals, laterals, and drains that also convey runoff and irrigation water through San Joaquin Valley. Canals in the project vicinity include the Main Canal, Le Grand Canal, the Fairfield Canal, and Yosemite Lateral. The Main Canal diverts water from the Merced River and discharges it into Lake Yosemite, which is located to the north of the campus. Water from Lake Yosemite is conveyed to the south by the Le Grand and Fairfield Canals. These canals traverse the northern and central portions of the campus, and the Fairfield Canal borders the eastern project area boundary as shown in **Figure 3-2, Project Area**. Lake Yosemite and its canals are used primarily for irrigation and secondarily, for flood control.<sup>5</sup> The canals are owned and operated by the Merced Irrigation District (MID).

#### 4.2.2.3 Campus Site Hydrology and Watersheds

The campus is located to the southeast of Lake Yosemite on the eastern side of Merced County, in a transition zone between the Sierra Nevada foothills to the east and the flat San Joaquin Valley floor to the west. The topography of the campus site is flat to undulating. The northeastern portion of the campus contains small hills and valleys while the remainder of the undeveloped portion of the campus, such as at the proposed Project site, slopes gently from the northeast to southwest. The southern portion of the campus where the new storm water basin would be located is generally level land. Elevations on the campus range from approximately 300 feet above mean sea level (msl) in the northeast to about 200 feet msl in the southwest near Lake Road.

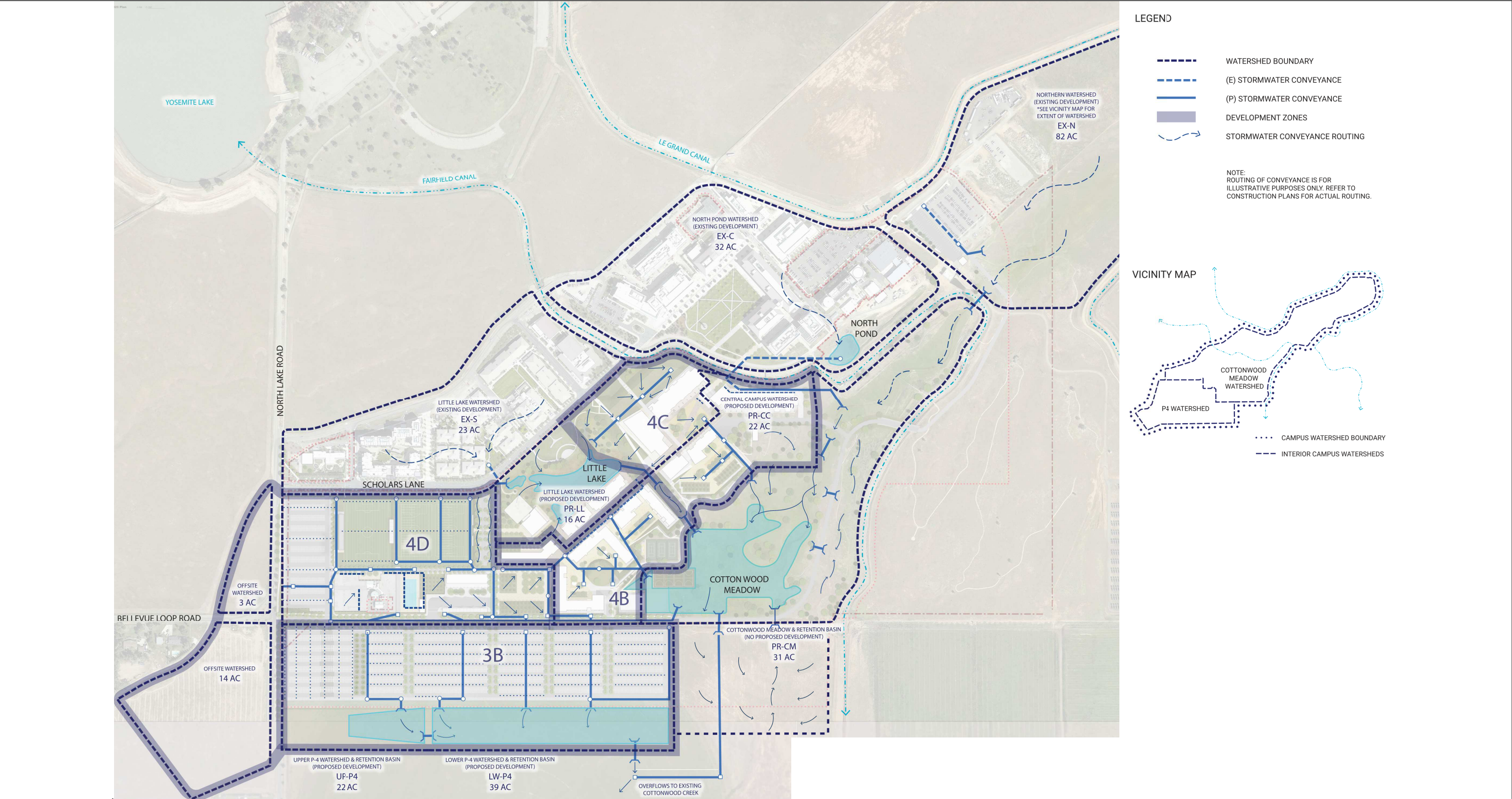
**Figure 4.2-1, Campus Watersheds**, shows the watersheds that make up the campus site. As the figure shows, the watersheds are aligned in a northeast to southwest direction in general and are bisected by Le Grand and Fairfield Canals that traverse through the campus. The primary drainage features within the project area include minor tributaries and fragments of Cottonwood Creek, an intermittent creek that historically had its headwaters in the northeastern portion of the campus site and drained in a southwesterly direction towards Lake Road. However, the topography of the campus site has been substantially altered from historical conditions due previous agricultural use, canal construction, and development pre-dating the initial Phase 1 campus construction in 2002. Thus, the historic Cottonwood Creek channel has been significantly modified by farming and canal construction and its remnants now meander in a southwesterly direction across the farmland south of the campus until joining with several small tributaries to form a formal streambed that flows south and west into the City of Merced.

In the beginning of campus development, storm drain systems were initially installed to collect all on-site runoff for discharge to two lakes, Little Lake and North Pond (**Figure 4.2-1**).

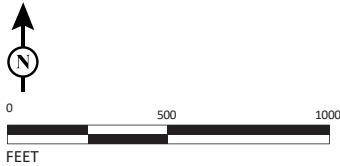
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<sup>5</sup> University of California, Merced. 2019. op. cit.





UNIVERSITY OF CALIFORNIA  
**MERCED**



SOURCE: Sherwood Design Engineers, May 2020  
I:\BTI2002.02\G\Figure 4.2-1\_Campus Watersheds.ai (7/27/2022)

FIGURE 4.2-1

*UC Merced Medical Education Building Project*  
*Merced County, California*

Campus Watersheds

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North Pond was designed to overflow to the Fairfield Canal. Little Lake was designed to continue discharging to the southeast through an existing pipe to Cottonwood Meadow with overflow to the unnamed tributary to Cottonwood Creek. The unnamed tributary to Cottonwood Creek at the present time is located within the former irrigation pivot area in the southern portion of the campus site south of Meyer's Gate Road (**Figure 3-2**). It runs in a south southwesterly direction on the east side of Lake Road, crossing under Lake Road in a culvert near Cardella Road, to continue east to its confluence with Fahrens Creek. Historically, some flooding occurred on the east side of Lake Road due to a capacity constraint in the culvert under Lake Road.<sup>6</sup>

In 2016, the UC Merced 2020 Project was initiated to support classroom instruction for up to 10,000 students. The campus expansion was completed in 2020 which added 1.2 million gross square feet (gsf) of additional classroom, recreational, campus housing, and parking facilities and supporting infrastructure, including additional storm water detention basins. As a result of the 2020 Project, new storm water management facilities were added, as shown in **Figure 4.2-1**: the Bellevue Watershed Basins (or P4 Basins) and the Cottonwood Meadow Watershed Basin. These watersheds and basins are described in more detail below based on information provided in the UC Merced 2020 Hydrology and Hydraulics Report.<sup>7</sup>

**Bellevue Watershed and Basins.** The Bellevue watershed (also called P4 watershed) covers the southwest corner of the UC Merced campus, extending from Bellevue Road to approximately 740 feet south of Bellevue Road. The approximately 31.6-acre drainage area is bounded on the west by Lake Road, on the south by Meyer's Gate Road, and on the north by Bellevue Road. This zone was primarily developed with parking lots as part of the 2020 Project. The Bellevue watershed is completely independent from all other watersheds on the campus. Two interconnected detention basins were constructed along the southerly border of the Bellevue Parking Lot to manage storm water runoff.

The Lower Basin is connected to the outflow pipe into the historic Cottonwood Creek channel south of the developed campus area. The outlet from Lower Basin is provided with a gate valve to prohibit storm water from free flow to the outfall. There are two valves between Cottonwood Creek and the Lower Basin, with the outflow from Cottonwood Meadow connected between the two valves into an intermediate structure. The flow from this intermediate structure allows storm water to flow from Cottonwood Meadow into either the unnamed tributary to Cottonwood Creek or into the Lower Basin. The Lower Basin soil conditions are mildly conducive to infiltration; however, the Upper Basin has proven to perform at an accelerated infiltration rate.

The Bellevue parking lot has asphalt drive lanes and gravel stalls, with runoff collected in gravel trench drains connected to the five main storm drain laterals running north-south through the lot. The storm drain systems generally follow the topography, discharging into the detention basins south of the Bellevue parking lot. Of these five drain lines, the westernmost (closest to Lake Road) discharges to the Upper Basin and the other four discharge to the Lower Basin. The use of check

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<sup>6</sup> University of California, Merced. 2019. op. cit.

<sup>7</sup> Sherwood Design Engineers. 2020. op. cit.



dams, sediment forebays located at each outfall, and long flow paths allows for solids to settle out prior to reaching the outlet.

During severe storm events, greater than the 100-year storm, water spills over the confining berm at the east end of the Upper Basin via a weir into the Lower Basin. The Lower Basin has capacity to retain the 100-year runoff from its watershed. Overflow from this basin, in the event of back-to-back, severe storms discharges at the southeast end, through an 18-inch culvert overflow structure. This overflow discharges to campus-owned land, where it flows south into the swales that drain into Cottonwood Creek.

**Cottonwood Meadow Watershed and Basin.** The Cottonwood Meadow watershed encompasses the central portion of the UC Merced campus east of Scholars Lane, plus approximately 82 acres of mostly undeveloped campus land lying to the northeast, inside a bend of the Fairfield Canal (see **Figure 4.2-1**). The overall watershed area is approximately 169.3 acres. The existing North Pond watershed was previously developed with underground drainage systems that discharged into Little Lake. As part of the 2020 Project, the North Pond discharge was rerouted with a direct pipe connection to Cottonwood Meadow. The Little Lake watershed was built-out with campus buildings and open space areas and its discharge is routed to Cottonwood Meadow through a pair of outlet pipes connected to a rock-lined swale. Thus, all storm water collected within the Cottonwood Meadow watershed ultimately drains into Cottonwood Meadow. The central and western campus systems discharge to the upper reaches of Cottonwood Meadow, along its northerly and westerly edges.

Cottonwood Meadow Basin was designed and constructed to detain the 100-year, 24-hour storm runoff from its entire contributing watershed. The outlets from Cottonwood Meadow include a 6-inch release orifice set onto a 15-inch pipe and a 24-inch catch basin, which serves as an emergency overflow. The 6-inch release orifice allows for the controlled draw down of Cottonwood Meadow. The elevation of the 6-inch release orifice is set at 201 feet to allow the 95th percentile storm to be retained within the basins. The emergency overflow is for storms larger than the 100-year event. The emergency overflow structure has an inlet at the required maximum storage elevation of 206 feet. This outlet structure discharges excess runoff through a 15-inch pipe set at an elevation of 201 feet within the catch basin structure, allowing storm water to slowly release into the swale that conveys the runoff into Cottonwood Creek. Discharge overflow may also be stored in the Lower Basin described above.

**Storm Water Management Area Design Requirements.** The Bellevue and Cottonwood Meadow basins were designed to meet the following technical requirements:

- Detain runoff from the entire 100-year, 24-hour storm on-site; and
- Retain the 95th percentile, 24-hour storm event on-site to prevent an increase of the peak flow rate or total volume of discharge from the overall campus.

In 2020, to improve storm water management and meet design requirements, the Campus installed an Energy Passive Groundwater Recharge (EGRP) system to reduce the amount of standing water in the Cottonwood Meadow and Lower Basins and improve groundwater recharge. The proprietary



EGRP system consists of a series of specifically designed polyethylene pipes that are installed vertically in the soil matrix. These pipes pull standing water on the surface into lower soil layers, using pressure differential and gravity, and thus the system increases basin capacity and improves groundwater recharge. Once acclimatized, the system is expected to infiltrate 750,000 gallons of water in 7 days. Approximately 22,670 linear feet of EGRP devices were installed in the Lower Basin, and approximately 24,660 linear feet of EGRP devices were installed in Cottonwood Meadow Basin.

Although there is an existing agreement between the University and MID to allow up to 225 gallons per minute (gpm) to be discharged to the MID irrigation canals, the existing storm water management system does not rely on this option.

#### 4.2.2.4 Flooding

The Federal Emergency Management Agency (FEMA) provides information on flood hazard and frequency for cities and counties on its Flood Insurance Rate Maps (FIRM). FEMA identifies designated zones to indicate flood hazard potential. In general, flooding occurs along waterways, with infrequent localized flooding also occurring due to constrictions of storm drain systems or surface water ponding. The San Joaquin River and its tributaries that flow through Merced, Stanislaus and Fresno Counties form part of the drainage system for over 9,000 square miles of the Sierra Nevada and foothill region. High flows of moderate duration in these rivers and streams can result in flooding and can occur from intense rainstorms. In addition, snowmelt in the Sierra Nevada can produce high flows of longer duration during the spring. Bear Creek, Black Rascal Creek, and Fahrens Creek, which are part of the Merced County Streams Group, flow through the City of Merced and are tributaries to the San Joaquin River. 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.<sup>8</sup>

There are areas southeast of the campus that are located in FEMA Zone A, which includes areas subject to inundation by the 1 percent annual flood event. Zone A is determined to have no base flood elevations. None of the watercourses within the campus (including the Le Grand and Fairfield canals and the limited headwaters of Cottonwood Creek) are included in the 100-year floodplain as defined by FEMA. The Le Grand and Fairfield canals are constructed with earthen embankments and are subject to erosion. According to MID, who owns and operates the canals, the campus could experience flooding 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. According to MID, the canals often need to be repaired due to erosion caused by seepage and animal burrowing.<sup>9</sup>

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<sup>8</sup> University of California, Merced. 2019. op. cit.

<sup>9</sup> Ibid.

### 4.2.3 Regulatory Considerations

#### 4.2.3.1 Federal Laws and Regulations

**Clean Water Act.** In 1972, the Federal Water Pollution Control Act—also known as and hereafter referred to as the Clean Water Act (CWA)—was amended to require National Pollutant Discharge Elimination System (NPDES) permits for discharge of pollutants into the “waters of the United States” that include oceans, bays, rivers, streams, lakes, ponds, and wetlands from any point source. In 1987, the CWA was amended to require that the United States Environmental Protection Agency (USEPA) establish regulations for permitting under the NPDES permit program of municipal and industrial storm water discharges. The USEPA published final regulations regarding storm water discharges on November 16, 1990. The regulations require that municipal separate storm sewer system (MS4) discharges to surface waters be regulated by an NPDES permit.

In addition, the CWA requires the states to adopt water quality standards for water bodies and have those standards approved by the USEPA. Water quality standards consist of designated beneficial uses—e.g., wildlife habitat, agricultural supply, fishing, etc.—for a particular water body, along with water quality criteria necessary to support those uses. Water quality criteria are prescribed concentrations or levels of constituents—such as lead, suspended sediment, and fecal coliform bacteria—or narrative statements that represent the quality of water that supports a particular use. Because California has not established a complete list of acceptable water quality criteria, the USEPA established numeric water quality criteria for certain toxic constituents in the form of the California Toxics Rule (40 CFR 131.38).

Water bodies not meeting water quality standards are deemed “impaired” and, under CWA Section 303(d), are placed on a list of impaired waters for which a Total Maximum Daily Load (TMDL) must be developed for the impairing pollutant(s). A TMDL is an estimate of the total load of pollutants from point, nonpoint, and natural sources that a water body may receive without exceeding applicable water quality standards (with a “factor of safety” included). Once established, the TMDL is allocated among current and future pollutant sources discharging to the water body.

**CWA Permits for Discharge to Surface Waters.** CWA Sections 401 and 402 contain requirements for discharges to surface waters through the NPDES program, administered by the USEPA. In California, State Water Resources Control Board (SWRCB) is authorized by the USEPA to oversee the NPDES program through the Regional Water Quality Control Boards (RWQCB) (see related discussion under **Porter-Cologne Water Quality Control Act**, below). The NPDES program provides for both general permits (those that cover a number of similar or related activities) and individual permits. The permit contains requirements of allowable concentrations of contaminants contained in the discharge.

**Municipal Separate Storm Sewer System Permit.** In 1987, in recognition that diffuse, or non-point, sources were significantly impairing surface water quality, Congress amended the CWA to address non-point source storm water runoff pollution in a phased program requiring NPDES permits for operators of MS4s, construction projects, and industrial facilities. Phase I, promulgated in 1990, required permits for facilities of these types generally serving populations over 100,000, construction permits for projects five acres or greater, and industrial permits for certain industries. The Phase II program expanded on the Phase I program by requiring operators of small MS4s in

urbanized areas and operators of small construction sites, through the use of NPDES permits, to implement programs and practices to control polluted storm water runoff. Phase II is intended to reduce these adverse impacts to water quality and aquatic habitat by instituting the use of controls on the unregulated sources of storm water discharges. Under Phase II of the NPDES program, SWRCB has issued three general permits: (1) Municipal permits – required for operators of small MS4s, including universities, (2) Construction permits – required for projects involving one acre or more of construction activity, and (3) Industrial permits. The municipal permit requires development and implementation of a guidance document identifying all permit requirements. The goal of the guidance document or Storm Water Management Plan is to reduce the discharge of pollutants to the Maximum Extent Practicable, as defined by the USEPA. “Minimum Control Measures” (MCMs) is the term used by the USEPA for the six MS4 program elements aimed at achieving improved water quality through NPDES Phase II requirements.

State requirements for discharge of storm water from the UC Merced campus are included in the Phase II Small MS4 General Permit, Order No. 2013-0001-DWQ, February 5, 2013 (the Order),<sup>10</sup> issued by the SWRCB. UC Merced is listed as a Non-Traditional Small MS4 Permittee in Attachment B of the Order. Non-Traditional Permittees are required to comply with Section F.

In Section F, the water quality component of the Phase II permit requires permittees to use Low Impact Design (LID) methods such as infiltration, rainwater harvesting, evapotranspiration, or bio-treatment to reduce runoff volumes and improve the quality of water that does run off a site. The amount of runoff that is required to be treated can be based on a volume metric or a flow-based metric (Section F.5.g.2.b).

#### 4.2.3.2 State Laws and Regulations

**Porter-Cologne Water Quality Control Act.** The Porter-Cologne Water Quality Control Act (Porter-Cologne Act), which is the state’s clean water act, provides the statutory authority for SWRCB and the RWQCBs to regulate water quality and was amended in 1972 to extend the federal CWA authority to these agencies (see **Clean Water Act**, above). The Porter-Cologne Act established the SWRCB and divided the state into nine regions, each overseen by a RWQCB. The SWRCB is the primary state agency responsible for protecting the quality of the state’s surface and groundwater supplies, but much of the daily implementation of water quality regulations is carried out by the nine RWQCBs.

Under the Porter-Cologne Act, the RWQCBs are given the responsibility and authority to prepare water quality plans for areas within the region (Basin Plans), identify water quality objectives, and issue NPDES permits and Waste Discharge Requirements (WDRs). Water quality objectives are defined as limits or levels of water quality constituents and characteristics established for reasonable protection of beneficial uses or prevention of nuisance. NPDES permits, issued by RWQCBs pursuant to the CWA, also serve as WDRs issued pursuant to the Porter-Cologne Act. WDRs

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<sup>10</sup> State Water Resources Control Board (SWRCB). 2013. *National Pollutant Discharge Elimination System (NPDES) General Permit for Waste Discharge Requirements (WDRs) for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) – Order No. 2013-0001-DWQ, NPDES No. CAS000004*. Adopted on February 5, 2013.

are also issued for discharges that are exempt from the CWA NPDES permitting program, discharges that may affect waters of the state that are not waters of the United States (i.e., groundwater), and/or wastes that may be discharged in a diffused manner. WDRs are established and implemented to achieve the water quality objectives (WQOs) for receiving waters as established in the Basin Plans. Sometimes they are combined WDRs/NPDES permits.

#### 4.2.3.3 Local Plans and Policies

**UC Merced Water Action Plan.** In 2014, in compliance with the UC Sustainable Practices Policy (Sustainability Policy), UC Merced prepared a Water Action Plan (WAP)<sup>11</sup> that includes all the required elements, including: (1) targets and actions to reduce consumptive use of water, and (2) targets and actions to manage storm water and protect the watershed.<sup>12</sup> The WAP includes education and outreach, and identifies the following actions for some of the major goals included in the plan associated with storm water management:

##### ***Protect & Restore Integrity of Local Watershed.***

##### ***Short Term Actions (0-3 Years)***

- Continue reducing storm water runoff volume and improve water quality
- Maximize USGBC LEED and AASHE STARS storm water credit

##### ***Intermediate Term Actions (3-5 Years)***

- Explore creation of applied model for UCM watershed
- Incorporate green infrastructure and low-impact development strategies into site design in order to manage 30-50% of total volume runoff on-site
- Continue incorporating retention basins into site design and development to capture 100% of campus storm water under normal precipitation conditions

##### ***Long Term Actions (5-10 Years)***

- Explore feasibility and implementation of distributed wastewater treatment opportunities such as on-site wastewater treatment facility
- Explore feasibility of using captured rainwater for irrigation and non-potable use in buildings

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<sup>11</sup> University of California, Merced. 2014. *UC Merced Water Action Plan*. June.

<sup>12</sup> University of California, Merced. 2019. op. cit.

***Prevent Storm Water Pollution Resulting from Campus Activities.***

**Short Term Actions (0-3 Years)**

- Include and coordinate storm water management plan with the 2020 Project
- Continue labeling storm water inlets to remind constituents that dumping in the storm sewer is harmful to water quality
- Develop and implement a campus and community outreach program on the importance of keeping campus free of trash and other threats to storm water quality
- Inventory herbicides and pesticides used on campus to assess risk they may have to storm water

**Intermediate Term Actions (3-5 Years)**

- Develop and implement UC Merced's Storm Water Management Plan (SWMP) based on mitigation of UC Merced campus high-risk pollutants

**Long Term Actions (5-10 Years)**

- Continue to implement campus SWMP and revise as needed to address emerging threat to storm water

***Protect Storm Water Quality.***

**Short Term Actions (0-3 Years)**

- Include storm water monitoring and protection measures in construction contract language
- Develop and implement a campus and community outreach program on the importance of keeping campus free of trash and other threats to storm water quality
- Inventory herbicides and pesticides used on campus to assess the risk they may pose to storm water

**Intermediate Term Actions (3-5 Years)**

- Develop and implement UC Merced's SWMP based on mitigation of UC Merced campus high-risk pollutants

**Long Term Actions (5-10 Years)**

- Continue to implement the campus SWMP and revise as needed to address emerging threats to storm water

## 4.2.4 Impacts and Mitigation Measures

### 4.2.4.1 Significance Criteria

This EIR uses significance criteria derived from Appendix G of the *State CEQA Guidelines*. For the purpose of this EIR, impacts related to hydrology and water quality would be significant if implementation of the proposed Project would:

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in:
  - substantial erosion or siltation on or off site;
  - substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site;
  - create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems, or provide substantial additional sources of polluted runoff; or
  - impede or redirect flood flows.

### 4.2.4.2 Issues Not Discussed Further

The following checklist items from Appendix G of the *State CEQA Guidelines* have been screened out of this EIR based on a finding of no impact or less than significant impact, as determined in the Initial Study (**Appendix 1.0, Section 5.12**):

- Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade water quality?
- Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?
- Would the project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?
- Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

### 4.2.4.3 Methodology

The impacts of project implementation on surface water hydrology are analyzed based on the preliminary conceptual building and parking layout provided by UC Merced, and the storm water

detention basin conceptual design prepared by Sherwood Design Engineers (**Appendix 3.0**), along with information from the UC Merced 2020 Hydrology and Hydraulics Report.<sup>13</sup>

#### 4.2.4.4 2020 LRDP Measures included in the Proposed Project

The 2020 LRDP SEIR presents mitigation measures that may be applicable to future development on the campus, such as the proposed Project. However, the 2020 LRDP SEIR did not include any mitigation measures to reduce impacts related to hydrology and water quality as no potentially significant impacts related to hydrology and water quality were identified.

#### 4.2.5 Project Impacts and Mitigation Measures

**UCM-ME Impact HYD-1 Implementation of the proposed Project would not substantially alter the existing drainage pattern of the campus site through alteration of a water course or through the addition of impervious surfaces such that it would result in substantial erosion or siltation on or off site, result in flooding on or off site, contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems, or impede or redirect flood flows. (*Less than Significant*)**

The 2020 LRDP SEIR analyzed the changes in drainage patterns as a result of campus development under the 2020 LRDP. The analysis concluded that the impacts from 2020 LRDP campus development would be less than significant. With the development of the Phase 1 campus and the 2020 Project, storm water from developed surfaces is collected by the campus storm drain system and discharged into a number of detention facilities that are designed to hold flows from a 100-year, 24-hour storm. As part of the 2020 Project, additional detention facilities were added within Cottonwood Meadow, as shown in **Figures 3-2** and **4.2-1**. The detention facilities were sized to accommodate both the peak flows and the total volume of storm water runoff associated with the 2020 Project before discharge into Cottonwood Creek or other receiving waters and avoid potential flooding and erosion/siltation impacts in downstream areas.

The proposed Project, which is located within the Cottonwood Meadow storm water management area, would both increase the impervious surface area and require filling of the central portion of the Cottonwood Meadow Basin. Based on the preliminary conceptual building and parking layout provided by UC Merced, the development of the proposed building would increase the area of impervious surfaces at the Project site by up to approximately 4.3 acres. Further, the siting of the new building, parking lot and access road would interfere with the Cottonwood Meadow Basin and the Campus has determined that the entire basin would be filled and replaced with a new storm water detention basin located in the southern portion of the campus, southeast of Parking Lot No. 4 and west of Fairfield Canal.

As described in **Section 4.2.2.3** above, the Cottonwood Meadow watershed area is approximately 169.3 acres and all of the runoff from this area is detained in Cottonwood Meadow Basin. This area generates approximately 37.7 acre-feet of runoff from a 100-year, 24-hour storm which is detained

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<sup>13</sup> Sherwood Design Engineers. 2020. op. cit.



in the Cottonwood Meadow Basin. The development of the proposed Project and other future buildings in the Cottonwood Meadow area would generate about 4.98 acre-feet of runoff from a 100-year, 24-hour storm. Therefore, the new detention basin would be constructed to provide a storage capacity of about 42.68 acre-feet (37.7 acre-feet to replace the lost storage in Cottonwood Meadow Basin, and 4.98 acre-feet of new runoff). The basin would have a surface area of about 8 acres and an average depth of about 6 feet.

To maintain predevelopment flows into Cottonwood Creek, the new basin would be constructed with an outflow structure that maintains pre-development flow rates, neither increasing or decreasing runoff discharged into the swale that drains into Cottonwood Creek.

To prevent an increase of the peak flow rate or total volume of discharge from the campus into downstream receiving waters, consistent with the design criteria set forth in the Campus' NPDES permit, the new basin would be sized to retain the 95th percentile, 24-hour storm event on-site. The basin would also detain flows from a 100-year, 24-hour storm. The collected storm water would either percolate into the soil or evaporate, and there would be no anticipated overflow discharges to Cottonwood Creek from the 100-year, 24-hour storm event, although a built-in weir would be included in the basin design such that flows above the 100-year 24-hour storm can overtop the basin and continue along the natural drainage pattern.

As described in Section 4.4 of the 2020 LRDP SEIR,<sup>14</sup> storm water flows in excess of the 100-year, 24-hour storm event may also be discharged to the Fairfield Canal. Because the canal is not used during fall and winter to convey irrigation water, under normal conditions, Fairfield Canal would have capacity to handle the storm water discharged by the campus. Water elevation detectors in the canal would determine when releases would be allowed to ensure that storm water in excess of the capacity of the canal is not discharged from the campus. As stated in **Section 4.2.3.3** above, UC Merced has an existing agreement with MID that allows up to 225 gpm to be discharged to the irrigation canals. While the existing campus storm water management system does not currently use this option, this agreement with MID would reduce the need for overflow discharges to Cottonwood Creek for storms larger than the 100-year event.

In summary, while construction of the UCM-ME Building Project would have the potential to increase the rate and amount of runoff, and if the runoff were to be discharged uncontrolled to surface waters, it could result in (or exacerbate) flooding as well as potential hydromodification (i.e., erosion and scour) in downstream drainages (i.e., Cottonwood Creek and Bear Creek). However, such downstream impacts would be avoided by the construction of a new appropriately sized detention basin. The basin would be designed and operated so that flows under normal rainfall conditions would be detained and released at pre-development rates, and, under larger storm conditions, including the 100-year, 24-hour storm, the flows would be detained and released at rates that would not exceed the existing peak and total flows.

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<sup>14</sup> University of California, Merced. 2019. op. cit.

Further, the proposed Project would comply with the UC Sustainability Policy and the UC Merced WAP which requires that the integrity of the local watershed be protected and restored, and sets forth a number of short-term, intermediate-term and long-term actions for the campus to implement, including but not limited to: continue reducing storm water runoff volume and improve water quality; maximize USGBC LEED and AASHE STARS storm water credit; and incorporate green infrastructure and LID strategies into site design in order to manage 30 to 50 percent of total volume runoff on-site.

In addition, no portion of the proposed Project site (as well as the overall campus) is within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or FIRM. Further, there are no water courses within the Project site that would be developed with new facilities. Therefore, no impact related to impeding or redirecting flood flows would occur.

Thus, although implementation of the proposed Project would generate increased storm water runoff, with the implementation of LID strategies and green infrastructure as well as the construction of the new detention basin, UC Merced would control both the peak flows and the total volume of storm water runoff before discharge into any receiving waters and would avoid potential flooding and erosion/siltation impacts in downstream areas. The impact from changes in storm water runoff from the proposed Project would be less than significant.

**Mitigation Measures:** No mitigation is required.

#### 4.2.6 Cumulative Impacts and Mitigation Measures

**Cumulative Impact C-HYD-1**     **Implementation of the proposed Project, in conjunction with other past, present, and reasonably foreseeable future development in the Project area, could cumulatively increase surface runoff but would not increase local and regional flooding. (*Less than Significant*)**

As reflected in the 2020 LRDP SEIR,<sup>15</sup> development of the campus under the proposed LRDP would increase the total amount of impervious surfaces and therefore increase surface runoff within the on-site watersheds. This increased runoff would discharge into Bear Creek via Cottonwood Creek. Other development in the Merced area would also increase the amount of impervious surfaces in the Merced area and increase storm water discharges to Bear Creek.

Like other creeks of the Merced Streams Group, Bear Creek has historically experienced serious flooding problems that have stemmed from the lack of channel capacity which is aggravated by erosion and overgrowth of vegetation within the channel. Furthermore, high flows of moderate duration in this creek and other streams occur from intense rainstorms and result in flash flooding. In addition, snowmelt in the Sierra can produce high flows of longer duration during the spring. Channel capacity, especially within Bear Creek, has become even more inadequate relative to the

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<sup>15</sup> University of California, Merced. 2019. op. cit.

flows as more impervious surfaces have been added in the creek's watershed, causing increased runoff to be discharged to the creek.

In the event that Fairfield Canal is not used to discharge excess flows, UC Merced would release some limited storm water into Cottonwood Creek (i.e., as a result of storms larger than the 100-year/24-hour storm), which is a tributary to Bear Creek. As discussed in the 2020 LRDP SEIR and above for the proposed Project, the storm water control system for the campus includes on-site detention facilities that would be operated so that all flows under normal rainfall conditions would be retained, and under larger storm conditions including the 100-year, 24-hour storm, the flows would be detained and released at rates that would not exceed the existing peak and total flows. This would preclude downstream flooding. Similarly, all other development in the watershed of Bear Creek would also be required to detain additional storm water generated by new impervious surfaces. The City of Merced Vision 2030 General Plan requires new development to use existing detention facilities or construct storm water detention facilities as part of new development. The SEIR concluded that because additional storm water runoff will be controlled and discharged at rates that would reduce the potential for flooding, the cumulative impact related to flooding is considered to be less than significant. As these same storm water management facility design criteria would apply to the proposed Project and the proposed detention basin would be appropriately sized to detain runoff per the NPDES permit requirements, the Project's contribution to a cumulative impact related to increases in storm water runoff and flooding would be less than significant.

**Mitigation Measures:** No mitigation is required.

## 4.3 PUBLIC SERVICES

### 4.3.1 Introduction

This section of the Draft Environmental Impact Report (EIR) describes the existing fire protection services associated with the Project site and its vicinity and potential impacts to these services from project implementation. Regulations and policies affecting the fire protection services in the Project area are also described. Information presented in this section is based on consultation with fire protection service providers and information included in the 2020 Long Range Development Plan (LRDP) Subsequent EIR (SEIR).<sup>1</sup> For other public services including law enforcement services, schools, public libraries, and parks and recreational facilities and the proposed Project's less-than-significant impacts on those services, please see **Appendix 1.0, Initial Study**, and **Chapter 6.0, Other CEQA Considerations**.

### 4.3.2 Environmental Setting

The environmental setting information in this section is derived from the UC Merced 2020 LRDP Subsequent SEIR<sup>2</sup> that was certified in March 2020.<sup>3</sup> Only information pertinent to the impact analyses in **Section 4.3.4** is provided below. For additional information on the environmental setting, please see Section 4.7 in the SEIR.

#### 4.3.2.1 Fire Protection and Emergency Medical Services

The Project site and its vicinity are currently served jointly by the Merced County Fire Department (MCFD) and the California Department of Forestry and Fire Protection (Cal Fire). UC Merced has a cooperative agreement with the County of Merced for the provision of fire protection services to the campus. The MCFD is a full-service fire department, providing emergency services to all unincorporated areas of the county through a network of fire stations, personnel, and equipment. The MCFD provides the fire stations, equipment, and tools while Cal Fire provides administrative staff, firefighting personnel, and training. Fire stations are staffed 24 hours a day by a full-time career fire captain or fire apparatus engineer, and emergency response is augmented with more than 300 Paid Call Firefighters (PCF) or volunteers.<sup>4</sup> This joint service provides fire response from several existing fire stations in the local area. The nearest County fire station is Fire Station 85, located at 3360 North McKee Road. This station is currently staffed by one fire captain and one fire engineer, and UC Merced is currently funding one position per day based on the cooperative agreement with the County. Engine 85 would be on-scene at UC Merced in less than 6 minutes from the time of call receipt.<sup>5</sup> A full commercial structure fire would require response from multiple fire stations and such a response would be at the scene in less than 18 minutes and would include two

<sup>1</sup> University of California, Merced. 2019. *UC Merced 2020 Long-Range Development Plan Recirculated Draft Subsequent Environmental Impact Report*, December 2019.

<sup>2</sup> Ibid.

<sup>3</sup> University of California, Merced. 2020b. *UC Merced 2020 Long-Range Development Plan Final Subsequent Environmental Impact Report*, March 2020.

<sup>4</sup> Merced County, Fire Department Services About the Department, Website: <https://www.co.merced.ca.us/349/About-the-Department> (accessed June 8, 2021).

<sup>5</sup> Merced County Fire Department and the California Department of Forestry & Fire Protection (Cal Fire). 2021. *UC Merced Fire Protection Services Enhancement Memorandum – HBS-ME Project*. June.

chief officers, four fire engines, one rescue truck, and two water tenders.<sup>6</sup> Mutual Aid from Merced City Fire could add one fire engine, one ladder truck, and one chief officer, if resources are available, with a response of a minimum of 12 firefighting personnel.<sup>7</sup> Station 85 has been expanded to its maximum capacity given the existing location of the station and property constraints; as such, additional fire department staff or fire apparatus cannot be stationed at Station 85.<sup>8</sup> The other station that would respond to incidents at the UC Merced campus is Fire Station 86 located at 9234 E. Broadway in Planada, approximately 11 miles from the UC Merced Campus and Project site. Station 86 is currently staffed by one fire captain and one fire engineer, and UC Merced is currently funding one position per day.<sup>9</sup> The County of Merced is in the process of preparing plans to expand Fire Station 86 to adequately serve the growth of the area and UC Merced.<sup>10</sup>

As discussed in the Merced County 2030 General Plan Program EIR (PEIR), “the 1999 Merced County Fire Master Plan defined Levels of Service in terms of five land use categories within Merced County. These categories are High Urban, Urban, Rural, Outlying, and Basic Level of Service. These categories correlate with the Land Use chapter of the 2000 Merced County General Plan. Each land use category has its own response requirements, and the level of service provided varies accordingly. The level of service delivered by a fire department can be measured by fire flow delivery capability, response times of apparatus, number of firefighters per capita, square footage of facilities per capita, staffing levels on apparatus, and reserve capacity.”<sup>11</sup>

The PEIR further notes that, “according to the Merced County Fire Master Plan, many of the Department’s facilities are inadequately staffed and equipped. Several stations and equipment repair facilities are 40 to 50 years old and were designed when fire apparatus was smaller and much less complicated. These facilities are in need of remodeling or replacement in order to meet current safety standards, and to provide adequate space for routine Department activities. In addition, response times in the county have increased due to rapid growth without a correspondent growth in fire protection facilities and staffing. The provision of adequate staffing for the MCFD is becoming increasingly difficult as the number of volunteers continues to decline. Adequate staffing cannot be accomplished without appropriate training and education for career and paid-call volunteers. Likewise, training cannot be delivered without appropriate facilities. State and federal mandates require in excess of 200 hours of training per year for all career firefighters. Although the MCFD has acquired training facilities and offices at Castle Airport, certain training topics require the use of specialized facilities such as burn buildings and training towers. These facilities are not presently available in Merced County.”<sup>12</sup>

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<sup>6</sup> Merced County Fire Department and the California Department of Forestry & Fire Protection (Cal Fire). 2021. *UC Merced Fire Protection Services Enhancement Memorandum – HBS-ME Project*. June.

<sup>7</sup> Ibid.

<sup>8</sup> Pimentel, Mark. 2021. Cal Fire Battalion Chief. Personal communication with P. Woods, UC Merced, and K. Nurmela, LSA. May 27, 2021

<sup>9</sup> Merced County Fire Department and the California Department of Forestry & Fire Protection (Cal Fire). 2021. op. cit.

<sup>10</sup> Pimentel, Mark. 2021. op. cit.

<sup>11</sup> University of California, Merced. 2019. op. cit.

<sup>12</sup> Ibid.

The City of Merced Fire Department provides mutual aid support, upon request, to MCFD/Cal Fire under a signed Mutual Aid Agreement. There is no automatic response contractual agreement in place between the two Fire Departments.

### 4.3.3 Regulatory Considerations

Regulatory information pertinent to the impact analyses in **Section 4.3.4** is provided below. Additional information is presented in Section 4.7 of the 2020 LRDP SEIR.

#### 4.3.3.1 State Laws and Regulations

**California Fire Code.** The California Fire Code (Title 24 CCR, Part 9) establishes minimum requirements to safeguard public health, safety, and general welfare from the hazards of fire, explosion, or dangerous conditions in new and existing buildings. Chapter 33 of CCR contains requirements for fire safety during construction and demolition.

#### 4.3.3.2 Local Plans and Policies

The proposed Project would be located on the campus which is owned by the University. None of the City and County plans and policies related to fire protection services are applicable to campus projects.

### 4.3.4 Impacts and Mitigation Measures

#### 4.3.4.1 Significance Criteria

This EIR uses significance criteria derived from Appendix G of the State *CEQA Guidelines*. For the purposes of this EIR, impacts on public services would be significant if implementation of the proposed Project would:

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

#### 4.3.4.2 Issues Not Discussed Further

The following CEQA checklist items have been screened out of this EIR based on a finding of no impact or less than significant impact, as determined in the Initial Study (**Appendix 1.0, Section 5.17**):

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:
  - Police protection
  - Schools

- Parks
- Other public facilities such as libraries
- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or
- Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment.

#### 4.3.4.3 Methodology

The proposed Project's demand for fire protection services was determined and compared to the MCFD and Cal Fire's ability to meet the anticipated Project-related demand with existing or planned facilities. The MCFD and Cal Fire were contacted to determine current operational service levels and whether there are existing service deficiencies that would need to be addressed in order to continue providing fire protection services to the campus with the addition of the UCM-ME Building. UC Merced representatives met with MCFD and Cal Fire staff on April 26 and May 27, 2021 to determine if adequate fire protection services could be provided to the UCM-ME Building under existing staff, equipment, and station service levels. The County and Cal Fire provided a memorandum documenting the fire protection services required for the UCM-ME Building Project on June 15, 2021.<sup>13</sup>

#### 4.3.4.4 2020 LRDP Measures included in the Proposed Project

The 2020 LRDP SEIR presents mitigation measures that may be applicable to future development on the campus, such as the proposed Project. However, the 2020 LRDP SEIR did not include any mitigation measures to reduce impacts to fire protection service as no potentially significant impacts related to fire protection services were identified.

### 4.3.5 Project Impacts and Mitigation Measures

**UCM-ME Impact PUB-1 Implementation of the UCM-ME Building would increase demand for fire protection services and could require an expansion of an existing fire station or the construction of a new facility, but the impacts from construction would be less than significant. (*Less than Significant*)**

As noted above, the campus is jointly served by the MCFD and Cal Fire. The nearest County fire station is McKee Fire Station 85 (Station 85), which is currently staffed by one fire captain and one fire engineer. UC Merced, in a cooperative agreement with Merced County, currently funds one staffing position per day at Station 85.<sup>14</sup> The County Fire Department response standard for a building fire is a "2 in, 2 out" standard, i.e., in responding to building fires, the department requires that there be two fire fighters available outside and two fire fighters available to go inside the building. Engine 85 would be on-scene at UC Merced in less than 6 minutes from the time of call

<sup>13</sup> Merced County Fire Department and the California Department of Forestry & Fire Protection (Cal Fire). 2021. op. cit.

<sup>14</sup> Ibid.



receipt. Fire Station 85 currently operates at full staffing and apparatus capacity and has already been expanded to its maximum capacity based on its location and existing property constraints.<sup>15</sup>

The 2020 LRDP SEIR analyzed the potential for campus development under the 2020 LRDP to result in increased demand for fire protection services. Development under the 2020 LRDP would accommodate about 17,400 students, faculty, and staff by 2030. The SEIR analysis found that because the growth on the UC Merced campus would occur incrementally over the planning horizon of the 2020 LRDP, there was not an immediate need for an increased fire service or additional resources from the fire department. However, the SEIR noted that if the demand for staff and equipment to serve new campus development resulted in the need for new or modified fire station facilities to house the additional staff and/or equipment, the environmental impacts from fire station construction would need to be evaluated and disclosed.

The proposed Project would add approximately 190,000 outside gross square feet<sup>16</sup> of building space to the UC Merced Campus and accommodate about 2,999 students, faculty and staff. Based on a review of the proposed Project, the County has determined that development of the proposed Project would require one additional fire engineer to adequately serve the proposed Project and continue to adequately serve the UC Merced campus.<sup>17</sup> Since Station 85 is currently at staffing and apparatus capacity, the additional fire engineer would be stationed at Station 86 in Planada.<sup>18</sup> Based on input from Cal Fire, the County is currently in the process of planning for the expansion of this station.<sup>19</sup> Thus, the expansion of this station is occurring independent of the proposed Project and is not being triggered by development of the UCM-ME Building. Furthermore, the County will conduct any required environmental review of the proposed expansion of Station 86. The expansion of Station 86 is unlikely to result in significant environmental impacts.

With the already planned expansion of Fire Station 86, the proposed Project itself would not require the development of new fire stations or expansion of existing fire stations the construction of which could cause significant environmental impacts.

Although CEQA does not require this EIR to analyze fire operational metrics such as response times (as they do not constitute environmental impacts), it is noted that the proposed Project does not propose off-campus circulation system changes that could affect the County's fire department response time to the campus or other land uses near the campus. No modifications to Lake Road would be made in connection with the proposed Project as the University does not own or control Lake Road. Further, the transportation facilities associated with the proposed Project would be constructed according to State of California design standards for roadway and intersection design and operations. Therefore, the proposed Project would not adversely affect fire department response times to the campus.

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<sup>15</sup> Pimentel, Mark. 2021. Cal Fire Battalion Chief. op. cit.

<sup>16</sup> "Outside gross square feet (ogsf)" includes the interior building area within the enclosed structure as well as the covered, unenclosed corridors, including walkways, porches, balconies, etc.

<sup>17</sup> Merced County Fire Department and the California Department of Forestry & Fire Protection (Cal Fire). 2021. op. cit.

<sup>18</sup> Ibid.

<sup>19</sup> Ibid.

In summary, for reasons presented above, the impact on fire protection services from implementation of the proposed Project would be less than significant.

**Mitigation Measures:** No mitigation is required.

#### 4.3.6 Cumulative Impacts and Mitigation Measures

**Cumulative Impact C- PUB-1**      **Development of the proposed Project, in conjunction with other past, present, and reasonably foreseeable future development in the project area, would generate an increased demand for fire protection services, the provision of which would not result in a significant cumulative environmental impact. (*Less than Significant*)**

The 2020 LRDP SEIR analyzed cumulative impacts to fire protection services based either the MCFD or the City of Merced Fire Department providing these services to the UC Merced campus. The SEIR referenced the EIRs prepared by the County and the City, respectively, for the 2030 General Plan and 2030 Vision General Plan, which analyzed the potential for future development within the County and City to result in increased demand for fire protection and emergency response services. Based on the analyses in the two general plan EIRs, the 2020 LRDP SEIR concluded that should UC Merced continue its contract with the County for fire protection services or execute a new contract with the City for fire protection services in the future, in the event that new or expanded fire station facilities are needed, their construction and operation would not result in significant environmental impacts, and the cumulative impact would be less than significant. Furthermore, the 2020 LRDP SEIR noted that if an existing County or City fire station is expanded or a new one is constructed by the County and significant environmental impacts requiring mitigation are identified, the University would pay its proportional share of the cost of mitigation.

Implementation of the proposed Project as well as related projects would cumulatively increase the need for fire protection services from either the County or City. Implementation of the proposed Project would cumulatively contribute to this need, as the proposed Project would require the addition of one fire engineer who would be added to Fire Station 86 in Planada. As discussed above in **Section 4.3.5**, the County is already in the process of planning the expansion of this station independent of whether the proposed Project is developed, and the expanded station would be able to accommodate the additional fire engineer. Thus, the proposed Project itself would not result in the expansion of Fire Station 86 nor would it require that a new County or City fire station be developed. Furthermore, the growth in campus building space and population associated with the proposed Project were previously considered in the impacts of fire protection service generated by the 2020 LRDP. Finally, UC Merced (through the cooperative agreement with Merced County) would fund two positions per day at Fire Station 86 under a modified cooperative agreement and would continue to provide staffing funding for Fire Station 85. All other related projects in the vicinity would be independently analyzed pursuant to CEQA to determine their impacts on fire protection services (either from the City or County) and any mitigation measures that would be needed to reduce their impacts.

In summary, the proposed Project would cumulatively contribute to an increased need for fire protection services which would require the addition of staff at the fire station serving the campus but would not require the expansion or construction of new facilities which could result in significant environmental impacts, because the facility expansion is planned independent of the proposed Project. For these reasons, the cumulative impact associated with Project implementation would be less than significant.

**Mitigation Measures:** No mitigation is required.

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## 4.4 TRANSPORTATION

### 4.4.1 Introduction

This section of the Draft Environmental Impact Report (EIR) describes the existing transportation system that serves the proposed UC Merced Medical Education (UCM-ME) Building Project (“proposed Project” or “Project”) site and its vicinity, as well as the potential impacts to the transportation system as a result of the implementation of the proposed Project. Regulations and policies affecting the transportation in the project area are also summarized.

Information presented in this section is based on the Vehicle Miles Travelled (VMT) Impact Analysis<sup>1</sup> prepared for this Project, which is included in **Appendix 4.0**. The VMT Impact Analysis was prepared in June 2021, using the analysis tools and supporting assumptions available and appropriate at that time. As described in **Section 1.4.2**, this EIR also includes an updated supplemental program-level transportation impact analysis of campus growth through 2030 under UC Merced’s 2020 Long Range Development Plan (LRDP)<sup>2</sup> based on VMT metrics (**Chapter 7.0, 2020 LRDP SEIR Transportation Supplement**) consistent with *California Environmental Quality Act (CEQA) Guidelines* Section 15064.3, subdivision (b). As some of the background and analysis contained in **Chapter 7.0** is applicable to the Project-level analysis in this section, references to that analysis are included here, when applicable, to minimize redundancy.

### 4.4.2 Environmental Setting

The environmental setting information in this section is derived from the UC Merced 2020 LRDP Subsequent Draft EIR (SEIR)<sup>3</sup> that was certified in March 2020.<sup>4</sup> Only information pertinent to the impact analyses in **Section 4.4.4** is provided below. For additional information on the environmental setting, including information related to bicycle, pedestrian and transit facilities that serve the campus, please see **Chapter 7.0**.

#### 4.4.2.1 Roadway Network

The UC Merced campus, including the Project site, is accessed by Bellevue Road and Lake Road, which are two-lane rural roads. Regional access to and from the campus is provided by State Route 99 and Highway 59 on the west and State Route 140 on the east. Descriptions of the local and regional roadways in the vicinity of the campus are provided below. Refer to **Figure 7-1, Roadway Network**, in **Chapter 7.0** for the location of these facilities.

**State Route 99** (hereinafter SR 99 or Highway 99 as it is locally known) is the primary regional facility in the Merced area. Highway 99 provides access to San Francisco and Sacramento to the north, and Fresno and Bakersfield to the south. Through the City of Merced, Highway 99 is a four-lane freeway

<sup>1</sup> Fehr & Peers. 2021. *VMT Impact Analysis for the UC Merced Medical Education Building Project and 2020 LRDP*. June.

<sup>2</sup> University of California, Merced. 2020a. *UC Merced 2020 Long-Range Development Plan*, March 2020.

<sup>3</sup> University of California, Merced. 2019. *UC Merced 2020 Long-Range Development Plan Recirculated Draft Subsequent Environmental Impact Report*, December 2019.

<sup>4</sup> University of California, Merced. 2020b. *UC Merced 2020 Long-Range Development Plan Final Subsequent Environmental Impact Report*, March 2020.

with two lanes in each direction. Future plans call for improvements to Highway 99 throughout the Central Valley.

**State Route 140** (hereinafter Highway 140 or Yosemite Parkway as it is locally known) is a major east-west highway serving recreational and local traffic. Highway 140 is a two-lane rural highway that provides regional access to Yosemite National Park to the east.

**State Route 59** (hereinafter Highway 59 as it is locally known) is a north-south facility extending from State Route 152 (near Los Banos) to Snelling, a community located north of the City of Merced. Highway 59 is a two-lane rural highway through Merced.

**G Street** is a north-south roadway extending from Highway 99 to La Paloma Road, where it turns into Snelling Road (Highway 59). G Street is a four-lane roadway south of Yosemite Avenue with left-turn pockets at major intersections. North of Yosemite Avenue, G Street expands to five lanes, three southbound and two northbound, with left-turn pockets until Mercy Avenue, where G Street narrows to become two lanes. North of Cardella Road, G Street expands back to four lanes until Farmland Avenue, where G Street narrows back to two lanes.

**Olive Avenue** is an east-west street providing cross-town access. West Olive Avenue connects Highway 59 and R, M, and G Streets. It is a six-lane facility west of G Street, primarily serving a commercial corridor. West of Highway 59, Olive Avenue becomes Santa Fe Drive, connecting the northern portions of Merced to the City of Atwater and Castle Air Force Base. East of G Street, East Olive Avenue transitions from four lanes to two lanes and provides access to one of Merced's largest residential areas.

**Yosemite Avenue** is an east-west road extending from Highway 59 to its eastern terminus at Arboleda Drive. Yosemite Avenue is a two-lane facility west of Arboleda Drive until Lake Road, where the roadway becomes a four-lane roadway. West of McKee Road, Yosemite Avenue narrows to three travel lanes (two eastbound and one westbound) and expands back to four lanes west of North Gardner Avenue.

**Bellevue Road** is a two-lane east-west road extending from Fox Road on the west to its eastern terminus at Lake Road and is one of the two access roads to the campus. As described in the 2020 LRDP SEIR, this roadway carries approximately 8,500 vehicles per day, west of Lake Road.<sup>5</sup>

**Lake Road** is a two-lane north-south road extending from Yosemite Avenue to its northern terminus at Lake Yosemite and is the other access road to the campus. As described in the 2020 LRDP SEIR, this roadway currently carries approximately 5,600 vehicles per day, south of Bellevue Road.<sup>6</sup>

#### 4.4.3 Regulatory Considerations

Regulatory information pertinent to the impact analyses in **Section 4.4.4** is provided below. Additional information is presented in **Chapter 7.0**.

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<sup>5</sup> University of California, Merced. 2019. op cit.

<sup>6</sup> Ibid.

#### 4.4.3.1 State Laws and Regulations

**Senate Bill 743.** Senate Bill 743 (CEQA Section 21099(b)(1)) requires that Governor's Office of Planning and Research (OPR) develop revisions to the State *CEQA Guidelines* establishing criteria for determining the significance of transportation impacts of projects that "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." CEQA Section 21099(b)(2) states that upon certification of the revised guidelines for determining transportation impacts pursuant to CEQA Section 21099(b)(1), automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion, shall not be considered a significant impact on the environment under CEQA.

In January 2016, OPR published for public review and comment a *Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA* recommending that transportation impacts for projects be measured using a VMT metric.<sup>7</sup> In December 2018, the California Natural Resources Agency certified and adopted the CEQA Guidelines update package, including the section implementing SB 743 (CEQA Guidelines Section 15064.3). OPR developed a *Technical Advisory on Evaluating Transportation Impacts in CEQA*, which contains technical recommendations regarding assessment of VMT, thresholds of significance, and mitigation measures.<sup>8</sup>

The Technical Advisory sets forth guidance regarding metrics that may be calculated to evaluate VMT impacts from land development projects and transportation projects. With regard to land development projects, the Technical Advisory identifies three types of land uses: residential, office, and retail. As each of these land uses is distinct in its trip generation and other attributes, the Technical Advisory recommends that different VMT metrics be used to analyze the transportation impacts of each land use type. For mixed-use projects, the Technical Advisory suggests evaluating each component independently, and applying the significance threshold for each project type included. An institutional land use, such as a university campus, is not specifically addressed in the advisory. However, for purposes of this EIR analysis, the proposed Project is treated as an office development because like a new office building that generates daily vehicle trips by workers who travel to the new building each day to work there, the UCM-ME Building would generate new daily vehicle trips that would be made by the new faculty and staff that would work in that building and by the new students who would travel within and to the campus to study and conduct research in that building. Residential and retail land uses are not a part of the proposed Project and therefore are not applicable to the proposed Project.

With regard to metrics for office type development, the Technical Advisory recommends use of VMT metrics that reflect the transportation efficiency of a project and are expressed in per capita terms. For office uses, the Technical Advisory suggests a metric based on home-based work vehicle trips,

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<sup>7</sup> California Office of Planning and Research (OPR). 2016. *Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA, Implementing Senate Bill 743* (Steinberg, 2013). January 20.

<sup>8</sup> State of California Governor's Office of Planning and Research (OPR). 2018. *Technical Advisory on Evaluating Transportation Impacts in CEQA*. December.



i.e., the number of daily trips that a worker makes between home and place of work, including trips made for lunch or other reasons, and the distance traveled in making those trips.

The Technical Advisory does not mandate the use of specific significance thresholds, but recommends that, for an office/employment-generating project, a VMT per worker that is 15 percent below that of existing employment development in the project's study area may be a reasonable threshold for determining the significance of an employment project's transportation impacts.

#### 4.4.3.2 University of California Policies

**The University of California Policy on Sustainable Practices.** The University of California Sustainable Practices Policy (Sustainability Policy), most recently updated in July 24, 2020<sup>9</sup>, is a system-wide commitment to minimize the University's impact on the environment and reduce its dependence on non-renewable energy sources. The Sustainability Policy states that "The University of California is committed to responsible stewardship of resources and to demonstrating leadership in sustainable business practices. The University's locations should be living laboratories for sustainability, contributing to the research and educational mission of the University, consistent with available funding and safe operational practices."

The Sustainability Policy contains the following goals related to reducing vehicle travel:

- The University recognizes that single-occupant vehicle (SOV) commuting is a primary contributor to commute greenhouse gas (GHG) emissions and localized transportation impacts.
  - By 2025, each location shall strive to reduce its percentage of employees and students commuting by SOV by 10 percent relative to its 2015 SOV commute rates.
  - By 2050, each location shall strive to have no more 40 percent of its employees and no more than 30 percent of all employees and students commuting to the location by SOV.
- Each location (campus) will develop a business-case analysis for any proposed parking structures serving University affiliates or visitors to the campus to document how a capital investment in parking aligns with each campus' Climate Action Plans and/or sustainable transportation policies.

**UC Merced Sustainability Strategic Plan 2017–2022.** In 2017, UC Merced released a Sustainability Strategic Plan<sup>10</sup> to describe its approach to achieving its sustainability goals. The ambitious central focus of the plan is the achievement of zero net energy usage, zero landfill waste, and zero net greenhouse gas emissions by 2020. Not only does the plan provide campus principles related to sustainability, but it also provides insight about the specific actions that will allow UC Merced to maintain its principles and meet its goals, even as the campus expands. The plan includes the

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<sup>9</sup> University of California. 2020. *University of California – Policy on Sustainable Practices*. Issuance/Effective Date July 24, 2020.

<sup>10</sup> University of California, Merced. 2017. *Sustainability Strategic Plan 2017-2022*.

following actions related to increasing alternative modes of transportation usage among the campus constituency to reduce the carbon footprint of transportation, parking, and fleet services:

- **Action 1:** Promote Sustainable Commuting – Encourage alternative modes of transportation for students, faculty, and staff by promoting ridesharing, car sharing, vanpool, and carpool incentives.
- **Action 2:** Environmentally Friendly Fleet – Sourcing fuel efficient and low emission fleets that reduce environmental impact.
- **Action 3:** Greenhouse Gas Reduction – Develop GHG emission reduction goals for campus fleet.
- **Action 4:** Transportation Demand Management (TDM) – Expand TDM programs and projects while developing marketing and educational campaigns focused on alternative transportation.

#### 4.4.3.3 Local Plans and Policies

The University of California, a constitutionally created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by the University that are in furtherance of the University's education purposes. However, the University may consider, for coordination purposes, aspects of local plans and policies for the communities surrounding a UC campus when it is appropriate and feasible, but it is not bound by those plans and policies in its planning efforts. This section summarizes the planning and policy documents that relate to the provision of transportation services in Merced County. Additional information is presented in **Chapter 7.0**.

**2018 Regional Transportation Plan/Sustainable Communities Strategy.** The 2018 Regional Transportation Plan/ Sustainable Communities Strategy (RTP/SCS)<sup>11</sup> provides a comprehensive long-range view of transportation issues, opportunities, and needs of Merced County. It establishes the goals, objectives, and policies for future transportation improvements. The plan identifies the actions that should be taken and the funding needs and options available for successful implementation. Some of the relevant policies contained in the 2018 RTP/SCS include:

#### **1. Highways, Streets, and Roads**

**Goal:** Provide a safe and efficient regional road system that accommodates the demand for the movement of people and goods.

**Objective 1.1** Maintain a Level of Service D on all regionally significant roads.

**Objective 1.2** Identify and prioritize improvements to the regional road system.

**Objective 1.3** Use the existing street and road system in the most efficient possible manner to improve local circulation.

**Objective 1.4** Monitor the impact of development on the regional road system.

<sup>11</sup> Merced County Council of Governments. 2018. *2018 Regional Transportation Plan/Sustainable Communities Strategy for Merced County*.

**Merced County General Plan.** The 2030 Merced County General Plan Circulation Element includes policies to ensure that adequate access is provided and maintained for all county land uses. The following presents the General Plan Circulation Element policies relevant to transportation systems near the proposed campus. Additional information is presented in **Chapter 7.0**.

**Goal CIR-1:** Maintain an efficient roadway system for the movement of people and goods that enhances the physical, economic, and social environment while being safe, efficient, and cost-effective.

**Policy CIR-1.5 County Level of Service Standards.** Implement a Countywide roadway system that achieves the following level-of-service (LOS) standards during peak traffic periods:

- a) For roadways located within rural areas: LOS "C" or better.
- b) For roadways located outside Urban Communities that serve as connectors between Urban Communities: LOS of "D" or better.
- c) For roadways located within Urban Communities: LOS of "D" or better.

**Merced Vision 2030 General Plan.** The City's General Plan Circulation Element includes policies to ensure that adequate access is provided and maintained for all city land uses. Some of the relevant policies contained in the Merced Vision 2030 General Plan include:

**Policy T-1.2** Coordinate circulation and transportation planning with pertinent regional, state, and federal agencies.

**Policy T-1.6** Minimize adverse impacts on the environment from existing and proposed road systems.

#### 4.4.4 Impacts and Mitigation Measures

##### 4.4.4.1 Significance Criteria

This EIR uses significance criteria derived from Appendix G of the State *CEQA Guidelines*. For the purposes of this analysis, impacts related to transportation would be significant if implementation of the proposed Project would:

- Conflict with a program, plan, ordinance or policy addressing roadway facilities; or
- Conflict or be inconsistent with State CEQA Guidelines Section 15064.3, subdivision (b).

**Project VMT Metrics and Thresholds.** The proposed Project involves the construction of a new academic building on the campus. The proposed Project would be constructed between 2023 and 2026, with occupancy beginning in 2026 and full occupancy being attained by 2030. It is anticipated that the maximum number of persons accommodated by the proposed building would be 2,811 students and 188 faculty and staff, for a total of about 2,999 persons. Of the 2,811 students, 1,542

are existing under-grad and post-grad students enrolled in the Psychological Sciences and Public Health departments and about 1,269 would be new students. Of the 188 faculty and staff, 139 are existing faculty and staff in the Psychological Sciences and Public Health departments. Thus, 1,681 of the 2,999 persons that would occupy the proposed UCM-ME Building were already enrolled as students or employed by the Campus as of 2020-21, and therefore the net new population due to this Project would be on the order of about 1,318 persons. The VMT impacts from this increase in population are analyzed below.

However, because the existing building space in the SSM Building that would be vacated when some of the departments move to the proposed UCM-ME Building would be backfilled, a second conservative scenario is also presented below that analyzes the VMT impacts associated with the entire population of 2,999 persons would be accommodated in the proposed building.

As noted earlier, the new students, faculty and staff are considered “workers” for purposes of VMT analysis, and the effect of this new population on transportation is analyzed in this EIR based on the metrics and the significance threshold set forth in **Table 4.4-1** below.

**Table 4.4-1: VMT Metric and Significance Threshold for Project Impacts**

Metric 1	Significance Threshold
1. Campus worker VMT per worker	Impact would be less than significant if the project worker VMT per worker is at least 15 percent below the existing regional average worker VMT per worker

Source: Fehr & Peers, June 2021

Metric 1 is recommended in the Technical Advisory for use in evaluating the transportation impacts of projects involving office/employment land uses. The concept underlying this metric is to compare the project’s transportation efficiency (project VMT per worker), with the existing regional efficiency (regional VMT per worker) and to determine whether the project would be more efficient than the existing region. If the project is sufficiently more efficient, it would result in a less-than-significant transportation impact. As noted earlier and in the table above, in order to be considered more efficient and result in a less-than-significant impact, the Project’s VMT per worker must be at least 15 percent below the existing regional average VMT per worker.

The regional average is defined as the Merced Countywide average. There are substantially different travel and VMT characteristics between the three counties in the MCAG Model, and since the campus is located in Merced County and most students and staff live in Merced County (about 90 percent and 60 percent, respectively), Merced County was chosen as the regional comparison metric. The average VMT per worker includes all home-work trips; i.e., all trips made between the home and the workplace. To evaluate the transportation impacts of the Project, the faculty, staff and students added to the campus as a result of the proposed Project were considered workers and assessed relative to Metric 1. This is because, as explained earlier, the campus functions as a workplace not only for faculty and staff, but also for students who attend class, study and conduct research on-site.

**Cumulative VMT Metrics and Thresholds.** With regard to cumulative impacts, the Technical Advisory notes that “[a] project that falls below an efficiency-based threshold that is aligned with long-term environmental goals and relevant plans would have no cumulative impact distinct from the project impact. Accordingly, a finding of a less-than-significant project impact would imply a less than significant cumulative impact, and vice versa. This is similar to the analysis typically conducted for greenhouse gas emissions, air quality impacts, and impacts that utilize plan compliance as a threshold of significance.” As this Draft EIR uses an efficiency-based metric listed in **Table 4.4-1** above, a separate VMT metric that analyzes cumulative impacts are not required. Nevertheless, the University has developed Metric 2 to evaluate whether the addition of worker population to the study area as a result of campus growth would have the potential to cause the forecasted regional average worker VMT per worker to increase compared to the no project conditions. The metric and corresponding significance threshold is set forth in **Table 4.4-2** below.

**Table 4.4-2: VMT Metric and Significance Threshold for Cumulative Impacts**

Metric 2	Significance Threshold
2. Regional average worker VMT per worker	Impact would be less than significant if there is no increase in the regional average worker VMT per worker due to the Project.

Source: Fehr & Peers, June 2021

Metric 2 is designed to estimate whether the addition of new workers to the region by the proposed Project would result in a change in the forecasted (2030) regional average VMT per worker. Any increase in the forecasted regional average worker VMT per worker due to the addition of the Project population would be considered a significant cumulative impact. Conversely, if there is no increase in the forecasted regional average worker VMT per worker due to the project, the cumulative impact would be less than significant.

#### 4.4.4.2 Issues Not Discussed Further

The following checklist items from Appendix G of the *State CEQA Guidelines* have been screened out of this EIR based on a finding of no impact or less than significant impact, as determined in the Initial Study (**Appendix 1.0, Section 5.19**):

- Would the project conflict with a program, plan, ordinance or policy addressing transit, bicycle and pedestrian facilities?
- Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?
- Would the project result in inadequate emergency access?

#### 4.4.4.3 Methodology

The MCAG *Three-County Regional Travel Demand Model* (MCAG Model) was used as the basis of estimating regional and project total VMT and VMT per worker. The MCAG Model includes a base

year of 2018 and multiple forecast years, including 2020, 2030, 2035, and 2042. The MCAG Model contains land use, roadway network, and travel characteristics information for Merced, Stanislaus, and San Joaquin Counties, and divides the three-county area into several traffic analysis zones (TAZs). The 2020 model was used as the baseline model for this analysis, and the year 2030 model was used for the forecast year, consistent with the expected full occupancy of the UCM-ME Building.

The model allows calculation of VMT based on the trip generation of each land use and the trip lengths for each trip. The four basic steps are as follows:

- **Trip Generation:** The generation of trip origins and destinations of different land uses within each TAZ by trip purpose, as a function of variables such as land use type, demographics, and other socioeconomic factors.
- **Trip Distribution:** The matching of trip origins and destinations, taking into account the relative activity level at each location and the travel times between each, among other factors.
- **Travel Mode Choice:** The proportion of trips between each origin and destination that uses a particular transportation mode.
- **Route Assignment:** The allocation of trips between each origin and destination by a particular mode to a route on the roadway network.

The models were reviewed and adjusted as described below to facilitate the VMT analysis.

### MCAG Model Adjustments

**Land Use.** The MCAG Model land uses reflect the Merced County Association of Governments (MCAG) 2018 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) for the land uses and roadway network outside of the UC Merced campus. However, an examination of the land use files in the model revealed that the model does not contain the correct current and projected campus staff and student populations. Therefore, the land use information in the model for the TAZs that contain the campus was updated to reflect the correct campus populations under current conditions (year 2020) and under future scenarios (2030 No Project and 2030 With UCM-ME Building Project).

The MCAG Model does not include any development on the Virginia Smith Trust (VST) property to the south of the campus (see Figure 7-1 in Chapter 7.0). However, VST is in the process of obtaining land development approval from the County, and it is possible that some of the proposed development on the VST property might be constructed by 2030. In the event that new housing is constructed on the VST property by 2030, it is reasonable to assume that some of the students, faculty, and staff would choose to live on the VST property in close proximity to the campus, rather than in other housing more distant from the campus. This would have the effect of lowering the VMT associated with the proposed Project. Therefore, an additional analysis was prepared that includes development of a portion of the VST property. The portion assumed was based on current VST development plans, which indicate that Phases 1A – 1C may be completed

by 2030, with other phases to be constructed after 2030.<sup>12</sup> It is noted that this development has not yet been entitled, however an application for this development was submitted to Merced County in June 2021.

The 2020 Baseline and 2030 Forecast housing, population, and employment for Merced County and the City of Merced, as included in the MCAG Model, are summarized in **Table 4.4-3, MCAG Model – Regional Housing, Population, and Employment**. The land uses for the VST development south of the campus are shown in **Table 4.4-4, VST Land Uses (Phases 1A – 1C)**.

**Table 4.4-3: MCAG Model – Regional Housing, Population, and Employment**

Area	Households	Population	Employees
<b>2020 Baseline</b>			
City of Merced	30,806	79,219	33,695
Merced County	90,989	243,426	87,067
<b>2030 Forecast</b>			
City of Merced	36,538	93,908	37,717
Merced County	105,992	284,922	97,462

Source: Fehr & Peers, June 2021

Note: The values for the County include those within the City of Merced.

**Table 4.4-4: VST Land Uses (Phases 1A – 1C)**

Single Family	Multi-Family	Retail Employees <sup>1</sup>	Office Employees <sup>2</sup>
343	1,726	650	908

Source: Fehr & Peers, June 2021

<sup>1</sup> Retail employees estimated by Fehr & Peers using 3.3 employees per thousand square feet.

<sup>2</sup> Office employees estimated by Fehr & Peers using 2 employees per thousand square feet.

**Roadway Network.** The roadway networks in the MCAG Model for the years 2020 and 2030 are consistent with the MCAG RTP/SCS. The 2020 network includes completion of Campus Parkway between State Route 99 and Childs Avenue. The 2030 network includes completion of Campus Parkway to Yosemite Avenue. No adjustments were made to the model networks.

**Analysis Scenarios.** The campus populations for the baseline year (2020) and with the UCM-ME Building Project are shown in **Table 4.4-5, Study Populations by Scenario**. The UCM-ME building would accommodate a net campus-wide increase of 1,269 students, and 49 additional faculty and staff.

<sup>12</sup> Peck Planning and Development LLC. 2021. 'Building with Phasing Dates,' transmitted to UC Merced on February 26, 2021.



**Table 4.4-5: Study Populations by Scenario**

Scenario	On-Campus Students	Off-Campus Students	Total Students	Faculty and Staff
Baseline/No Project	3,667	5,333	9,000	1,269
UCM-ME Building (Net New Population)	3,667	6,602	10,269	1,318
UCM-ME Building (Total Population)	3,667	8,144	11,811	1,457

Source: UC Merced, May 2021

The following scenarios were analyzed:

- Baseline (2020) No Project
- Future (2030) No Project
- Future (2030) No Project with VST Development
- Future with UCM-ME Building Project (Net New Population)
- Future with VST Development with UCM-ME Building Project (Net New Population)
- Future with UCM-ME Building Project (Total Population)
- Future with VST Development with UCM-ME Building Project (Total Population)

Two Future (2030) No Project scenarios are analyzed in this EIR – the first one listed above assumes no UCM-ME Building Project as well as no additional growth and development on the campus under the 2020 LRDP. This scenario also assumes no development on the VST property to the south of the campus. The second Future No Project scenario assumes no UCM-ME Building Project or other growth on the campus but that the VST property would be developed with Phases 1A through 1C. The two Future with UCM-ME Building Project scenarios (both with and without the VST development) are intended to analyze the effect of just the UCM-ME Building Project on the regional VMT efficiency metrics.

The combined effect of the UCM-ME Building Project along with other campus development and growth under the 2020 LRDP through 2030 on the regional VMT efficiency metric is analyzed in **Section 7.0** under the Future with LRDP Build-out scenarios. Those scenarios analyze all of the growth on the campus through 2030 including the growth accommodated by the UCM-ME Building Project (the building project is within the development space and population projections of the 2020 LRDP).

**COVID-19 Considerations.** The current Coronavirus disease 2019 (COVID-19) pandemic has introduced a substantial amount of uncertainty in human lives. The pandemic has directly affected human behavior, requiring people to temporarily reduce mobility and make other changes to the manner in which they live. Indirectly it has affected the economy resulting in reduced consumer spending, business closures, and widespread unemployment. While some of these trends are considered short-term and are expected to reverse, it is likely that there could be more permanent changes in the ways humans live and behave in the post pandemic world. As with humans,

institutions such as UC Merced are also expected to make changes to the manner in which they operate. As a result of the pandemic, UC Merced will likely consider operational changes such as increases in telework and remote learning. Similarly, it is reasonable to assume that the travel behaviors of the rest of the regional population will likely change in the post pandemic world, including more remote learning, work, and online shopping. The analysis of VMT in this section is model-based and reflects trip generation rates and travel behaviors that are pre-pandemic. The net effect of the pandemic on UC Merced development and operations, including its effect on the campus VMT metrics (including the VMT metrics for the UCM-ME Building Project), as well as the regional average VMT metrics, cannot be predicted at this point in time without speculation. However, the analysis presented below reflect a good faith and reasonable effort to analyze VMT impacts with the best available analysis tools and assumptions.

#### 4.4.4.4 2020 LRDP Mitigation Measures included in the Proposed Project

Transportation-related mitigation measures from the 2020 LRDP SEIR are no longer applicable to new development on the campus, including the proposed Project. The mitigation measures are considered not “feasible” as defined under CEQA Guidelines Section 15126.4, as they were designed specifically to reduce automobile delay at roadway intersections which is no longer considered a significant impact on the environment under CEQA. As stated above, consistent with SB 743, CEQA now requires that transportation impacts be evaluated based on VMT, rather than level of service. See **Section 7.4.5** of this Draft EIR for additional discussion regarding the elimination of the previous transportation-related mitigation measures from the 2020 LRDP SEIR certified in March 2020.

#### 4.4.5 Project Impacts and Mitigation Measures

##### **UCM-ME Impact TRANS-1 Implementation of the proposed Project would not conflict with a program, plan, ordinance or policy addressing roadway facilities. (*Less than Significant*)**

The site planning and other aspects of the proposed UCM-ME Building Project would ensure the integration of the new building within the existing campus fabric. The site selection criteria that were used to identify the preferred site included the following: site suitability to ensure compatibility with the physical context of the campus; location and proximity to the academic core; community access; pedestrian access; future site considerations, and infrastructure connections. Automobile access to the site would be via the Bellevue Road extension and Cottonwood Loop Road. To facilitate community participation in research studies in developmental psychology and community-based public health initiatives, a moderately-sized parking lot with 60 spaces would be provided adjacent to the proposed building with direct access to Cottonwood Loop Road. The parking lot would also include electrical vehicle stalls/charging stations.

The proposed Project would include a pedestrian link from the UCM-ME Building to the Academic Quad and Academic Walk, a main pedestrian path along the eastern side of the campus. This connection would allow the building functions to be fully integrated into the academic core of the UC Merced campus. The proposed Project would also include bicycle spaces, showers, and locker rooms in order to encourage the use of bicycles for travel to the site. Bicycle spaces would be provided consistent with LEED v4.1 requirements.

Consistent with all other development on the campus, the proposed Project would continue to be completed in a manner that it is compliant with the Sustainability Policy and the UC Merced Sustainability Strategic Plan. As the proposed Project contains design components that enhance and encourage the utilization of alternative modes of transportation to reduce dependence on single-occupant vehicles, the proposed Project is generally consistent with the transportation-related goals and policies in the University's Sustainability Policy and UC Merced's Sustainability Strategic Plan. In addition, the roadway connection to the UCM-ME Building from Cottonwood Loop Road would be designed to comply with the UC Facilities Manual, which requires UC Merced to comply with the Title 24 California Building Standards Code, Parts 1-12, and all amendments. To the extent indicated in the UC Facilities Manual, UC Merced would also comply with current best practice roadway design guidance such as the Caltrans Highway Design Manual and the California Manual on Uniform Traffic Control Devices. Thus, UC Merced would ensure the proposed on-campus transportation network changes as a result of the proposed Project meet applicable University and industry standard roadway design and safety guidelines.

As indicated above in **Section 4.4.3.3**, UC Merced is a constitutionally created state agency that is not subject to the policies and requirements of Merced County or the City of Merced whenever using property under its control in furtherance of its educational mission. The proposed Project's circulation changes would be wholly contained on the UC Merced campus and would not impede the County's or City's off-campus roadway network infrastructure improvements. The roadway modifications would also not impede the implementation of regional, County, and City goals and policies related to circulation and connectivity, including RTP/SCS Goal 1 (*Provide a safe and efficient roadway system that accommodates the demand*), Merced County General Plan Goal CIR-1 (*Maintain an efficient roadway system for the movement of people and goods*), and City of Merced General Plan Policy T-1.2 (*Coordinate circulation and transportation planning with pertinent regional, state, and federal agencies*). Further, while the RTP/SCS and Merced County General Plan include policies related to LOS, any conflict of the proposed Project with these policies would not constitute an impact to the environment under CEQA because as of July 1, 2020, VMT (not LOS) is the legally acceptable metric for evaluation of transportation-related environmental impacts pursuant to CEQA, and automobile delay is not recognized as an environmental impact under the *State CEQA Guidelines*. Furthermore, as reflected under **UCM-ME Impact TRANS-2** below, the VMT associated with the proposed Project would not exceed an applicable VMT threshold of significance. By resulting in a VMT per worker that is substantially lower than that of the region, the proposed Project would essentially not conflict with the provision of a safe and efficient regional road system that accommodates the demand for the movement of people and goods.

Therefore, the proposed Project would not result in conflicts with programs, plans, ordinances, or policies addressing roadway facilities. This impact would be less than significant.

**Mitigation Measures:** No mitigation is required.

**UCM-ME Impact TRANS-2** Implementation of the proposed Project would not exceed an applicable VMT threshold of significance under 2030 with Project conditions and therefore would not conflict with State CEQA Guidelines Section 15064.3, subdivision (b). (*Less than Significant*)

The UCM-ME Building Project would accommodate additional students and faculty/staff but would not include any new campus housing. The proposed Project would include development of an approximately 190,000 outside gross square feet (ogsf)<sup>13</sup> academic building to provide facilities for the Campus' ME and related programs and accommodate a total of about 2,999 persons, of which about 1,318 persons (1,269 students and 49 staff/faculty) would be new while the remaining population would relocate from existing buildings on the campus. The transportation (VMT) impacts of the proposed Project based on net new population (about 1,318 persons) as well as total population (about 2,999 persons) are evaluated under 2030 conditions below. The analysis evaluates the change in VMT due to the project-related population using two metrics, and under two scenarios – the first assuming no development on the VST property south of the campus and the second assuming that a portion of the VST property would be developed with a mixed-use community.

#### 4.4.5.1 Baseline VMT Metrics

**Table 4.4-6, 2020 Baseline VMT Results** presents the Baseline VMT metrics based on the current (2020) populations of the campus and the region (Merced County). At the present time, the campus generates a substantially lower VMT per worker than the county as a whole: 14.52 VMT per campus worker versus a regional average of 19.79 VMT per worker. Factors that underlie this result for the campus include the following:

- Students, both on-campus residents and commuters, tend to have lower auto ownership than typical county residents.
- The campus is located near Merced County's largest population center, providing greater opportunities for off-campus residents to live relatively close to the campus.

**Table 4.4-6: 2020 Baseline VMT Results**

VMT Type	Metric	Regional	Campus
Worker	Employees	87,067	1,269
	Students	19,800	9,000
	Home-Work VMT	2,114,776	149,130
	<b>VMT per Worker</b>	<b>19.79</b>	<b>14.52</b>

Source: Fehr & Peers, June 2021

Based on the existing regional average of 19.79 VMT per worker, the threshold that is used below to evaluate the Project's impact is calculated to be 16.82 VMT per worker (15% below the existing VMT per worker). If the Project's VMT per worker is less than 16.82 VMT per worker, the Project's impact would be less than significant.

<sup>13</sup> "Outside gross square feet (ogsf)" includes the interior building area within the enclosed structure as well as the covered, unenclosed corridors, including walkways, porches, balconies, etc.

#### 4.4.5.2 UCM-ME Building Project VMT Metrics (Net New Population & No VST Development Assumed)

**Table 4.4-7, UCM-ME Building Project VMT Impact – Metric 1 (Based on Net New Population)** presents the VMT results for the UCM-ME Building Project based on net new population, relative to Metric 1. These results are derived based on land uses included in the MCAG Model which do not include the development of VST Phases 1A – 1C to the south of the campus. As the table shows, VMT per worker for the campus for the 2030 with ME Project scenario would be 14.31 VMT per worker, which is lower than the Metric 1 threshold value of 16.82 VMT per worker. Therefore, the impact of the Project would be less than significant.

**Table 4.4-7: UCM-ME Building Project VMT Impact – Metric 1  
(Based on Net New Population & No VST Development)**

VMT Type	Metric	2020	2030 No Project	2030 With UCM-ME Building (net new population)
Worker	Employees (Campus)	1,269	1,269	1,318
	Students (Campus)	9,000	9,000	10,269
	Home-work VMT (Campus)	149,130	149,130	165,824
	VMT per worker (Campus)	14.52	14.52	14.31
	Regional Average VMT per worker (County)	19.79	20.76	20.58
	Metric 1 Threshold: VMT per worker that would be 15% below the existing regional average	16.82	---	---
	Is the Project VMT per worker at least 15% below the existing regional average?	---	---	Yes

Source: Fehr & Peers, June 2021

#### 4.4.5.3 UCM-ME Building Project VMT Metrics (Net New Population & With VST Development Assumed)

**Table 4.4-8, UCM-ME Building Project VMT Impact – Metric 1 (Based on Net New Population & With VST Development)** presents the VMT results for the ME Project relative to Metric 1. These results are derived based on land uses in the MCAG Model with the development of VST Phases 1A – 1C incrementally added to the model. As the table shows, VMT per worker for the campus for the 2030 with ME Project scenario would be 14.25 VMT per worker, which is lower than the Metric 1 threshold value of 16.82 VMT per worker. Therefore, the impact of the Project would be less than significant.

**Table 4.4-8: UCM-ME Building Project VMT Impact – Metric 1  
(Based on Net New Population & With VST Development)**

VMT Type	Metric	2020	2030 No Project	2030 With UCM-ME Building (net new population)
Worker	Employees (Campus)	1,269	1,269	1,318
	Students (Campus)	9,000	9,000	10,269
	Home-work VMT (Campus)	149,130	149,559	165,061
	VMT per worker (Campus)	14.52	14.56	14.25
	Regional Average VMT per worker (County)	19.79	20.74	20.50
	Metric 1 Threshold: VMT per worker that would be 15% below regional average	16.82	---	---
	Is the Project VMT per worker at least 15% below the existing regional average?	---	---	Yes

Source: Fehr & Peers, June 2021

#### 4.4.5.4 UCM-ME Building Project VMT Metrics (Total Population & No VST Development Assumed)

**Table 4.4-9, UCM-ME Building Project VMT Impact – Metric 1 (Based on Total Population & No VST Development)** presents the VMT results for the UCM-ME Building Project based on the total population that would occupy the building, relative to Metric 1. These results are derived based on land uses included in the MCAG Model which do not include the development of VST Phases 1A – 1C to the south of the campus. As the table shows, VMT per worker for the campus for the 2030 with ME Project scenario would be 14.31 VMT per worker, which is lower than the Metric 1 threshold value of 16.82 VMT per worker. Therefore, the impact of the Project would be less than significant.

**Table 4.4-9: UCM-ME Building Project VMT Impact – Metric 1  
(Based on Total Population & No VST Development)**

VMT Type	Metric	2020	2030 No Project	2030 With UCM-ME Building (total population)
Worker	Employees (Campus)	1,269	1,269	1,457
	Students (Campus)	9,000	9,000	12,811
	Home-work VMT (Campus)	149,130	149,130	189,865
	VMT per worker (Campus)	14.52	14.52	14.31
	Regional Average VMT per worker (County)	19.79	20.76	20.58
	Metric 1 Threshold: VMT per worker that would be 15% below the existing regional average	16.82	---	---
	Is the Project VMT per worker at least 15% below the existing regional average?	---	---	Yes

Source: Fehr & Peers, June 2021

#### 4.4.5.5 UCM-ME Building Project VMT Metrics (Total Population & With VST Development Assumed)

**Table 4.4-10, UCM-ME Building Project VMT Impact – Metric 1 (Based on Total Population & With VST Development)** presents the VMT results for the ME Project based on total population relative to Metric 1. These results are derived based on land uses in the MCAG Model with the development of VST Phases 1A – 1C incrementally added to the model. As the table shows, VMT per worker for the campus for the 2030 with ME Project scenario would be 14.25 VMT per worker, which is lower than the Metric 1 threshold value of 16.82 VMT per worker. Therefore, the impact of the Project would be less than significant.

**Mitigation Measures:** No mitigation is required.



**Table 4.4-10: UCM-ME Building Project VMT Impact – Metric 1  
(Based on Total Population & With VST Development)**

VMT Type	Metric	2020	2030 No Project	2030 With UCM-ME Building (total population)
Worker	Employees (Campus)	1,269	1,269	1,457
	Students (Campus)	9,000	9,000	11,811
	Home-work VMT (Campus)	149,130	149,559	189,069
	VMT per worker (Campus)	14.52	14.56	14.25
	Regional Average VMT per worker (County)	19.79	20.74	20.50
	Metric 1 Threshold: VMT per worker that would be 15% below regional average	16.82	---	---
	Is the Project VMT per worker at least 15% below the existing regional average?	---	---	Yes

Source: Fehr & Peers, June 2021

#### 4.4.6 Cumulative Impacts and Mitigation Measures

The cumulative transportation impact assessment below focuses on Significance Criterion 2 (i.e., bullet number two as reflected in **Section 4.4.4.1**), which is based on whether the proposed Project would conflict or be inconsistent with *State CEQA Guidelines* 15064.3, subdivision (b). With regard to Significance Criterion 1, a separate cumulative impact analysis is not required. This is because the impact of a project under Significance Criterion 1 is site-specific and not cumulative in nature.

##### Cumulative Impact C-TRANS-1

**Implementation of the proposed Project would not exceed an applicable VMT threshold of significance under cumulative conditions. (*Less than Significant*)**

As noted earlier, according to the Technical Advisory, a project that falls below an efficiency-based threshold that is aligned with long-term environmental goals and relevant plans would have no cumulative impact distinct from the project impact. As reflected in the analysis in **Section 4.4.5** above, the proposed Project would lower the campus VMT per worker compared to 2030 No Project conditions and would not exceed an applicable VMT threshold of significance. Therefore, based on the guidance in the Technical Advisory, the proposed Project would result in a less-than significant cumulative impact with respect to VMT.

Although not required, the University has completed an additional analysis of the proposed Project's cumulative impact by modeling whether the additional campus population associated with the Project would have the potential to increase the forecasted regional average VMT per capita. That analysis, based on Metric 2, is presented below.

#### 4.4.6.1 UCM-ME Building Project VMT Metrics (Based on Net New Population and No VST Development Assumed)

**Table 4.4-11, UCM-ME Building Project VMT Impact – Metric 2 (Based on Net New Population & No VST Development)** presents the VMT results for the UCM-ME Building Project based on net new population relative to Metric 2. These results are derived based on land uses included in the MCAG Model which do not include the development of VST Phases 1A – 1C south of the campus. As the table shows, while the regional average VMT per worker would increase from 19.79 in 2020 to 20.76 in 2030 in the absence of the development of the proposed Project, the addition of the Project population would cause the forecasted regional average VMT per worker to decrease to 20.58. Thus, implementation of the proposed Project would not contribute to an increase in the forecasted regional average VMT metric and therefore would result in a less-than-significant cumulative impact.

**Table 4.4-11: UCM-ME Building Project VMT Impact – Metric 2  
(Based on Net New Population & No VST Development)**

VMT Type	Metric	2020	2030 No Project	2030 With UCM-ME Building (net new population)
Worker	Employees	87,067	97,462	97,511
	Students	19,800	19,800	21,069
	Home-work VMT	2,114,776	2,434,438	2,440,064
	<b>VMT per worker</b>	<b>19.79</b>	<b>20.76</b>	<b>20.58</b>
	Metric 2 Threshold: Does Regional VMT per Worker Increase with Project?	---	---	No

Source: Fehr & Peers, June 2021

#### 4.4.6.2 UCM-ME Building Project VMT Metrics (Based on Net New Population & With VST Development Assumed)

**Table 4.4-12, UCM-ME Building Project VMT Impact – Metric 2 (Based on Net New Population & With VST Development)** presents the VMT results for the ME Project, in combination with VST development, relative to Metric 2. These results are derived based on land uses in the MCAG Model with the development of VST Phases 1A – 1C incrementally added to the model. As the table shows, while the regional average VMT per worker would increase from 19.79 in 2020 to 20.74 in 2030 in the absence of the development of the proposed Project, but the addition of the Project population would cause the forecasted regional average VMT per worker to decrease to 20.50. Thus, implementation of the proposed Project would not contribute to an increase in the forecasted regional average VMT metric and therefore would result in a less-than-significant cumulative impact.

**Table 4.4-12: UCM-ME Building Project VMT Impact – Metric 2  
(Based on Net New Population & With VST Development)**

VMT Type	Metric	2020	2030 No Project	2030 With UCM-ME Building (net new population)
Worker	Employees	87,067	99,220	99,269
	Students	19,800	19,800	21,069
	Home-work VMT	2,114,776	2,468,186	2,467,159
	<b>VMT per worker</b>	<b>19.79</b>	<b>20.74</b>	<b>20.50</b>
	Metric 2 Threshold: Does Regional VMT per Worker Increase with Project?	---	---	No

Source: Fehr & Peers, June 2021

#### 4.4.6.3 UCM-ME Building Project VMT Metrics (Based on Total Population and No VST Development Assumed)

**Table 4.4-13, UCM-ME Building Project VMT Impact – Metric 2 (Based on Total Population & No VST Development)** presents the VMT results for the UCM-ME Building Project based on total population that would occupy the building, relative to Metric 2. These results are derived based on land uses included in the MCAG Model which do not include the development of VST Phases 1A – 1C south of the campus. As the table shows, the addition of the Project-related population would cause the forecasted regional average VMT per worker to decrease to 20.58. Thus, implementation of the proposed Project would not contribute to an increase in the forecasted regional average VMT metric and therefore would result in a less-than-significant cumulative impact.

**Table 4.4-13: UCM-ME Building Project VMT Impact – Metric 2  
(Based on Total Population & No VST Development)**

VMT Type	Metric	2020	2030 No Project	2030 With UCM-ME Building (total population)
Worker	Employees	87,067	97,462	97,650
	Students	19,800	19,800	22,611
	Home-work VMT	2,114,776	2,434,438	2,474,971
	<b>VMT per worker</b>	<b>19.79</b>	<b>20.76</b>	<b>20.58</b>
	Metric 2 Threshold: Does Regional VMT per Worker Increase with Project?	---	---	No

Source: Fehr & Peers, June 2021

#### 4.4.6.4 UCM-ME Building Project VMT Metrics (Based on Total Population & With VST Development Assumed)

**Table 4.4-14, UCM-ME Building Project VMT Impact – Metric 2 (Based on Total Population & With VST Development)** presents the VMT results for the ME Project based on the total population that would occur the building, in combination with VST development, relative to Metric 2. These results are derived based on land uses in the MCAG Model with the development of VST Phases 1A – 1C incrementally added to the model. As the table shows, the addition of the Project-related population would cause the forecasted regional average VMT per worker to decrease to 20.50. Thus, implementation of the proposed Project would not contribute to an increase in the forecasted regional average VMT metric and therefore would result in a less-than-significant cumulative impact.

**Table 4.4-14: UCM-ME Building Project VMT Impact – Metric 2  
(Based on Net New Population & With VST Development)**

VMT Type	Metric	2020	2030 No Project	2030 With UCM-ME Building (total population)
Worker	Employees	87,067	99,220	99,408
	Students	19,800	19,800	22,611
	Home-work VMT	2,114,776	2,468,186	2,501,390
	<b>VMT per worker</b>	<b>19.79</b>	<b>20.74</b>	<b>20.50</b>
	Metric 2 Threshold: Does Regional VMT per Worker Increase with Project?	---	---	No

Source: Fehr & Peers, June 2021

For the effect of the UCM-ME Building Project combined with other growth and development at UC Merced through 2030 under the 2020 LRDP, please refer to **Section 7.0** of this Draft EIR. That analysis also shows that campus growth under the 2020 LRDP, which includes growth accommodated by the UCM-ME Building Project, would result in a less-than-significant cumulative impact with respect to VMT.

**Mitigation Measures:** No mitigation is required.

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## 4.5 TRIBAL CULTURAL RESOURCES

### 4.5.1 Introduction

This section of the Draft Environmental Impact Report (EIR) evaluates the potential impacts to Tribal Cultural Resources (TCRs) from the implementation of the proposed UC Merced Medical Education (UCM-ME) Building Project (“proposed Project” or “Project”). TCRs are sites, features, places, cultural landscapes, sacred places and objects with cultural value to a California Native American tribe. As detailed later in this section, potential impacts of the proposed Project on TCRs are evaluated based on consultation with interested Native American tribes pursuant to Assembly Bill (AB) 52.

### 4.5.2 Environmental Setting

The environmental setting information in this section is derived from 2020 Long Range Development Plan (LRDP) Subsequent EIR (SEIR)<sup>1</sup> and the 2009 LRDP Environmental Impact Statement (EIS)/EIR.<sup>2</sup>

#### 4.5.2.1 Prehistory

Detailed information regarding the prehistoric occupation of the campus vicinity is presented in Section 4.5, Cultural Resources, in the 2009 LRDP EIS/EIR. As noted in Section 4.5.2.1 of the EIS/EIR, although few archaeological sites demonstrate evidence of human occupation of the San Joaquin Valley during the late Pleistocene and early Holocene epochs (12,000–6000 B.C.), this is likely a product of the archaeological record itself rather than lack of human habitation in the valley. Most Pleistocene- and Holocene-epoch archaeological sites are deeply buried in accumulated gravels and silts or have been eroded away.<sup>3</sup>

The earliest sites in the San Joaquin Valley are believed to be the Farmington Complex sites in San Joaquin and Stanislaus Counties, the Tranquility site in Fresno County, and the Witt site in Kings County. Archaeologists have identified fluted projectile points on the margin of Tulare Lake. The points, which are morphologically similar to Clovis points, may date as early as 11,000–12,000 years ago. No fluted projectile points have been reported in the Merced vicinity to date.<sup>4</sup>

The closest-available prehistoric chronology for the Project area comes from the west side of the San Joaquin Valley as a result of the excavations at several sites during archaeological efforts for reservoir construction of the San Luis, Los Banos, and Little Panoches Reservoirs. Four cultural complexes were identified in the archaeological data collected during these excavations. These complexes are assigned to timespans for the development of a cultural chronology for the area and are represented by archaeological assemblages that are summarized here.

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<sup>1</sup> University of California, Merced. 2019. *UC Merced 2020 Long-Range Development Plan Recirculated Draft Subsequent Environmental Impact Report*, December 2019.

<sup>2</sup> University of California, Merced. 2009. *UC Merced and University Community Project Environmental Impact Statement/Environmental Impact Report*, March 2009.

<sup>3</sup> University of California, Merced. 2019. op. cit.

<sup>4</sup> Ibid.

The Positas Complex (5200–4600 B.P.) is characterized by small, shaped mortars; cylindrical pestles; millings; perforated flat cobbles; small flake scrapers; handstones; and spire-lopped *Olivella* beads. The perforated cobbles resemble the cog-stones documented at many southern Californian archaeological sites, prompting some researchers to posit a cultural relationship between the Positas Complex and southern Californian cultures. To date, archaeologists have not identified burials or structures associated with the Positas Complex.<sup>5</sup>

The Pacheco Complex (4600–1600 B.P.) consists of two subcomplexes: Pacheco Complex A (3600–1600 B.P.) and Pacheco Complex B (4600–3600 B.P.). Pacheco Complex B is characterized by foliate bifaces, rectangular shell ornaments, flexed burials, and thick rectangular *Olivella* beads. Sites attributed to Pacheco Complex A exhibit spire-ground *Olivella* beads, perforated canine teeth, bone awls, whistles, grass saws, large stemmed and side-notched points, flexed burials, millings, mortars, and pestles. Domestic structure remnants attributed to Pacheco Complex A were probably circular in outline and 10 to 12 feet in diameter.<sup>6</sup>

The Gonzaga Complex (1600–1000 B.P.) is characterized by extended and flexed burials; bowl mortars; shaped pestles; squared and tapered-stem points; few bone awls; distinctive shell ornaments; and thin rectangular, split-punched, and oval *Olivella* beads. Projectile points are rare in comparison to the Pacheco Complex and are predominantly made from silicate stones. Archaeologists have reported a few fragmentary serrated projectile points fashioned from obsidian. Architectural features from the Gonzaga Complex are larger than those reported from earlier complexes. Archaeologists hypothesize that the Gonzaga Complex marks the arrival of the Yokuts in the San Joaquin Valley.<sup>7</sup>

The Panoche Complex (400–200 B.P.) is recognized by large circular structures (pits), flexed burials and primary and secondary cremations, varied mortars and pestles, bone awls, whistles, small side-notched points, clamshell disk beads, and other bead types. The Panoche Complex appears to represent Yokuts occupation of the valley.<sup>8</sup>

#### 4.5.2.2 Ethnography

The indigenous inhabitants of the area in which the proposed Project is located are known as the Northern Valley Yokuts. “Yokuts” is a term applied to a large and diverse number of peoples inhabiting the San Joaquin Valley and Sierra Nevada foothills of central California. The Yokuts cultures include three primary divisions, corresponding to broad environmental zones: the Southern San Joaquin Valley Yokuts, the Foothill Yokuts, and the Northern San Joaquin Valley Yokuts.<sup>9</sup>

The Yokuts languages, of which there are three subdivisions, belong to the Yokutsan family, Penutian stock. Each of the primary divisions included several dialects. The Northern Valley Yokuts

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<sup>5</sup> University of California, Merced. 2019. op. cit.

<sup>6</sup> Ibid.

<sup>7</sup> Ibid.

<sup>8</sup> Ibid.

<sup>9</sup> Ibid.



lived in the northern San Joaquin Valley from around Bear Creek north of Stockton to the bend in the San Joaquin River near Mendota.<sup>10</sup>

There was no Yokuts tribal organization that encompassed the whole of the peoples speaking Yokutsan languages, or even a tribal organization that encompassed an entire primary division, such as Foothill Yokuts. These are linguistic and geographic designations only. Similar to most Native American groups in California, the largest political entity among the Yokuts was that of the tribelet. A tribelet consisted of a large village and a few smaller surrounding villages. Larger villages and tribelets had a chief or headman<sup>3</sup>an advisory position that was passed from father to son.<sup>11</sup>

In general, the Yokuts were seasonally mobile hunter-gathers with semi-permanent villages. Seasonal movements to temporary camps would occur to exploit food resources in other environmental zones. The primary difference between the various Yokuts groups rests largely on the differences in available resources in their territory. The Northern Valley Yokuts relied heavily on acorns as a food staple, which was processed into a thick soup, along with salmon and other fish, grass seeds and tule roots (which were processed into meal), and probably waterfowl, tule elk, and pronghorn.<sup>12</sup>

Principal settlements were located on the tops of low mounds, on or near the banks of the larger watercourses. Settlements were composed of single-family dwellings, sweathouses, and ceremonial assembly chambers. Dwellings were small and lightly constructed, semi-subterranean and oval. The public structures were large and earth covered. The establishment of semi-permanent settlements was fostered by the abundance of riverine resources in the area.<sup>13</sup>

The Yokuts first came into contact with Europeans when Spanish explorers visited the area in the late 1700s. The conversion of individuals to Christianity, various epidemics in the 1800s, and the arrival of settlers and miners all contributed to the disintegration of Yokuts culture. Although nearly obliterated, the descendants of the Northern Valley Yokuts still live in Merced County today and continue to rebuild their cultural identity.<sup>14</sup>

### 4.5.3 Regulatory Considerations

#### 4.5.3.1 Federal Laws and Regulations

The Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) protects Native American remains, including Native American graves on federal and tribal lands, and recognizes tribal authority over the treatment of unmarked graves. NAGPRA prohibits the selling of Native American remains and provides guidelines for the return of Native American human remains and cultural objects from any collection receiving federal funding, such as museums, universities, or governments. Noncompliance with NAGPRA can result in civil and criminal penalties.

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<sup>10</sup> Ibid.

<sup>11</sup> University of California, Merced. 2019. op. cit.

<sup>12</sup> Ibid.

<sup>13</sup> Ibid.

<sup>14</sup> Ibid.

#### 4.5.3.2 State Laws and Regulations

**Assembly Bill 52.** Assembly Bill (AB) 52, which was approved in September 2014 and became effective on July 1, 2015, requires that CEQA lead agencies consult with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of a proposed project, if requested by the tribe. A provision of the bill, chaptered in CEQA Section 21084.12, also specifies that a project with an effect that may cause a substantial adverse change in the significance of a TCR is a project that may have a significant effect on the environment.

Defined in Section 21074(a) of the Public Resources Code, TCRs are:

1. Sites, features, places, cultural landscapes, sacred places and objects with cultural value to a California Native American tribe that are either of the following:
  - a. Included or determined to be eligible for inclusion in the California Register of Historical Resources; or
  - b. Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.
2. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

TCRs are further defined under Section 21074 as follows:

- a. A cultural landscape that meets the criteria of subdivision (a) is a TCR to the extent that the landscape is geographically defined in terms of the size and scope of the landscape; and
- b. A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a “non-unique archaeological resource” as defined in subdivision (h) of Section 21083.2 may also be a TCR if it conforms with the criteria of subdivision (a).

Mitigation measures for TCRs must be developed in consultation with the affected California Native American tribe, pursuant to Section 21080.3.2, or according to Section 21084.3. Section 21084.3 identifies mitigation measures that include avoidance and preservation of TCRs and treating TCRs with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource.

**Assembly Bill 978.** In 2001, the State of California passed AB 978, the California Native American Graves Protection and Repatriation Act (CalNAGPRA), requiring all state agencies and museums that receive state funding and that have possession or control over collections of human remains or cultural items to provide a process for the identification and repatriation of these items to the appropriate tribes. The bill also created a Repatriation Oversight Commission with oversight

authority. The intent of the legislation was to cover gaps in NAGPRA specific to the State of California.

**Assembly Bill 275.** AB 275, which was enacted into law in 2020, was designed to strengthen CalNAGPRA by revising various definitions including, among others, “the definition of ‘California Indian tribe’ to include both a tribe that meets the federal definition of Indian tribe and a tribe that is not recognized by the federal government, but that is a native tribe located in California that is on the list maintained by the Native American Heritage Commission (NAHC),” as well as the “definition of ‘museum’ to specify it receives state funds.” AB 275 requires every state agency, as defined, with significant interaction with tribal issues, peoples, or lands, including the University of California, to designate one or more liaisons for the purpose of engaging in consultation with California Native American tribes on the tribal contact list. The University of California is also required to adopt and implement certain updated policies and procedures to better implement NAGPRA. AB 275 also revises and recasts the process by which a direct lineal descendent or a California Indian tribe can request the return of human remains or cultural items.

**California Register of Historical Resources.** The State Historical Resources Commission designed the California Register of Historical Resources (CRHR) for use by state and local agencies, private groups and citizens to identify, evaluate, register and protect California's historical resources. The CRHR is the authoritative guide to the state's significant historical and archeological resources.

The CRHR program encourages public recognition and protection of resources of architectural, historical, archeological and cultural significance, identifies historical resources for state and local planning purposes, determines eligibility for state historic preservation grant funding and affords certain protections under CEQA. The criteria for designation include:

- Associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States (Criterion 1)
- Associated with the lives of persons important to local, California or national history (Criterion 2)
- Embodies the distinctive characteristics of a type, period, region or method of construction or represents the work of a master or possesses high artistic values (Criterion 3)
- Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California or the nation (Criterion 4)

#### **4.5.4 Impacts and Mitigation Measures**

##### **4.5.4.1 Significance Criteria**

This EIR uses significance criteria derived from Appendix G of the *State CEQA Guidelines*. For the purposes of this EIR, impacts related to TCRs resulting from the implementation of the proposed Project would be considered significant if the proposed Project would cause:

- A substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is

geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

- listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resource Code Section 5020.1(k); or
- a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

#### 4.5.4.2 Issues Not Discussed Further

Impacts on TCRs are analyzed below, consistent with the significance criteria derived from Appendix G of the State *CEQA Guidelines*.

#### 4.5.4.3 Methodology

Although AB 52 requires the Native American tribes to request notification of projects that involve an EIR or a Mitigated Negative Declaration, UC Merced proactively reached out to the NAHC and requested a list of Native American tribes with traditional lands or cultural places located within the vicinity of the campus. Using the list of tribes identified by the NAHC for the campus, UC Merced sent out via certified mail 12 letters to representatives of the identified tribes on March 31, 2021, informing them of the commencement of CEQA review of the proposed UCM-ME Building Project and asking them if they wished to consult regarding this proposed Project pursuant to AB 52. Pursuant to AB 52, the tribes have 30 days from the receipt of the letter to request consultation with UC Merced. No requests for formal consultation were received by UC Merced. A cultural resources study, which included a records search at the Central California Information Center (CCIC) and a pedestrian field survey on February 3, 2021, was also conducted to identify whether historical or archaeological cultural resources may be present within the Project area (**Appendix 5.0**).<sup>15</sup>

#### 4.5.4.4 2020 LRDP Measures included in the Proposed Project

The 2009 LRDP EIS/EIR and 2020 LRDP SEIR present mitigation measures that are applicable to the proposed Project. These previously adopted mitigation measures are a part of the 2020 LRDP and would not be readopted as part of the proposed Project, as implementation of these measures is assumed as part of the Project impact analysis. The following 2020 LRDP mitigation measures are applicable to the proposed Project:

<b>2020 LRDP MM CUL-2</b>	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
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<sup>15</sup> LSA. 2021. *Cultural Resources Survey for the Health and Behavioral Sciences-Medical Education (HBS-ME) Building Project at the University of California, Merced*. June.

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.

**2020 LRDP MM CUL-3**

If human remains of Native American origin are discovered during ground disturbing activities, the Campus 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 American 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 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.

**4.5.5 Project Impacts and Mitigation Measures**

**UCM-ME Impact TCR-1 The proposed Project would not cause a substantial adverse change in the significance of a tribal cultural resource as defined in Section 21074. (*Less than Significant*)**

As noted above, UC Merced sent out notification letters on March 31, 2021, to 12 tribes identified by the NAHC for the region around the Project site, and no requests for formal consultation were received by UC Merced. One tribe, the Tuolumne Band of Me-Wuk Indians, responded on April 13, 2021, indicating the tribe had no concerns, nor had any knowledge of tribal cultural resources within the Project area. At the time that the notification letters were sent to the tribes, the approximately 8-acre area where the proposed storm water detention basin would be located had not been identified for the location of that project element. However, the area is immediately south of the area that was identified in the notification letters as the project area, and as indicated above, the one tribe that responded did not express any concerns about the Project. Furthermore, the storm water detention area was included in the project area that was defined for the AB 52 consultation conducted for the 2020 LRDP SEIR, and no requests for formal consultation were received by UC

Merced as part of the AB 52 consultation that occurred for the 2020 LRDP SEIR. For these reasons, UC Merced did not reinitiate AB 52 consultation for this Project due to the project area expansion.

Based on geologic mapping, the portions of the Project site with the greatest potential for buried precontact archaeological deposits are those located on the Pleistocene to Holocene-aged alluvium of the Riverbank Formation.<sup>16</sup> This includes much of the proposed staging area, as reflected in **Figure 3-2**. The soil survey information indicates that the landforms in this area consists of stream terraces and remnant alluvial fans. These landform types are generally considered to have higher archaeological sensitivity as they may have offered habitable surfaces in proximity to streams or rivers in the past. The typical profiles for the mapped soil units suggest the alluvium in this portion of the Project site could reach considerable depth and thus have the potential to contain deeply buried paleosols.

Based on surveys conducted prior to and in conjunction with the preparation of the 2020 LRDP SEIR, no known prehistoric sites are located on, adjacent to, or near the Project site. Furthermore, no cultural resources have been encountered during grading and excavation conducted on the campus since 2002 when the construction of the campus was commenced. Expansion of the campus in the late 2010s resulted in extensive grading, cutting, and filling in the Project site, which reduced the likelihood of buried intact cultural resources being present. Finally, the February 3, 2021 field survey (see **Appendix 5.0**) that was conducted on the Project site determined that no cultural resources were visible on the Project site.<sup>17</sup> While the Project site was expanded to the south to include the proposed storm water detention basin subsequent to the 2021 cultural resources survey, no known prehistoric sites were identified in this area during previous surveys conducted prior to and in conjunction with the 2020 LRDP SEIR. Therefore, the Project site is not expected to contain any TCRs.

Earthmoving activities that could potentially disturb previously undiscovered buried archaeological resources, including human remains, which could be considered TCRs, could occur with implementation of the proposed Project. As such, the proposed Project would be required to implement **2020 LRDP Mitigation Measures CUL-2** and **CUL-3** to ensure that should cultural resources, including human remains, be encountered, they would be protected, documented, and preserved, as appropriate. In summary, the proposed Project would not result in a significant impact on TCRs.

**Mitigation Measures:** No mitigation measures are required.

#### 4.5.6 Cumulative Impacts and Mitigation Measures

**Cumulative Impact C-TCR-1**      **Implementation of the proposed Project would not result in a significant cumulative impact on tribal cultural resources. (*Less than Significant*)**

<sup>16</sup> LSA. 2021. *Cultural Resources Survey for the Health and Behavioral Sciences-Medical Education (HBS-ME) Building Project at the University of California, Merced*. June.

<sup>17</sup> LSA. 2021. *Cultural Resources Survey for the Health and Behavioral Sciences-Medical Education (HBS-ME) Building Project at the University of California, Merced*. June.

The 2020 LRDP SEIR contains an analysis of the cumulative impact of campus development under the 2020 LRDP along with other foreseeable development in Merced County and the City of Merced on cultural resources and human remains under Cumulative Impact CUL-1. That analysis concluded that the cumulative impact on cultural resources and human remains would be less than significant because campus projects would be required to implement appropriate mitigation measures to avoid or minimize impacts to significant resources. Because the same measures would avoid and minimize impacts to TCRs, it is reasonable to conclude that the cumulative impacts associated with Project implementation would result in a less than significant cumulative impact on TCRs. Furthermore, as noted above, in compliance with CEQA, UC Merced consulted with Native American tribes pursuant to AB 52 pertaining to the proposed Project. Notification letters were sent out to 12 tribes identified by the NAHC for the region around the Project site, and no requests for formal consultation were received by UC Merced. One tribe, the Tuolumne Band of Me-Wuk Indians, responded indicating the tribe had no concerns, nor had any knowledge of historic cultural resources within the Project area. As such, the proposed Project would not make a cumulatively considerable contribution to a cumulative impact on TCRs. There would be a less-than-significant impact.

**Mitigation Measures:** No mitigation measures are required.



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## 4.6 UTILITIES AND SERVICE SYSTEMS

### 4.6.1 Introduction

This section of the Draft Environmental Impact Report (EIR) evaluates the potential for the proposed UC Merced Medical Education (UCM-ME) Building Project (“proposed Project” or “Project”) to significantly affect the wastewater system that serves the campus. The section discusses the demand that the proposed Project would place on the wastewater system infrastructure and evaluates the environmental consequences from the construction and operation of any wastewater system improvements needed to serve the proposed Project. The Project’s impacts on all other utilities, including water service and supply, solid waste, natural gas, and electricity, would be less than significant as shown by the analysis in **Appendix 1.0, Initial Study**, and summarized in **Chapter 6.0, Other CEQA Considerations**.

### 4.6.2 Environmental Setting

The environmental setting information in this section is derived from the 2020 Long Range Development Plan (LRDP) Subsequent EIR (SEIR)<sup>1</sup>, the City of Merced’s (City) *Wastewater Collection System Master Plan*<sup>2</sup> (*Wastewater Master Plan*) prepared in 2017, and the City’s *Wastewater Collection System Master Plan Draft Environmental Impact Report*<sup>3</sup> (*Wastewater Master Plan EIR*) prepared in 2020. Only information pertinent to the impact analyses in **Section 4.6.4** is provided below. For additional information on the environmental setting, please see Section 4.10 in the 2020 LRDP SEIR.

The proposed Project is located on the UC Merced campus, which is located within unincorporated Merced County, within the City of Merced’s (City) Sphere of Influence (SOI). The UC Merced campus receives wastewater services from the City under an extraterritorial Urban Services agreement. The agreement states that the City will serve a campus population of up to 10,000 Full Time Equivalent (FTE) students.

#### 4.6.2.1 Wastewater Infrastructure

The City owns and operates a municipal wastewater collection and treatment system and provides service to all areas within city limits and to some unincorporated areas outside the city limits, including the campus, which includes the Project site. The City’s system consists of wastewater conveyance pipelines and a wastewater treatment plant (WWTP) located approximately 3 miles south of the city.

**Wastewater Conveyance.** The campus is connected to the City’s wastewater collection and treatment system. The 27-inch Bellevue Road trunk main was constructed to convey wastewater flows from the UC Merced campus based on projected wastewater flows from a 25,000-student

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<sup>1</sup> University of California, Merced. 2019. *UC Merced 2020 Long-Range Development Plan Recirculated Draft Subsequent Environmental Impact Report*, December 2019.

<sup>2</sup> City of Merced. 2017. *Wastewater Collection System Master Plan*. December 15.

<sup>3</sup> City of Merced. 2020. *City of Merced Wastewater Collection System Master Plan Draft Environmental Impact Report*. September.

campus accounted for in the 2009 LRDP Environmental Impact Statement (EIS)/EIR<sup>4</sup>, as well as provide additional capacity for planned development along the Bellevue Road corridor between G Street and Lake Road. According to the *Wastewater Master Plan*, the trunk has capacity to convey approximately 6.5 million gallons per day (mgd) of wastewater under peak wet weather conditions.<sup>5</sup> Based on the 2009 LRDP buildout population of 25,000 students, an estimated 1.13 mgd of capacity would be required to convey the flows from the campus.

The Bellevue Road trunk main connects to the City's sewer system via a connection to the G Street trunk main.<sup>6</sup> The *Wastewater Master Plan* indicates that the existing G Street trunk main is 21 to 30 inches in diameter.<sup>7</sup> The G Street trunk main has capacity to convey approximately 4.14 mgd of wastewater under peak wet weather conditions, has an existing flow of 0.85 mgd, and therefore has an estimated remaining capacity of 3.29 mgd. However, the available capacity of the G Street trunk is not sufficient to convey flow from the entitled properties expected to utilize this facility.<sup>8</sup> As such, the *Wastewater Master Plan* recommends that G Street trunk main be upgraded to a 24-inch diameter pipe between Bellevue Road and Cardella Road.<sup>9</sup> The *Wastewater Master Plan EIR* identifies the Northern Trunk Sewer Project and the Southern Trunk Sewer Project as the initial priority projects necessary to implement the *Wastewater Master Plan*. The recommended G Street trunk main upgrade is part of the Northern Trunk Sewer Project, with construction anticipated to start as early as 2022 and lasting 18 months.<sup>10</sup>

**Wastewater Treatment.** Wastewater generated on the campus is treated at the City of Merced WWTP. The WWTP currently has a tertiary treatment capacity of 12 mgd. The WWTP treats an average flow of 8.2 mgd.<sup>11</sup> In 2006, the City certified an EIR (SCH No. 2005101135) for the expansion of the WWTP to a design capacity of 20 mgd.<sup>12</sup> The additional capacity would be installed in phases and would include several facility upgrades. The WWTP expansion to 20 mgd is based on anticipated wastewater flows generated by the approved 1997 Specific Urban Development Plan (SUDP) (17.1 mgd) and UC Merced campus growth (2.25 mgd), based on the University's 2002 estimate of wastewater flows that would be generated by a 25,000-student campus.<sup>13</sup>

#### 4.6.3 Regulatory Considerations

Regulatory information pertinent to the impact analyses in **Section 4.6.4** is provided below. Additional information is presented in Section 4.10 of the 2020 LRDP SEIR.

<sup>4</sup> University of California, Merced. 2009. *UC Merced and University Community Project Environmental Impact Statement/Environmental Impact Report*, March 2009.

<sup>5</sup> City of Merced. 2017. *Wastewater Collection System Master Plan*. December 15.

<sup>6</sup> University of California, Merced. 2019. op. cit.

<sup>7</sup> City of Merced. 2017. op. cit.

<sup>8</sup> Ibid.

<sup>9</sup> Ibid.

<sup>10</sup> City of Merced. 2020. op. cit.

<sup>11</sup> University of California, Merced. 2019. op. cit.

<sup>12</sup> Ibid.

<sup>13</sup> Ibid.

#### 4.6.3.1 State Laws and Regulations

**Government Code Section 54999.** Government Code Section 54999 provides for the payment of fees in certain specific enumerated situations for capital improvements for utilities, including wastewater, actually serving the University. A capital facilities fee that is imposed must be nondiscriminatory and the amount must not exceed the amount necessary to provide capital facilities to the University.

#### 4.6.4 Impacts and Mitigation Measures

##### 4.6.4.1 Significance Criteria

This EIR uses significance criteria derived from Appendix G of the *State CEQA Guidelines*. For the purpose of this EIR, impacts related to wastewater systems would be significant if implementation of the proposed Project would:

- Require or result in the relocation or construction of new or expanded wastewater conveyance or treatment facilities, the construction or relocation of which could cause significant environmental effects; or
- Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

##### 4.6.4.2 Issues Not Discussed Further

The following checklist items from Appendix G of the *State CEQA Guidelines* have been screened out of this EIR based on a finding of no impact or less than significant impact, as determined in the Initial Study (**Appendix 1.0, Section 5.21**):

- Would the project require or result in the relocation or construction of new or expanded water, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?
- Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?
- Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?
- Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Impacts to storm water drainage facilities are discussed in **Section 4.2, Hydrology and Water Quality**.

#### 4.6.4.3 Methodology

The anticipated wastewater generation for the proposed Project was estimated based on the 2018 campus population (students, faculty, and staff) of 9,715 person and 49,013,000 gallons of wastewater that were generated by the campus in 2018. The resulting 13.8 gallons per day (gpd) per person wastewater generation rate was used to determine the average amount of wastewater that would be generated as a result of the occupancy of the UCM-ME Building. In order to determine the peak wastewater generated by the proposed Project, the average amount of wastewater in gpd was converted to an average flow rate of wastewater per second. The average flow rate of wastewater per second was multiplied by a peaking factor of 3.7<sup>14</sup> to calculate the Project's peak flow rate.<sup>15</sup>

The estimated wastewater generated as a result of the proposed Project was then compared to the anticipated wastewater generated by the campus upon full development of the 2020 LRDP, as reported in the 2020 LRDP SEIR, as well as the projected UC Merced campus wastewater generation under the City of Merced's *Wastewater Master Plan*.

#### 4.6.4.4 2020 LRDP Measures included in the Proposed Project

The 2020 LRDP SEIR presents mitigation measures that may be applicable to future development on the campus, such as the proposed Project. However, the 2020 LRDP SEIR did not set forth mitigation measures as no potentially significant impacts associated with wastewater were identified.

#### 4.6.5 Project Impacts and Mitigation Measures

**UCM-ME Impact UTL-1 Implementation of the proposed Project would not require construction of new or expanded wastewater conveyance or treatment facilities; nor would the proposed project result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the project's projected demand in addition to existing commitments. (*Less than Significant*)**

The 2020 LRDP SEIR analyzed the potential impacts of campus development under the 2020 LRDP on the environment from the construction of new or expanded wastewater conveyance and treatment facilities. The 2020 LRDP SEIR noted that the existing sewer main in Bellevue Road was adequate to handle wastewater flows from the campus because it was designed and constructed to convey wastewater flows generated by the campus with a buildout student population of 25,000 and a total population of 31,560, including faculty and staff.<sup>16</sup> The wastewater flows that would be generated by the campus under the 2020 LRDP would be substantially lower because they would be generated by a substantially reduced 2030 campus buildout student population of 15,000 and a

<sup>14</sup> AECOM. 2016. *UC Merced Utilities Capacity Study*. February.

<sup>15</sup> Calculation is as follows: 13.8 gpd/person generation rate \* 2,999 population increase associated with the UCM-ME Building = 41,386.2 gpd average. 41,386.2 gpd [or rounded to 0.04 mgd] converted to 0.06 cubic feet/second flow rate. 0.06 cubic feet/second flow rate \* 3.7 Peak Flow Peaking Factor = 0.20 cubic feet/second (converted back to 129,263 gpd [or rounded to 0.13 mgd] to obtain campus peak day discharge).

<sup>16</sup> University of California, Merced. 2019. op. cit.

total population of about 17,400 persons.<sup>17</sup> With regard to the G Street trunk main, the 2020 LRDP SEIR noted that the G Street trunk main had a capacity to serve the UC Merced campus with about 10,000 students. With campus enrollment growth under the 2020 LRDP to 15,000 students, improvements to the G Street trunk main would be needed. However, because the trunk main upgrade would be located in G Street right-of-way which is already disturbed, the impacts from pipeline construction would be less than significant.

The 2020 LRDP SEIR projected that by 2030, with a population of about 17,400 persons, the UC Merced campus would generate 98.55 million gallons per year or 0.27 mgd of wastewater. Based on this average daily flow rate, the 2020 LRDP SEIR determined that the 2020 LRDP wastewater generation through 2030 would be adequately treated at the WWTP and an expansion of the facility would not be required. Therefore, the 2020 LRDP Project's impact on the City's wastewater conveyance and treatment facilities was determined to be less than significant.

As noted earlier, wastewater service is provided to the campus by the City of Merced pursuant to an extraterritorial urban services agreement. The agreement states that the City will serve a campus population of up to 10,000 FTE students. The 2020 LRDP SEIR determined that the agreement would need to be updated to serve future campus growth under the 2020 LRDP Project.

In 2017, the City of Merced prepared the *Wastewater Master Plan* and in September 2020, subsequent to the certification of the University's 2020 LRDP SEIR, the City published the *Wastewater Master Plan Draft EIR*. The *Wastewater Master Plan* was prepared to identify the deficiencies of the City's wastewater infrastructure system and determine what improvements were needed to ensure adequate wastewater collection, conveyance, and disposal for land uses within the City and its SOI based on buildout conditions. The buildout conditions analyzed in the *Wastewater Master Plan* included the development of the UC Merced campus to accommodate a campus population of 25,000 students and associated faculty and staff, which was the anticipated buildout population under the 2009 LRDP by 2030. As described in **Section 1.3** of this Draft EIR, the 2020 LRDP is based on a substantially reduced 2030 campus buildout population of 15,000 students and a smaller faculty and staff population.

Based on the analysis in the 2009 LRDP EIS/EIR and the anticipated buildout population of 25,000 students, the *Wastewater Master Plan* estimated that the UC Merced campus, including a community south of the campus, would contribute 3.09 mgd of wastewater during dry weather conditions and 6.95 mgd of wastewater during peak wet weather conditions to the City's wastewater conveyance system.<sup>18</sup> The *Wastewater Master Plan* used this conservative projected wastewater generation for UC Merced plus additional wastewater generation to model the "interim condition system" and determine the capacity improvements that would be needed to adequately convey the projected flows. The interim condition system modeling accounts for the developments entitled to connect to the existing wastewater system and was intended to identify the potential limits of the existing system to convey flow from entitled properties before new, large diameter trunk sewers (or other measures) are constructed. The results of the interim modeling reflect that a

<sup>17</sup> A discussion of the differences between the 2009 LRDP and 2020 LRDP and their environmental documents is presented in Section 1.3 of this Draft EIR.

<sup>18</sup> City of Merced. 2017. op. cit.

portion of the G Street trunk main would only have only 0.07 mgd capacity remaining.<sup>19</sup> Based on the analysis presented in the *Wastewater Master Plan*, the G Street trunk main between Bellevue Road and Cardella Road would need to be improved to 24 inches in diameter to accommodate the projected flows.

The proposed Project is anticipated to accommodate about 2,999 students, faculty, and staff on the UC Merced campus.<sup>20</sup> Based on a wastewater generation rate of 13.8 gpd per person, the proposed Project would generate an average flow of 41,386 gpd (rounded to 0.04 mgd) and a peak flow of 129,263 gpd (rounded to 0.13 mgd).<sup>21</sup> The proposed Project would include wastewater lateral infrastructure that would connect to the existing 21-inch diameter wastewater main located in the intersection of Muir Pass Road and Scholar's Lane on the UC Merced campus. From the campus, wastewater would discharge into the City-owned 27-inch sewer main located in Bellevue Road.

**Table 4.6-1: Wastewater Generation Summary** provides a summary of peak wastewater generation assumed for the UCM-ME Building at full occupancy; wastewater that would be generated by the 2020 LRDP at buildout, as reported in the 2020 LRDP SEIR; and anticipated UC Merced peak wastewater generation conditions at buildout, as estimated in the 2009 LRDP EIS/EIR and assumed in the City's *Wastewater Master Plan*.

**Table 4.6-1: Wastewater Generation Summary**

	Wastewater Generation Estimate (mgd)
UCM-ME Building (peak at full occupancy)	0.13 <sup>1</sup>
Full Campus under the 2020 LRDP (peak flow based on 15,000 FTE students)	0.27 <sup>2</sup>
UC Merced wastewater volume per the City's <i>Wastewater Master Plan</i> (peak flow based on 25,000 FTE students)	6.95 <sup>3</sup>

Sources:

<sup>1</sup> LSA, June 2021, based on sewer meter data provided by UC Merced.

<sup>2</sup> University of California, Merced, UC Merced 2020 LRDP Recirculated Draft Subsequent Environmental Impact Report, Section 4.10 Utilities and Service Systems, Table 4.10-2, December 2019.

<sup>3</sup> City of Merced, City of Merced Wastewater Collection System Master Plan, Table 5-3, page 40, December 15, 2017.

mgd = million gallons per day

<sup>19</sup> City of Merced. 2017. op. cit.

<sup>20</sup> About 1,681 of the 2,999 persons that would occupy this building are already enrolled as students or employed in the Psychological Sciences and Public Health Departments as of 2020, and therefore the net new population due to this project would be on the order of about 1,318 persons. However, because the existing building space that would be vacated by the Psychological Sciences and Public Health Departments when those departments move to the proposed UCM-ME Building could be backfilled by the growth in other teaching and research programs, this analysis conservatively assumes that a campus population increase of about 2,999 persons would be associated with the proposed Project.

<sup>21</sup> 13.8 gpd/person generation rate \* 2,999 population increase of UCM-ME Building = 41,386.2 gpd average. 41,386.2 gpd [or rounded to 0.04 mgd] converted to 0.06 cubic feet/second flow rate. 0.06 cubic feet/second flow rate \* 3.7 Peak Flow Peaking Factor = 0.20 cubic feet/second (converted back to 129,263 gpd [or rounded to 0.13 mgd] to obtain campus peak day discharge).



#### 4.6.5.1 Medical Education Building Project's Impact on Wastewater Treatment Capacity

Wastewater generated by the proposed Project would be conveyed to the City's WWTP for treatment and disposal. As indicated above in **Table 4.6-1**, the proposed Project is estimated to generate 0.13 mgd of wastewater under peak conditions at full UCM-ME Building occupancy.

The WWTP currently treats approximately 8.2 mgd of wastewater. If the projected wastewater flows from the proposed Project are added to the existing flows, the WWTP would be required to treat approximately 8.33 mgd. As noted earlier, the City's WWTP currently has the capacity to treat up to 12 mgd and the City has approved the expansion of the capacity to 20 mgd. This WWTP expansion will be implemented to serve regional population growth with and without the proposed Project. If it is assumed that there are no increases in flows to the WWTP from other sources, the existing WWTP would be adequate to serve the wastewater demands of the proposed Project. Even with increases in flows from other sources, there would be adequate capacity to serve the proposed Project. No capacity improvements at the WWTP would be required to serve the Project.

#### 4.6.5.2 Medical Education Building's Impact on Conveyance Capacity

Wastewater generated by the UC Merced campus flows into the Bellevue Drive trunk main and then into G Street trunk main and is eventually conveyed to the City's WWTP for treatment. According to the *Wastewater Master Plan*, the existing G Street trunk main has an existing capacity to convey approximately 4.14 mgd of wastewater, has an existing flow rate of 0.85 mgd of wastewater, and therefore has an existing remaining capacity (in peak conditions) of 3.29 mgd of wastewater.<sup>22</sup> However, the *Wastewater Master Plan* determined that the entitled properties expected to connect to the G Street trunk main would generate 4.07 mgd of wastewater under the interim condition modeling. Thus, accounting for the entitled properties, which included dry weather wastewater flows of 3.09 mgd and peak wet weather flows of 6.95 mgd from UC Merced based on the 2009 LRDP buildout student population of 25,000 students, a capacity of only 0.07 mgd of wastewater would remain. As such, under 2030 conditions, the *Wastewater Master Plan* determined that the G Street trunk main between Bellevue Road and Cardella Road would need to be upgraded to a 24-inch diameter pipe as the wastewater generated by entitled properties would fully utilize the remaining capacity.

As described above, the City's wastewater system improvements take into account a buildout population at UC Merced of 25,000 FTE students (with associated faculty and staff) consistent with the 2009 LRDP. The 2020 LRDP is based on a significantly reduced 2030 buildout student population of 15,000 students with associated faculty and staff. The proposed Project would conservatively add 2,811 new students, which combined with 9,000 existing students as of 2020, would result in a total campus student population of 11,811. Thus, the wastewater generation of the proposed Project, as well as the wastewater from the entire campus at buildout under the 2020 LRDP, have been considered in the City's analysis in establishing the improvement that is needed for the G Street trunk main. Therefore, the G Street trunk main would not need to be further upgraded due to implementation of the proposed Project. In the *Wastewater Master Plan EIR*, the City indicated that the G Street trunk main upgrade would commence as early as 2022 and would be completed within

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<sup>22</sup> City of Merced. 2017. op. cit.

18 months of construction start.<sup>23</sup> The proposed Project would be constructed between 2023 and 2026, and the occupancy of the building would take place incrementally over the next 5 to 10 years. As such, the upgraded line would be in place and operational prior to the occupancy of the UCM-ME Building.

As described above, the campus receives wastewater services from the City pursuant to an extraterritorial urban services agreement. The agreement states that the City will serve a campus population of up to 10,000 FTE students. As reflected in the 2020 LRDP SEIR, the agreement would need to be updated to serve future campus growth under the 2020 LRDP. The proposed Project would accommodate 2,811 new students that would be added to the existing (as of 2020) 9,000-student population of the UC Merced campus; as such, the proposed Project would result in the campus population exceeding 10,000 FTE students, and UC Merced will coordinate with the City of Merced to update the extraterritorial urban services agreement.

In summary, implementation of the proposed Project would not require construction of new or expanded wastewater treatment facilities; nor would the proposed Project result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the projected demand of the proposed Project in addition to existing commitments. The City's proposed wastewater conveyance improvements account for the campus growth associated with the proposed Project as well as the 2020 LRDP under 2030 buildout conditions. Thus, the impact related to wastewater conveyance and treatment facilities would be less than significant.

**Mitigation Measures:** No mitigation is required.

#### 4.6.6 Cumulative Impacts and Mitigation Measures

**Cumulative Impact C-UTL-1**      **Development of the proposed Project, in conjunction with other past, present, and reasonably foreseeable future development in the project area, would not result in a significant cumulative impact on wastewater collection and treatment facilities, such that construction of new or expanded facilities would be required. (*Less than Significant*)**

The study area for potential cumulative impacts related to the treatment of wastewater is the City of Merced's service area. As discussed above, the City's WWTP currently has the capacity to treat up to 12 mgd of wastewater and the City has approved the expansion of the capacity of its WWTP to 20 mgd. As analyzed in the City's *Wastewater Treatment Plant Expansion Project EIR* certified in 2006, the WWTP expansion would accommodate wastewater flows from the approved 1997 SUDP that would generate approximately 17.1 mgd of wastewater, in addition to 2.25 mgd of wastewater flows expected from the full development of the campus based on the University's 2002 estimate of wastewater that would be generated by the campus.<sup>24</sup> However, as reflected in reflected in **Table 4.6-1** above, the peak wastewater flows from UC Merced (under the 2020 LRDP) would be about 0.27 mgd in 2030, which is substantially lower than the number used by the City in its plan for

<sup>23</sup> City of Merced. 2020. op. cit.

<sup>24</sup> University of California, Merced. 2019. op. cit.

the WWTP. The peak amount of wastewater generated by the proposed Project (0.13 mgd) is already considered in the 0.27 mgd that would be generated under the 2020 LRDP. The expanded WWTP would be able to serve a population of approximately 174,000.<sup>25</sup> As a result, with the expansion of the WWTP, there would be enough wastewater treatment capacity to serve the proposed Project, other campus growth and development under the 2020 LRDP, as well as other past, present, and reasonably foreseeable future development within the City's service area. Therefore, cumulative development would not result in the need for a new or expanded WWTP, and the cumulative impact would be less than significant.

As discussed above, the City is planning (through implementation of the 2017 *Wastewater Collection System Master Plan*) to upgrade off-site sewer mains/trunk mains to accommodate conveyance of wastewater flows to the City's WWTP. The upgrades are based on existing entitlements and future buildout of the City and the City's SOI, including UC Merced, through the year 2030. The wastewater generation assumptions in the City's *Wastewater Master Plan* for UC Merced were based on the 2009 LRDP and an associated community to the south of the campus. The 2020 LRDP is based on a significantly reduced buildout population when compared to the 2009 LRDP. As such, the City has anticipated the wastewater flow requirements and infrastructure sizing to serve the proposed Project, the 2020 LRDP buildout, and other past, present, and reasonably foreseeable future development within the City's SOI. Therefore, cumulative development would not result in the need for new or expanded wastewater collection facilities, and the cumulative impact would be less than significant.

**Mitigation Measures:** No mitigation is required.

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<sup>25</sup> City of Merced. 2011. *Merced Vision 2030 General Plan Environmental Impact Report*. July.

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## 5.0 ALTERNATIVES

### 5.1 INTRODUCTION

This section of the Draft EIR Environmental Impact Report (EIR) presents an analysis of the alternatives to the proposed UC Merced Medical Education (UCM-ME) Building Project (“proposed Project” or “Project”). CEQA requires that an EIR describe a range of reasonable alternatives to the proposed project or to the location of the project that could feasibly avoid or lessen any significant impacts while feasibly attaining most of the basic objectives of the proposed project. An EIR should also evaluate the comparative merits of the alternatives. This section sets forth potential alternatives to the proposed Project and evaluates them, as required by CEQA.

Key provisions of the *State CEQA Guidelines* pertaining to the analysis of alternatives are summarized below:

- The discussion of alternatives shall focus on alternatives to the project or its location that are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives or would be more costly.
- The range of alternatives required in an EIR is governed by a “rule of reason.” Therefore, the EIR must evaluate only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project.
- The No Project alternative shall be evaluated along with its impacts. The analysis of the No Project alternative shall discuss the existing conditions at the time the notice of preparation is published. Additionally, the analysis shall discuss what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services.
- For alternative locations, only locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR.
- An EIR need not consider an alternative whose effects cannot be reasonably ascertained and whose implementation is remote and speculative.
- The range of feasible alternatives should be selected and discussed in a manner intended to foster meaningful public participation and informed decision-making. Among the factors that may be taken into account when addressing the feasibility of alternatives are environmental impacts, site suitability, economic viability, availability of infrastructure, general plan consistency, regulatory limitations, jurisdictional boundaries, and whether the project proponent could reasonably acquire, control, or otherwise have access to an alternative site.

- The EIR should also identify any alternatives that were considered but rejected as infeasible and briefly explain the reasons underlying the lead agency's determination. Among the factors that may be used to eliminate alternatives from further detailed consideration in an EIR are: (1) failure to meet most of the basic project objectives; (2) infeasibility; or (3) inability to avoid significant environmental impacts.
- The description of each alternative must be sufficient to allow meaningful evaluation and comparison with the proposed project. The lead agency must also identify the environmentally superior alternative in the Draft EIR.

## 5.2 PROJECT OBJECTIVES AND IMPACTS

To develop and evaluate project alternatives, the University, as Lead Agency, considered the project objectives and reviewed the significant impacts of the proposed Project, identified those impacts that could be substantially avoided or reduced through an alternative, and identified the appropriate range of alternatives to be analyzed.

### 5.2.1 Project Objectives

As stated in **Chapter 3.0, Project Description**, the key objectives of the proposed Project are to:

- Provide space for the development of a new Medical Education program, initially in partnership with the UCSF-Fresno and SJV/PRIME program.
- Provide space for growth in the Department of Public Health.
- Provide space for growth in the Department of Psychological Sciences and creation of an Institute for Child and Family Sciences.
- Consolidate and collocate these existing and new programs in one facility so as to optimally draw upon the intellectual, technological, and material resources of the UC Merced programs and facilities, and enhance intellectual exchange and collaboration between related programs.
- Provide classroom space to support campus population growth.
- Maximize energy efficiency, sustainability, and cost-effectiveness of these programs by housing them in a consolidated, state-of-the-art building designed to balance energy use and cost efficiencies.

### 5.2.2 Project Impacts

The analysis of the proposed Project's environmental impacts is presented in **Chapter 4.0** of this EIR. The analysis concludes that with the incorporation of applicable 2020 LRDP mitigation measures, especially in the areas of Aesthetics, Air Quality, Biological Resources, Cultural Resources, Geology and Soils, Greenhouse Gas Emissions, Noise, and Public Services, all of the impacts of the proposed Project would be less than significant.

#### 5.2.2.1 Air Quality

The analysis in **Section 4.1, Air Quality**, of this EIR determined that because **2020 LRDP Mitigation Measures AQ-1a, AQ-1b, AQ-2a, and AQ-2b** are already incorporated into and a part of the Project, all of the air quality impacts of the proposed Project (**UCM-ME Impact AQ-1 through AQ-4; Cumulative Impact C-AQ-1**) would be less than significant. No significant or significant and unavoidable impacts were identified.

#### 5.2.2.2 Hydrology and Water Quality

The analysis in **Section 4.2, Hydrology and Water Quality**, of this EIR found that implementation of the proposed Project would result in a less than significant project-level impact (**UCM-ME Impact HYD-1**) and a less than significant cumulative impact (**Cumulative Impact C-HYD-1**) related to hydrology and water quality. No significant and unavoidable impacts related to hydrology and water quality were identified.

#### 5.2.2.3 Public Services

The analysis in **Section 4.3, Public Services**, of this EIR found that implementation of the proposed Project would result in a less than significant project-level impact (**UCM-ME Impact PUB-1**) and a less than significant cumulative impact (**Cumulative Impact C-PUB-1**) related to fire service. No significant and unavoidable impacts related to public services were identified.

#### 5.2.2.4 Transportation

The analysis in **Section 4.4, Transportation**, of this EIR found that the proposed Project would not conflict with an applicable plan, ordinance or policy addressing roadway facilities (**UCM-ME Impact TRANS-1**). It would also not generate vehicle trips that would exceed applicable vehicle miles travelled (VMT) thresholds of significance under Project conditions (**UCM-ME Impact TRANS-2**) and Cumulative conditions (**Cumulative Impact C-TRANS-1**) and therefore would not conflict with State CEQA Guidelines Section 15064.3, subdivision (b). No significant and unavoidable impacts related to transportation were identified.

#### 5.2.2.5 Tribal Cultural Resources

The analysis in **Section 4.5, Tribal Cultural Resources**, of this EIR found that as **2020 LRDP Mitigation Measures CUL-2 and CUL-3** are incorporated into and a part of the proposed Project, the Project would result in a less than significant project-level impact (**UCM-ME Impact TCR-1**) and a less than significant cumulative impact (**Cumulative Impact C-TCR-1**) on tribal cultural resources (TCR). No significant and unavoidable impacts related to TCRs were identified.

#### 5.2.2.6 Utilities and Service Systems

The analysis in **Section 4.6, Utilities and Service Systems**, of this EIR found that implementation of the proposed Project would result in a less than significant project-level impact (**UCM-ME Impact UTL-1**) and a less than significant cumulative impact (**Cumulative Impact C-UTL-1**) on wastewater collection and treatment systems. No significant and unavoidable impacts related to utilities were identified.



#### 5.2.2.7 All Other Resources

As stated in **Section 6.5** of this EIR, with the incorporation of 2020 LRDP mitigation measures which are already adopted and a part of the proposed Project, the Project would result in no impacts or less than significant impacts on Aesthetics, Agriculture and Forestry Resources, Air Quality (construction and operational odors), Biological Resources, Cultural Resources, Energy, Geology and Soils, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality (water quality, groundwater recharge and supplies, seiche or tsunami inundation, relevant plans related to water quality and groundwater), Land Use and Planning, Mineral Resources, Noise, Population and Housing, Public Services (police, school, parks, and other public services), Recreation, Transportation (plans or policies associated with pedestrian, transit, and pedestrian facilities); hazards due to a geometric design feature or incompatible use; or emergency access), Utilities and Service Systems (water, solid waste, sewer), and Wildfire.

### 5.3 ALTERNATIVES CONSIDERED BUT NOT EVALUATED IN DETAIL

Section 15126.6(c) of the *State CEQA Guidelines* states that an EIR should briefly describe the rationale for selecting the alternatives to be discussed and the reasons for eliminating alternatives from detailed consideration in an EIR. Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR is failure to meet most of the basic project objectives, infeasibility, or inability to avoid or substantially reduce significant environmental impacts. According to Section 15162.6(f)(1) "Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent). No one of these factors establishes a fixed limit on the scope of reasonable alternatives."

The following alternatives were considered by the University but were not carried forth for detailed evaluation because they were determined not to meet most of the project objectives or were found to be infeasible based on economic viability and inconsistency with project objectives. Each alternative is described below along with a brief explanation of the reasons for its exclusion.

#### 5.3.1 Locate Medical Education Program in Fresno

UC Merced examined the potential to develop the Medical Education (ME) program using existing facilities in Fresno where the UCSF-Fresno and SJV/PRIME program are currently located. Under this alternative, no new space would be developed on the campus. This alternative was not carried forth for detailed evaluation because the alternative would not meet the vast majority of the basic objectives of the proposed Project, which include providing space for growth in the Department of Public Health; providing space for growth in the Department of Psychological Sciences and creation of an Institute for Child and Family Sciences, and consolidating and collocating these existing and new programs, including the Medical Education program in one facility so as to optimally draw upon the intellectual, technological, and material resources of the UC Merced programs and facilities, and enhance intellectual exchange and collaboration between related programs. Further, this alternative would require students enrolled at UC Merced and faculty to travel to Fresno for ME classes,

resulting in loss of time and other inefficiencies, as well as greater air quality and GHG impacts from the additional travel between the two locations. For these reasons, this alternative was determined to be infeasible based on inconsistency with project objectives and was not analyzed further in this EIR.

### 5.3.2 Locate Medical Education Program in Downtown Merced

UC Merced considered an alternative that would develop the ME program using existing facilities in downtown Merced. Under this alternative, no new space would be developed on the campus. Similar to the alternative above, this alternative was not carried forth for detailed evaluation because the alternative would not meet the vast majority of the basic objectives of the proposed Project, which include providing space for growth in the Department of Public Health; providing space for growth in the Department of Psychological Sciences and creation of an Institute for Child and Family Sciences, and consolidating and collocating these existing and new programs, including the Medical Education program in one facility so as to optimally draw upon the intellectual, technological, and material resources of the UC Merced programs and facilities, and enhance intellectual exchange and collaboration between related programs. Further, this alternative would require students enrolled at UC Merced and faculty to travel to downtown Merced for ME classes, resulting in loss of time and other inefficiencies as well as greater air quality and GHG impacts from the travel between the two locations. For these reasons, this alternative was determined to be infeasible based on inconsistency with project objectives and was not analyzed further in this EIR.

## 5.4 ALTERNATIVES EVALUATED IN THIS EIR

According to the *State CEQA Guidelines*, in addition to considering a “no project” alternative, the discussion of alternatives should focus on alternatives to a project or its location that can avoid or substantially lessen the significant effects of the project, while feasibly attaining most of the basic project objectives. The *State CEQA Guidelines* indicate that the range of alternatives included in this discussion should be sufficient to allow decision makers to make a reasoned choice. The alternative analysis should provide decision makers with an understanding of the merits and disadvantages of the alternatives.

Alternatives considered for detailed evaluation in this EIR include the CEQA-mandated No Project Alternative along with other potential alternate projects that would meet most of the Project’s basic objectives while reducing the environmental impacts of the proposed Project. Alternatives considered in this EIR for detailed evaluation include the following:

- No Project Alternative
- Reduced Program Alternative
- Reduced Building Footprint Alternative

Each of these alternatives is described below, followed by a comparison of its impacts to those of the proposed Project, and the ability of the alternative to meet project objectives.

## 5.5 ALTERNATIVE IMPACT ANALYSIS

### 5.5.1 Alternative 1: No Project Alternative

#### 5.5.1.1 Description of Alternative

*State CEQA Guidelines* require the analysis of a No Project Alternative (Section 15126.6(e)). The analysis must discuss existing conditions, as well as what would be reasonably expected to occur in the foreseeable future if the proposed project were not to be approved, based on current plans, site zoning, and consistent with available infrastructure and community services. If a project is a development project on an identifiable site, *State CEQA Guidelines* Section 15126.6(e)(3)(B) provides that the discussion of the No Project Alternative should compare the environmental effects of the site remaining in its existing state against environmental effects which would occur if the project were approved.

Under the No Project Alternative, there would be no modifications to the existing Cottonwood Meadow detention basins, the UCM-ME Building, parking lot and site access road, and other infrastructure including the storm water detention basin, would not be constructed, and the Project site would continue to remain largely undeveloped. Existing campus buildings would be utilized to accommodate the ME program and instruction. The Departments of Psychological Sciences and Public Health would remain in the Social Sciences and Management (SSM) Building. Without the vacated space within the SSM Building, the Department of Economics would remain in the School of Social Sciences, Humanities and Arts (SSHA) Building. With respect to enrollment and employment increase, the No Project alternative would involve the same population increase of about 2,999 students, faculty and staff as with the proposed Project if the Campus is able to accommodate the new and expanded programs in existing buildings. However, if there is a serious lack of space on the campus, the alternative could involve a smaller population increase.

#### 5.5.1.2 Environmental Impacts

**Air Quality.** As the No Project Alternative would not involve the construction and operation of a new building and it would involve a similar or smaller increase in campus population, it would avoid construction emissions and result in similar or somewhat reduced operational emissions compared to the proposed Project. The alternative would further reduce the less than significant project-level and cumulative air quality impacts of the proposed Project.

**Hydrology and Water Quality.** As the No Project Alternative would not involve the construction and operation of a new building, it would avoid an increase in stormwater runoff that would be discharged into Cottonwood Creek and the filling of the Cottonwood Meadow Basin. The alternative would avoid the less than significant project-level and cumulative impacts of the proposed Project on hydrology and water quality.

**Public Services.** As a new building would not be constructed on the campus under the No Project Alternative and there would be a similar or smaller increase in enrollment and employment compared to the proposed Project, the alternative would further reduce the less than significant project-level and cumulative impacts of the proposed Project on fire service.

**Transportation.** As the No Project Alternative would accommodate a similar or slightly smaller enrollment and employment increase compared to the proposed Project, it would generate a similar or smaller increase in the number of new daily vehicle trips to the campus. As a result of the small reduction in daily trips, this alternative would result in lower total VMT compared to the proposed Project, but a comparable per worker VMT as the proposed Project, thus resulting in similar or slightly reducing the less than significant project-level and cumulative transportation impacts of the Project.

**Tribal Cultural Resources.** As the No Project Alternative would not involve the construction of a new building, it would avoid any inadvertent damage to previously unknown TRCs on the project site. The alternative would avoid the less than significant project-level and cumulative impacts of the proposed Project on TRCs.

**Utilities and Service Systems.** As the No Project Alternative would involve no new building space and a similar or slightly smaller campus population growth compared to the proposed Project, it would result in a comparable or slightly smaller increase in the demand for utilities on the campus site. The alternative would, therefore, result in comparable or slightly reduced less than significant project-level and cumulative impacts on utilities compared to the proposed Project.

**All Other Resources.** As the No Project Alternative would not involve the construction of a new building, and the enrollment and employment increase due to the alternative would be comparable or slightly smaller, it would avoid or further reduce the less than significant impacts of the proposed Project on all other resources.

#### 5.5.1.3 Conclusion and Relationship to Project Objectives

The alternative would not achieve most of the key objectives of the proposed Project, including the objectives of providing space for the establishment of the ME program, space for growth in the Department of Public Health, and space for the growth in the Department of Psychological Sciences and creation of an Institute for Child and Family Sciences. It would not allow UC Merced to consolidate and colocate these existing and new programs, including the ME program in one facility so as to optimally draw upon the intellectual, technological, and material resources of the UC Merced programs and facilities, and enhance intellectual exchange and collaboration between related programs, and would not provide classroom space to support campus population growth, nor maximize energy efficiency, sustainability, and cost-effectiveness of these programs by housing them in a consolidated, state-of-the-art building designed to balance energy use and cost efficiencies.

### 5.5.2 Alternative 2: Reduced Program Alternative

#### 5.5.2.1 Description of Alternative

The Reduced Program Alternative was developed in order to reduce the size of the proposed building. Under this alternative, only the ME program and the proposed School of Management would be accommodated in the new building. The Departments of Psychological Sciences and Public Health would remain in the SSM Building and the Department of Economics would move into the

new building with the Management Program and the Departments of Cognitive Information Sciences and Economics.

Under this alternative, the proposed building would be reduced in size from approximately 190,000 outside gross square feet (ogsf)<sup>1</sup> to approximately 145,300 ogsf, a reduction in size of about 24 percent. The anticipated assignment of space under this alternative is reflected in **Table 5-1**.

**Table 5-1: Reduced Program Alternative**

Department	Assignable Square Feet
Medical Education	23,200
Management Program	9,500
Economics Department	12,900
Cognitive Sciences Department	12,600
HSRI	2,850
Instructional Spaces	21,360
Shared Spaces	12,000
<b>Total Assignable Square Feet</b>	<b>94,410</b>
<b>Total Outside Gross Square Feet</b>	<b>145,300</b>

Source: UC Merced (August 2022).

With a smaller amount of building space and still maintaining a four-story building, the building footprint would be reduced by about 20 to 24 percent, and the associated parking would be reduced by approximately 50 percent. As with the proposed Project, the new building under this alternative would also be located in Cottonwood Meadow and filling of the storm water basins on the project site would be required. The access roadway, new storm water detention basin, and other infrastructure improvements would be the same as under the proposed Project.

The anticipated net new population accommodated in the building would be 845 persons (i.e., 784 new students, and 61 new faculty and staff), compared to 1,318 persons under the proposed Project (1,269 students and 49 faculty/staff).

#### 5.5.2.2 Environmental Impacts

**Air Quality.** The Reduced Program Alternative would involve a smaller (24 percent less) amount of building space development than the proposed Project although other components such as filling of storm water basins and construction of a new detention basin and access roadway would be the same. Therefore, compared to the proposed Project, this alternative would result in somewhat reduced air pollutant emissions during construction. The operational emissions would, however, be comparable to those from the operation of the proposed Project because while the population housed in the new building would be smaller under this alternative, the rest of the new population would be accommodated in existing buildings and the new population would result in comparable vehicle trips and air emissions. The alternative would reduce only construction-phase less than significant project-level and cumulative air quality impacts of the proposed Project.

<sup>1</sup> "Outside gross square feet (ogsf)" includes the interior building area within the enclosed structure as well as the covered, unenclosed corridors, including walkways, porches, balconies, etc.

**Hydrology and Water Quality.** As the building footprint would be 20 to 24 percent smaller and less parking would be constructed under the Reduced Program Alternative, this alternative would result a smaller increase in stormwater runoff from the project site. However, the filling of the Cottonwood Meadow storm water basins and the construction of the new storm water basin would still be required. The hydrology and water quality impacts would be comparable to those of the proposed Project.

**Public Services.** Although the Reduced Program Alternative would construct a smaller building which would accommodate a smaller population, the rest of the new population would be accommodated in existing buildings and hence the alternative would result in comparable less than significant project-level and cumulative impacts on fire service.

**Transportation.** Although the Reduced Program Alternative would construct a smaller building which would accommodate a smaller population, the rest of the new population would be accommodated in existing buildings and hence the alternative would result in comparable less than significant project-level and cumulative transportation, including VMT, impacts.

**Tribal Cultural Resources.** As the building footprint would be 20 to 24 percent smaller and less parking would be constructed under the Reduced Program Alternative, this alternative would have less potential to encounter and affect previously unknown tribal cultural resources during construction. As with the proposed Project, construction of this alternative would also be required to implement **2020 LRDP Mitigation Measures CUL-2** and **CUL-3** for the protection of previously unknown cultural resources, including human remains, encountered during construction. Therefore, the Reduced Program Alternative would further reduce the proposed Project's less than significant project-level and cumulative impacts on TCRs.

**Utilities and Service Systems.** Although the Reduced Program Alternative would construct a smaller building which would accommodate a smaller population, the rest of the new population would be accommodated in existing buildings and hence the alternative would result in comparable less than significant project-level and cumulative impacts related to wastewater.

**Other Resources.** Although the enrollment and employment associated with the alternative would be comparable to that associated with the proposed Project, the Reduced Program Alternative would involve the construction of a smaller building, as a result of which the alternative would further reduce the less than significant construction impacts of the proposed Project on other resources.

### 5.5.2.3 Conclusion and Relationship to Project Objectives

The Reduced Program Alternative would result in comparable operational impacts as the proposed Project. However, due to the smaller building size and footprint, the alternative's construction-phase impacts would be somewhat reduced compared to the proposed Project.

The alternative would, however, not achieve the vast majority of the key objectives of the proposed Project, including the objectives of providing space for growth in the Department of Public Health; providing space for the growth in the Department of Psychological Sciences and creation of an

Institute for Child and Family Sciences; consolidating and collocating the existing and new programs, including the ME program in one facility so as to optimally draw upon the intellectual, technological, and material resources of the UC Merced programs and facilities, and enhance intellectual exchange and collaboration between related programs. It will also not provide classroom space to support campus population growth, nor maximize energy efficiency, sustainability, and cost-effectiveness of these programs by housing them in a consolidated, state-of-the-art building designed to balance energy use and cost efficiencies.

### 5.5.3 Alternative 3: Reduced Building Footprint Alternative

#### 5.5.3.1 Description of Alternative

The Reduced Building Footprint Alternative was developed in order to decrease the development footprint of the UCM-ME Building while maintaining the building space program planned under the proposed Project. Under this alternative, the new building would accommodate the co-location of the medical program and the health and behavioral sciences programs as planned for the proposed Project, but the building footprint would be reduced by increasing the height of the building. Thus, the building would be a five-story (approximately 75 feet in height [70 feet plus a 5-foot parapet]) structure, compared to a four-story/65-foot-tall structure under the proposed Project. The Reduced Building Footprint Alternative would result in a decrease in the building footprint by approximately 20 percent, or from 2.05 acres under the proposed Project to approximately 1.64 acres for the taller building.

The same amount of parking would be provided as under the proposed Project. As with the proposed Project, the new building under this alternative would also be located in Cottonwood Meadow and filling of the storm water basins on the project site would be required. The access roadway, new storm water detention basin, and other infrastructure improvements would be the same as under the proposed Project.

The new building under this alternative would accommodate the same number of persons as the proposed Project - about 2,999 students, faculty and staff, of which there would be 1,318 new persons (including 1,269 students and 49 faculty/staff) and the rest would relocate from other existing buildings.

#### 5.5.3.2 Environmental Impacts

**Air Quality.** The Reduced Building Footprint Alternative would accommodate the same number of students, faculty and staff as the proposed Project, and the same amount of building space would be constructed on a slightly reduced footprint. Therefore, this alternative would result in substantially the same amount of air emissions both during construction and operations as the proposed Project. As with the proposed Project, the project-level and cumulative air quality impacts of this alternative would also be less than significant.

**Hydrology and Water Quality.** As the building footprint would be 20 percent smaller under the Reduced Building Footprint Alternative, this alternative would result a smaller increase in stormwater runoff from the project site. However, the filling of the Cottonwood Meadow storm water basins and the construction of the new storm water basin would still be required. The



hydrology and water quality impacts would be comparable to those of the proposed Project and would also be less than significant.

**Public Services.** As the Reduced Building Footprint Alternative would construct a similar sized although taller building and accommodate the same number of students, faculty and staff as the proposed Project, it would result in a similar demand for fire service. It would, therefore, result in the same less than significant project-level and cumulative impacts on fire service as the proposed Project.

**Transportation.** As the Reduced Building Footprint Alternative would involve the same amount of building space and accommodate the same number of students, faculty and staff as the proposed Project, this alternative would result in the same less than significant project-level and cumulative impacts on transportation, including VMT, as the proposed Project.

**Tribal Cultural Resources.** Building development under this alternative would occur within a slightly smaller area than under the proposed Project. Therefore, the potential to encounter previously unknown cultural resources would be slightly lower. As with the proposed project, this alternative would also be subject to **2020 LRDP Mitigation Measures CUL-2** and **CUL-3** for the protection of previously unknown cultural resources, including human remains, encountered during construction. As with the proposed Project, the project-level and cumulative impacts of this alternative on TCRs would be less than significant.

**Utilities and Service Systems.** As the Reduced Building Footprint Alternative would involve the same amount of building space and accommodate the same number of students, faculty and staff as the proposed Project, it would result in a similar utility demand as the proposed Project. The project-level and cumulative impacts of this alternative related to wastewater would also be less than significant.

**All Other Resources.** As the Reduced Building Footprint Alternative would involve the construction of a similar sized building, and would accommodate the same number of students, faculty and staff as the proposed Project, it would also result in the same less than significant impacts on all other resources as the proposed Project.

#### 5.5.3.3 Conclusion and Relationship to Project Objectives

The Reduced Building Footprint Alternative would result in all of the same construction-phase and operational impacts as the proposed Project. However, due to the smaller building footprint, the alternative's impacts on TRCs would be reduced compared to the proposed Project.

The alternative would achieve the vast majority of the key objectives of the proposed Project, including the objectives of providing space for the new ME program; providing space for growth in the Department of Public Health; providing space for the growth in the Department of Psychological Sciences and creation of an Institute for Child and Family Sciences; consolidating and collocating the existing and new programs, including the ME program in one facility so as to optimally draw upon the intellectual, technological, and material resources of the UC Merced programs and facilities, and enhance intellectual exchange and collaboration between related programs. It would also provide

classroom space to support enrollment growth, and maximize energy efficiency, sustainability, and cost-effectiveness of these programs by housing them in a consolidated, state-of-the-art building designed to balance energy use and cost efficiencies.

## 5.6 COMPARISON OF ALTERNATIVES/ENVIRONMENTALLY SUPERIOR ALTERNATIVE

**Table 5-2** presents a summary comparison of the alternatives evaluated in detail. The table is designed to allow a reader to compare the impacts of the proposed Project with those of the alternatives, so that the reader can determine whether the alternative would result in similar, greater, or lesser environmental impacts than the proposed Project.

**Table 5-1: Summary Comparison of Project Alternatives**

Project Impact	Proposed Project	Alternative 1	Alternative 2	Alternative 3
		No Project	Reduced Program	Reduced Building Footprint
<b>UCM-ME Impact AQ-1:</b> The proposed Project would not result in construction emissions that would result in a cumulatively considerable net increase of criteria pollutants for which the air basin is in non-attainment.	<i>LTS</i>	Avoided	Reduced	Similar
<b>UCM-ME Impact AQ-2:</b> The proposed Project would result in operational emissions that would not involve a cumulatively considerable net increase of criteria pollutants for which the air basin is in non-attainment.	<i>LTS</i>	Reduced	Similar	Similar
<b>UCM-ME Impact AQ-3:</b> Implementation of the proposed Project would not expose sensitive receptors to substantial pollutant concentrations of carbon monoxide.	<i>LTS</i>	Reduced	Similar	Similar
<b>UCM-ME Impact AQ-4:</b> Implementation of the proposed Project would not conflict with or obstruct implementation of the applicable air quality plan.	<i>LTS</i>	Reduced	Similar	Similar
<b>Cumulative Impact C-AQ-1:</b> The construction and operation of the proposed Project, in conjunction with other past, present, and reasonably foreseeable future development in the project area, would not hinder air quality attainment and maintenance efforts for criteria pollutants.	<i>LTS</i>	Reduced	Similar	Similar

**Table 5-1: Summary Comparison of Project Alternatives**

Project Impact	Proposed Project	Alternative 1	Alternative 2	Alternative 3
		No Project	Reduced Program	Reduced Building Footprint
<b>UCM-ME Impact HYD-1:</b> Implementation of the proposed Project would not substantially alter the existing drainage pattern of the campus site through alteration of a water course or through the addition of impervious surfaces such that it would result in substantial erosion or siltation on or off site, result in flooding on or off site, contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems, or impede or redirect flood flows.	LTS	Avoided	Similar	Similar
<b>Cumulative Impact C-HYD-1:</b> Implementation of the proposed Project, in conjunction with other past, present, and reasonably foreseeable future development in the Project area, could cumulatively increase surface runoff but would not increase local and regional flooding.	LTS	Avoided	Similar	Similar
<b>UCM-ME Impact PUB-1:</b> Implementation of the proposed UCM-ME Building would increase demand for fire protection services and could require an expansion of an existing fire station or the construction of a new facility, but the impacts from construction would be less than significant.	LTS	Avoided	Similar/Reduced	Similar/Greater
<b>Cumulative Impact C-PUB-1:</b> Development of the proposed Project, in conjunction with other past, present, and reasonably foreseeable future development in the project area, would generate an increased demand for fire protection services, the provision of which would not result in a significant cumulative environmental impact.	LTS	Avoided	Similar/Reduced	Similar
<b>UCM-ME Impact TCR-1:</b> The proposed Project would not cause a substantial adverse change in the significance of a tribal cultural resource as defined in Section 21074.	LTS	Avoided	Reduced	Reduced
<b>Cumulative Impact C-TCR-1:</b> Implementation of the proposed Project would not result in a significant cumulative impact on tribal cultural resources.	LTS	Avoided	Reduced	Reduced

**Table 5-1: Summary Comparison of Project Alternatives**

Project Impact	Proposed Project	Alternative 1	Alternative 2	Alternative 3
		No Project	Reduced Program	Reduced Building Footprint
<b>UCM-ME Impact TRANS-1:</b> Implementation of the proposed Project would not conflict with a program, plan, ordinance or policy addressing roadway facilities.	<i>LTS</i>	Avoided	Similar	Similar
<b>UCM-ME Impact TRANS-2:</b> Implementation of the proposed Project would not exceed an applicable VMT threshold of significance under 2030 with Project conditions and therefore would not conflict with State CEQA Guidelines Section 15064.3, subdivision (b).	<i>LTS</i>	Reduced	Similar	Similar
<b>Cumulative Impact C-TRANS-1:</b> Implementation of the proposed Project would not exceed an applicable VMT threshold of significance under 2030 with Project conditions.	<i>LTS</i>	Reduced	Similar	Similar
<b>UCM-ME Impact UTL-1:</b> Implementation of the proposed Project would not require construction of new or expanded wastewater conveyance or treatment facilities; nor would the proposed project result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the project's projected demand in addition to existing commitments.	<i>LTS</i>	Reduced	Similar	Similar
<b>Cumulative Impact C-UTL-1:</b> Development of the proposed Project, in conjunction with other past, present, and reasonably foreseeable future development in the project area, would not result in a significant cumulative impact on wastewater collection and treatment facilities, such that construction of new or expanded facilities would be required.	<i>LTS</i>	Reduced	Similar	Similar

LTS = Less than significant impact  
 Similar = Impact similar to proposed project  
 Reduced = Impact less than proposed project  
 Greater = Impact greater than proposed project

CEQA requires the identification of the environmentally superior alternative among the alternatives to the proposed Project. The environmentally superior alternative must be an alternative to the proposed Project that reduces some of the environmental impacts of the proposed Project, regardless of the financial costs associated with this alternative. Identification of the environmentally superior alternative is an informational procedure and the alternative identified as

the environmentally superior alternative may not be that which best meets the goals or needs of the proposed Project.

As the table shows, the No Project Alternative would reduce all of the less than significant impacts of the Project and would, therefore, be considered the environmentally superior alternative. However, because the No Project Alternative would not meet the vast majority of the project objectives, an environmentally superior alternative must be identified from the other alternatives evaluated in detail. Based on the analysis above, the Reduced Building Footprint would result in substantially the same or greater impacts than the proposed Project. Although the Reduced Program Alternative would also result in operational impacts that would be comparable to the proposed Project, by involving a smaller building, it would further reduce the proposed Project's less than significant construction phase impacts. The Reduced Program alternative would, therefore, be considered the environmentally superior alternative. It would not, however, meet many of the project objectives.

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## 6.0 OTHER CEQA CONSIDERATIONS

### 6.1 INTRODUCTION

Sections 15126 and 15128 of the *State CEQA Guidelines* state that an EIR must include a discussion of the following topics:

- Significant environmental effects which cannot be avoided if the proposed project is implemented.
- Significant irreversible environmental changes which would be caused by the proposed project should it be implemented.
- Growth-inducing impacts of the proposed project; and
- A brief statement of the reasons why certain possible effects of a project was determined not to be significant and, therefore, are not evaluated in the EIR.

The following sections address each of these types of impacts and CEQA requirements, based on the analyses included in **Chapter 4.0, Environmental Setting, Impacts, and Mitigation Measures**, and additional analysis as needed.

### 6.2 SIGNIFICANT AND UNAVOIDABLE EFFECTS

With implementation of the 2020 LRDP mitigation measures included in the proposed Project, all project impacts would be reduced to a less-than-significant level and the proposed Project would not result in any significant and unavoidable impacts.

### 6.3 ANALYSIS OF IRREVERSIBLE CHANGES

Section 15126.2(c) of the *State CEQA Guidelines* requires a discussion of any significant irreversible environmental changes that would be caused by the proposed project. Specifically, Section 15126.2(c) states:

*Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible, since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irrecoverable commitments of resources should be evaluated to assure that such current consumption is justified.*

Generally, a project would result in significant irreversible environmental changes if:

- The project would generally commit future generations to similar uses at the project site.



- The proposed consumption of resources is not justified (e.g., the project involves the wasteful use of energy).
- The project would involve a large commitment of nonrenewable resources.
- The project would involve uses in which irreversible damage could result from any potential environmental accidents associated with the project.

Development of the proposed Project would result in the continued commitment of the project site to institutional uses, thereby precluding any other uses within this specific portion of the UC Merced campus. The University of California's ownership of the campus represents a long-term commitment of the campus lands to an institutional use. Restoration of the Project-site to pre-developed conditions would not be feasible given the degree of disturbance, the urbanization of the area, and the level of capital investment.

Additional irreversible commitments to future uses include those related to new development on the area of the Project site designated Campus Mixed Use (CMU). Development of this area would constitute an irreversible use of the site because once the Medical Education (ME) Building, parking lot, and other paved surfaces are constructed, the underlying soils would no longer be available for other uses. The proposed Project would result in the loss of up to approximately 4.3 acres of undeveloped although disturbed land, which provides limited to no agricultural value but some habitat value in its current state. As discussed in Section 5.6 of the Initial Study (**Appendix 1.0**), the proposed Project would implement mitigation measures from the 2020 Long Range Development Plan (LRDP) Subsequent Environmental Impact Report (SEIR) (as applicable) to reduce impacts to sensitive biological resources, and UC Merced has already preserved and enhanced appropriate habitat elsewhere in the vicinity of the campus to mitigate the impacts from the development of all of the lands within the campus.

Resources that will be permanently and continually consumed by the Project implementation include water, electricity, natural gas, and fossil fuels. However, the consumption of these resources by the project-related population would not represent unnecessary, inefficient, or wasteful use of resources. Similarly, construction activities related to the proposed Project would result in the irretrievable commitment of nonrenewable energy resources, primarily in the form of fossil fuels (including fuel oil, natural gas, and gasoline) for automobiles and construction equipment, but this usage would not represent unnecessary, inefficient or wasteful use of these resources.

UC Merced has instituted several water conservation measures that would be implemented by the proposed Project. These include a water conservation program to reduce the use of irrigation water by using drought tolerant species in landscaping, installing drip irrigation where appropriate, using automatic timing systems to apply irrigation water during the part of the day when evaporation rates are low, and installing of water meters. The proposed UCM-ME Building would also be fitted with low-flow fixtures to minimize indoor water consumption.

UC Merced has also instituted lighting and other energy conservation measures, including up-to-date energy-saving equipment that would be implemented by the proposed Project (as applicable). Lighting conservation efforts in new construction include installation of occupancy sensors to

automatically turn off lights when not in use, lighting reflectors, electronic ballasts, and energy-efficient lamps. In addition, UC Merced would construct the proposed Project in accordance with the UC Green Building Policy, which requires campuses to outperform the energy requirements of the California Building Code by at least 20 percent on all new construction and major renovation projects (except acute care facilities) or meet UC's Whole Building Energy Targets.

With respect to operational activities associated with the proposed Project, compliance with all applicable building codes and standard campus conservation features would ensure that all natural resources, including water and energy, are conserved to the maximum extent feasible. Overall, the consumption of natural resources would increase at a lesser rate than the project-related population increase due to the variety of energy and water conservation measures that UC Merced would implement as part of the proposed Project.

The *State CEQA Guidelines* also require a discussion of the potential for irreversible environmental damage caused by an accident associated with the project. While the proposed Project would involve the use, transport, store, and disposal of hazardous materials and wastes, as described in Section 5.11 of the Initial Study (**Appendix 1.0**), hazardous materials would be used and stored in small quantities, and the proposed Project would comply with all applicable state and federal laws and existing campus programs, practices, and procedures related to hazardous materials, which reduces the likelihood and severity of accidents that could result in irreversible environmental damage. These practices are applied to the entirety of the UC Merced campus, and there has never been an accident that resulted in irreversible environmental damage, indicating that current practices with respect to hazardous material handling are adequate. As such, there is a low potential for the proposed Project to cause irreversible environmental damage from an accidental release of hazardous materials.

## 6.4 GROWTH-INDUCING IMPACTS

This section evaluates the potential for the proposed Project to induce growth in eastern Merced County. Section 15126.2(d) of the *State CEQA Guidelines* requires that an EIR include a discussion of the potential for a proposed project to foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment.

The *State CEQA Guidelines* do not provide specific criteria for evaluating growth inducement and state that it must not be assumed that growth in an area is necessarily beneficial, detrimental, or of little significance to the environment. Growth inducement is generally not quantified, but is instead evaluated as either occurring, or not occurring, with implementation of a project. The identification of growth-inducing impacts is generally informational, and mitigation of growth inducement is not required by CEQA. It must be emphasized that the *State CEQA Guidelines* require an EIR to “discuss the ways” that a project could be growth inducing and to, “discuss the characteristics of some projects that may encourage...activities that could significantly affect the environment.” However, the *State CEQA Guidelines* do not require an EIR to predict or speculate specifically where such growth would occur, in what form it would occur, or when it would occur.

The 2020 LRDP SEIR estimated that between 2020 and 2030, enrollment on the campus would increase from about 9,700 full time equivalent (FTE) students to 15,000 students, an increase of

about 5,300 students. Over the same period, faculty and staff would increase from 1,280 to 2,411, an increase of 1,131 persons. Overall, the campus population would increase by 6,431 persons (5,300 FTE students and 1,131 staff/faculty personnel). As such, by 2030 the UC Merced campus is projected to have a total population of 17,411 students, faculty, and staff. The 2020 LRDP SEIR determined that the UC Merced campus would be developed with additional housing to accommodate 50 percent of the 2030 student population. The remaining balance of students would be accommodated by housing within the City of Merced or in communities within a 40-mile radius of the campus. The SEIR also noted that all of the new employees would live off campus. The 2020 LRDP SEIR determined that enough housing is available and planned in the City of Merced and in other communities within the 40-mile radius of the campus to house the new students and employees who would live off campus.

As discussed in Section 5.16 of the Initial Study (**Appendix 1.0**), the proposed Project is estimated to accommodate 2,811 students and 188 faculty and staff, for a total of 2,999 persons. Of the 2,811 students, 1,542 are existing under-grad and post-grad students enrolled in the Psychological Sciences and Public Health Departments and about 1,269 would be new students. Of the 188 faculty and staff, 139 are existing faculty and staff in the Psychological Sciences and Public Health departments, and about 49 would be new hires. Thus, 1,681 of the 2,999 persons that would occupy the proposed ME are already enrolled as students or employed by the Campus as of 2020, and therefore the net new population associated with the proposed Project would be on the order of about 1,318 persons. The Initial Study concluded that an estimated 684 total off-site housing units would be needed by the Project-related students and faculty/staff. If the backfill of the SSM Building is also taken into account, the proposed Project could generate a demand for about 1,125 to 1,594 off-campus housing units, assuming two to three students per housing unit. The Initial Study determined that the increase in housing needs related to the proposed Project would occur over a period of time as the programs in the new UCM-ME building are populated; in fact, the increase in population related to the proposed Project is projected to take place over a period of 10 years. As there won't be an immediate need for housing after completion of the proposed Project, the Initial Study determined that enough existing and planned housing would be available in the City of Merced and in communities within the 40-mile radius study area to house the additional students, employees, and dependents related to the proposed Project. The proposed Project would therefore not result in direct inducement of growth that would be considered adverse and all other environmental impacts of the proposed Project (i.e., transportation, utilities, and public services) have been thoroughly analyzed in their respective sections of this EIR and accompanying Initial Study. All impacts were determined to be less than significant or reduced to a level of less than significant with 2020 LRDP mitigation measures.

The proposed Project could generate indirect economic growth in both the City and County of Merced as students/staff associated with the proposed Project could increase demand for goods and services from other related industries or businesses in the Merced area. Due to this increased demand for goods and services, indirect employment could increase at small businesses in the Merced area. However, due to the relatively small size of the proposed Project within the context of the existing campus and the fact that only about 1,318 new students/staff are associated with the proposed Project, indirect economic growth in the City and County of Merced due to Project implementation would not be substantial. It is not anticipated that the City or County of Merced

would experience a large demand for new businesses to be developed or expanded because of implementation of the proposed Project on the UC Merced campus. Additionally, any new or expanded business in the City or County of Merced would undergo environmental analysis and review pursuant to CEQA to determine their environmental effects.

The influx of people into an area/region in response to the employment opportunities provided by a proposed project is considered an indirect population growth effect of a proposed project. The proposed Project would generate employment opportunities for about 188 staff and faculty, of which 139 are existing faculty and staff in the Psychological Sciences and Public Health departments, and about 49 would be new hires. As of June 2022, the unemployment rate in Merced County is 7.0 percent (8,000 persons unemployed) and the unemployment rate in the City of Merced is 5.5 percent (1,900 persons unemployed).<sup>1</sup> Based on the unemployment rate in Merced County and the City of Merced, it can be assumed that new staff hires (i.e., non-faculty) for the proposed Project would come from these two areas. For these reasons, indirect population growth caused by the proposed Project is expected to be small. Impacts would not be substantial and would be less than significant.

If utility infrastructure associated with a proposed project is constructed with excess capacity, indirect growth can be triggered in an area. If a proposed project is developed in an area where a lack of infrastructure or infrastructure constraint is removed due to a proposed project, such a condition could indirectly encourage growth in an area. The proposed Project would be developed on the UC Merced campus which is currently served by an adequate utility infrastructure. The proposed Project would connect to existing water and wastewater infrastructure on the campus. The existing G Street trunk main, which would convey Project generated wastewater, would be upgraded to a bigger diameter pipe independent of and prior to occupation of the proposed Project. Thus, growth outside of the Project site and campus would not be triggered by extension of infrastructure to the Project site.

## 6.5 EFFECTS NOT FOUND TO BE SIGNIFICANT

Under CEQA and the *State CEQA Guidelines*, a lead agency may limit an EIR's discussion of environmental effects when they are not significant (Public Resources Code [PRC] Section 21002.1(e); *State CEQA Guidelines* Sections 15128 and 15143). Based on a review of the potential effects of the proposed Project and as summarized below, the University has determined that the proposed Project would result in no impacts or less than significant impacts in the environmental resources areas of Aesthetics, Agriculture and Forestry Resources, Air Quality (construction and operational odors), Biological Resources, Cultural Resources, Energy, Geology and Soils, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water quality (water quality, groundwater recharge and supplies, seiche or tsunami inundation, relevant plans related to water quality and groundwater), Land Use and Planning, Mineral Resources, Noise, Population and Housing, Public Services (police, school, parks, and other public services), Recreation, Transportation (plans or policies associated with pedestrian, transit, and pedestrian facilities, hazards due to a

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<sup>1</sup> State of California Employment Development Department, Unemployment Rates for Merced County and City of Merced, Website: <https://www.labormarketinfo.edd.ca.gov/geography/merced-county.html> (accessed July 22, 2022).

geometric design feature or incompatible use, or emergency access), Utilities and Service Systems (water, solid waste, sewer), and Wildfire, and that detailed evaluation of these resource areas in the EIR is not required.

The analysis below is based substantially on the Initial Study (**Appendix 1.0**) that was published with the NOP for this EIR. At the time that the Initial Study/NOP was prepared, the approximately 9-acre area where the proposed storm water detention basin would be located had not been identified for the location of that project element. However, the detention basin area is immediately south of the area that was identified as the project area in the Initial Study. The analysis below updates the analysis from the Initial Study as appropriate to include the environmental impacts from the development of the storm water detention basin.

### 6.5.1 Aesthetics

The proposed UCM-ME Building would be developed on a portion of the campus that is designated CMU and the storm water detention basin would be constructed on lands designated CMU and CBRSL. The Project site as well as the campus are not located near any designated scenic highways. The proposed Project would be located near the existing academic core and would be similar in height and scale to other development in the southeastern portion of the campus, where building heights range between approximately 45 and 80 feet tall. The proposed building would be a four-story building that would be about 65 feet in height and would not be taller than any of the other surrounding buildings in this portion of the campus. The architectural design of the proposed building would adhere to the campus aesthetic vision and reflect UC Merced's vision for a distinctive environment that is dynamic and engaging for learning, living, and working. The proposed Project would comply with existing UC Merced architectural standards for lighting and glare to avoid spillover. Further, **2020 LRDP Mitigation Measures AES- 1b** and **AES-3a** would be implemented as part of the proposed Project which would reduce impacts on scenic vistas and visual character. Therefore, potential impacts of the proposed Project related to scenic vistas, scenic resources, scenic regulations, and light and glare would be less than significant.

### 6.5.2 Agriculture and Forestry Resources

The proposed Project site is not designated as an Important Farmland (i.e., Prime Farmland, Unique Farmland, Farmland of Statewide Importance) pursuant to the California Department of Conservation Farmland Mapping and Monitoring Program (FMMP). The site is not under agricultural production, is not under a Williamson Act Contract, nor is it occupied by forest land. Finally, the proposed Project site is not zoned for agricultural, or forestry uses. Therefore, there would be no impact to agricultural and forestry resources.

### 6.5.3 Air Quality (Odors)

Construction of the proposed Project would require the use of diesel-fueled equipment and architectural coatings, both of which generate odors. However, these odors would be short-term and temporary and would not be pervasive enough to affect a substantial number of people. Routine operation of the proposed Project would not involve activities that typically produce odors such as wastewater treatment, manufacturing, agriculture, etc. Occasional use of maintenance products around and within the proposed building could produce localized odors, but they would be

temporary and limited in area. In addition, the proposed Project would include laboratory fume hoods. Consequently, short-term construction and long-term operation of the proposed Project would not create odors that could affect a substantial number of persons, nor would the proposed Project expose Project site occupants to substantial odors, and the impact would be less than significant. (All other impacts on air quality are addressed in **Section 4.1, Air Quality**, of this EIR.)

#### 6.5.4 Biological Resources

The proposed Project has the potential to impact the following special-status wildlife species: California tiger salamander (CTS), western spadefoot, western pond turtle, special-status birds and nesting birds, vernal pool fairy shrimp, vernal pool tadpole shrimp, Crotch bumble bee, and San Joaquin kit fox.

**California Tiger Salamander.** A CTS relocation plan has been developed and approved for salvage of individual CTS if found within the Project area. The Campus' existing Incidental Take Permit (ITP) also requires the installation of a CTS exclusion fence around construction sites and excavation of small mammal burrows within 0.25-mile of known or potential CTS breeding habitat. UC Merced would continue to implement all requirements of the ITP and Biological Opinion (BO) as part of the proposed Project.

**Western Spadefoot.** Habitats suitable for CTS are often also suitable for western spadefoot; thus, the avoidance and protection measures for CTS would also help protect this species, should an individual enter a work site.

**Western Pond Turtle.** With respect to the potential for Project construction activities to result in injury or mortality of western pond turtle, UC Merced's 2009 Construction Mitigation Plan (CMP) requires that a biologist conduct a preconstruction survey for western pond turtle prior to initial ground-disturbing activities in all suitable aquatic habitats within 100 feet of the work area. Work buffers would be established, as needed, based on the results of the preconstruction survey.

**Special-Status and Nesting Birds.** While no mature trees would be removed as part of the Project, grading and vegetation removal would occur on the building site and the detention basin site during Project construction. Project implementation has the potential to disturb active special-status and non-special-status migratory bird nests, including burrowing owls that nest in small mammal burrows, if ground disturbing activities and/or construction occurs during the nesting season (generally February 15 through August 15). The destruction or disturbance of active nests resulting in nest failure or loss of individuals would be a potentially significant impact. However, **2020 LRDP Mitigation Measure BIO-9a**, which is a part of the proposed Project, as well as the conditions in UC Merced's Incidental Take Permit (ITP) for Swainson's hawk (e.g., preconstruction nesting surveys, no disturbance buffers, etc.), would be implemented that would reduce potential impacts to special-status and non-special status migratory bird nests.

**Vernal Pool Crustacean Species.** As described in the 2020 LRDP SEIR, previously extant vernal pools and swales that occurred within the Project area were graded and filled as a result of UC Merced's Phase 6 Project and, more recently, the 2020 Project. UC Merced has already fully compensated for



the loss of habitat for these species, as described in Section 5.6 of the Initial Study. There would be no impact on the species.

**Crotch Bumble Bee.** The Project area could provide potentially suitable underground nesting habitat for Crotch bumble bee. Should Crotch bumble bee colonies or overwintering queens be present in underground nests in the Project area, construction activities could adversely affect this species and its habitat. With the implementation of **2020 LRDP Mitigation Measure BIO-4**, which is a part of the proposed Project, any potential impacts on Crotch bumble bee would be reduced to less than significant.

**San Joaquin kit fox.** Although no kit fox occurrence has been recorded on or near the campus since the inception of the campus, there is some potential for San Joaquin kit foxes to disperse through the Project site, and a potential for physical harm to a kit fox, should one be present within a construction site. Both the ITP issued by the California Department of Fish and Wildlife and Biological Opinion (BO) issued to the campus by US Department of Fish and Wildlife contain extensive requirements, including pre-construction surveys and compliance measures, that UC Merced must implement during construction of all projects, including the proposed Project, to avoid harm to kit fox. Compliance with the BO and ITP requirements would adequately avoid and minimize harm to kit fox.

The Project area does not contain any riparian habitat, State or federally protected wetlands, or wildlife movement corridors. Overall, potential impacts related to biological resources from implementation of the proposed Project would be less than significant.

#### 6.5.5 Cultural Resources

On March 13, 2021, a field survey of the building site and staging area was conducted by an archaeologist to identify the potential presence or absence of surficial archaeological resources. During the field survey, no structural remains, artifacts, or soil inconsistencies were observed within the area surveyed that would indicate the presence of a historical resource. As referenced in **Section 4.5**, while the Project site was expanded to the south to include the proposed storm water basin subsequent to the 2021 cultural resources survey, no known historic or pre-historic sites were identified in this area based on previous surveys conducted prior to and in conjunction with the 2020 LRDP SEIR. Furthermore, in the event that historical or archaeological resources are discovered during Project construction activities, the proposed Project would be required to implement **2020 LRDP Mitigation Measure CUL-2**, resulting in a less than significant impact. The proposed Project site within the UC Merced campus has been disturbed by previous construction activities, and no evidence of human remains have been discovered on the site, including during the survey conducted on March 13, 2021. In the event that human remains are discovered during Project construction activities, the proposed Project would be required to implement **2020 LRDP Mitigation Measure CUL-3**. Overall, impacts to cultural resources would be less than significant.



### 6.5.6 Energy

The proposed Project would account for an additional approximately 190,000 outside gross square feet (ogsf)<sup>2</sup> of building space on the campus, which is well within the 1.83 million gsf increase evaluated in the 2020 LRDP SEIR. Furthermore, the construction of the proposed building would comply with CALGreen standards, the University of California Sustainable Practices Policy (Sustainability Policy), and California Air Resources Board's (CARB) adopted Airborne Toxic Control Measure (ATCM) to limit heavy-duty diesel motor vehicle idling and the production of toxic air contaminants (TACs). As such, Project construction would not increase the consumption of energy resources beyond what was evaluated in the 2020 LRDP SEIR. The proposed Project would comply with the Sustainability Policy and the Campus's sustainable practice design guidelines during operation. The proposed Project would outperform the California Energy Code by 20 percent or better as required by UC's Sustainability Policy or would meet UC's Whole Building Energy Performance Targets. Furthermore, the estimated population and total building space associated with the proposed Project are within the program-level assumptions for the 2020 LRDP SEIR analyses. Therefore, the use of energy in the construction and operation of the proposed Project would not be wasteful or inefficient. Impacts related to energy from implementation of the proposed Project would be less than significant.

### 6.5.7 Geology and Soils

The proposed Project is not located in an Alquist-Priolo Fault Zone. The 2020 LRDP SEIR concluded that the UC Merced campus, including the UCM-ME Building site, could be exposed to excessive ground shaking during a seismic event, seismic-related ground failure/liquefaction, and instability due to expansive soils. As such, the proposed Project would implement **2020 LRDP Mitigation Measure GEO-2** to ensure that impacts associated with such events do not occur to the UCM-ME Building. Implementation of **2020 LRDP Mitigation Measures CUL-4a** and **CUL-4b** would ensure that potential impacts of the proposed Project to paleontological resources would be avoided or reduced. Impacts related to geology, soils, and paleontology with implementation of the proposed Project would be less than significant.

### 6.5.8 Greenhouse Gas Emissions

The 2020 LRDP SEIR found that the campus' per capita emissions of 0.63 metric tons of CO<sub>2</sub>e per capita per year in 2030 would be well below the UC Merced 2030 target of 2.44 metric tons of CO<sub>2</sub>e per capita per year. However, the 2020 LRDP SEIR found that the campus' total emissions of 10,137 metric tons of CO<sub>2</sub>e in 2030 would exceed the threshold of 3,300 metric tons of CO<sub>2</sub>e per year. As such, the 2020 LRDP SEIR found that implementation of the 2020 LRDP would result in a potentially significant impact related to GHG emissions. The estimated population and total building space associated with the proposed Project are within the growth assumptions used in the 2020 LRDP SEIR analyses; therefore, the operational GHG emissions that would result due to the proposed Project are included in the estimated emissions reported and analyzed in the SEIR to determine the LRDP's GHG impact. UC Merced would implement **2020 LRDP Mitigation Measures GHG-1a, GHG-1b, and GHG-1c** to ensure the campus' total operational emissions remain below the threshold set forth in

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<sup>2</sup> "Outside gross square feet (ogsf)" includes the interior building area within the enclosed structure as well as the covered, unenclosed corridors, including walkways, porches, balconies, etc.

the 2020 LRDP SEIR. Therefore, the Project's impacts related to GHG emissions would be less than significant.

### 6.5.9 Hazards and Hazardous Materials

Small quantities of biologically hazardous substances and radioactive materials would be used in laboratories that are included in the proposed Project. UC Merced currently adheres to and would continue to adhere to the U.S. Department of Health and Human Services guidelines, *Biosafety in Microbiological and Biomedical Laboratories*, put forth by the National Institutes of Health and the Centers of Disease Control, which specifies best practices for the safe conduct of work in biomedical and clinical laboratories. The Radiological Safety Division of the Department of Environmental Health and Safety (EH&S) at UC Merced is responsible for the development and oversight of a comprehensive radiation safety program. 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. Furthermore, radioactive materials would be monitored closely by the EH&S. The use of hazardous chemicals in varying amounts during construction of the proposed building is also subject to hazard control. Building construction activities are required to comply with all applicable environmental, health and safety compliance regulations including, but not limited to, Titles 8 and 22 of the California Code of Regulations, Uniform Fire Code, and Division 20 of the California Health and Safety Code. The transport and unloading of hazardous materials to and from the proposed Project site during construction would comply with United States Department of Transportation (DOT) and California Department of Transportation (Caltrans) regulations.

According to the California Department of Toxic Substance Control EnviroStor website there are no known hazardous waste sites located within 1,000 feet of the Project site. The proposed Project is not located within ¼-mile of a K-12 school; as such, the proposed Project would not emit hazardous emissions or handle hazardous materials within one-quarter mile of a school. The Project site is not within 2 miles of an airport; as such, the proposed Project would not result in a safety hazard or excessive noise for people residing or working within the Project area from airports. UC Merced has adopted both an Emergency Operations Plan and a Crisis Communications Plan that the proposed Project would abide by; as such, the proposed Project would not impair or physically interfere with an adopted emergency response plan or emergency evacuation plan. Overall, impacts related to hazards and hazardous materials would be less than significant.

### 6.5.10 Hydrology and Water Quality

Construction activities under the 2020 LRDP, which include the proposed UCM-ME Building Project, could result in soil erosion and release of sediment into receiving waters. Spills or leaks from heavy equipment and machinery (petroleum products and other heavy metals) in staging areas and building sites could also adversely affect receiving waters. The proposed Project would be subject to National Pollutant Discharge Elimination System (NPDES) regulations for storm water and would be required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit Order 2009-009-DWQ) and prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) during construction.

The proposed Project would increase demand for potable water, which would be drawn from the Merced Subbasin by the City and supplied to the campus. The 2020 LRDP SEIR evaluated the impact of campus development under the 2020 LRDP for its potential to decrease groundwater supplies and determined that implementation of the 2020 LRDP would not substantially interfere with groundwater recharge nor substantially decrease groundwater supplies. The anticipated population associated with the proposed UCM-ME Building Project is within the projected campus population increase that was analyzed in the 2020 LRDP SEIR. Therefore, the proposed Project would not increase the demand for potable water or require extraction of groundwater in excess of what was previously analyzed in the 2020 LRDP SEIR and found to result in a less than significant impact on groundwater supplies.

The Project site is not within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map. In addition, Lake Yosemite, which is located approximately 0.5-mile northeast of the Project site, has not historically produced seiches in association with tectonic activity. As a result, the campus is not at risk of seiche or tsunami inundation.

Overall, impacts related to water quality, groundwater recharge and supplies, seiche or tsunami inundation, and conflicts related to a water quality control plan or sustainable groundwater management plan would be less than significant. (The proposed Project's impact on the existing drainage patterns in the project area due to the addition of impervious surfaces and other changes is analyzed in **Section 4.2, Hydrology and Water Quality**, of this Draft EIR.)

#### 6.5.11 Land Use and Planning

The land use plan that is applicable to the proposed Project is the 2020 LRDP. The 2020 LRDP was designed to guide the future development of the campus in a manner that would avoid and minimize any adverse effects of campus growth and development. The proposed Project would not conflict with the 2020 LRDP. The proposed building would be located in an area that is designated CMU, which allows for the siting of academic buildings and would be designed in compliance with development standards in the 2020 LRDP and the Physical Design Framework of the UC Merced campus. The storm water basin would also be located on lands that are designated for the development of such facilities. Further, the building space and campus population associated with the proposed Project is within the growth projections of the 2020 LRDP. As such, implementation of the proposed Project would not cause a significant environmental impact due to a conflict with the 2020 LRDP. Impacts related to land use and planning would be less than significant.

#### 6.5.12 Mineral Resources

The Project site is not located on land designated as a mineral resource zone (MRZ); therefore, implementation of the Project would not interfere with mineral resource extraction. There would be no impact related to mineral resources.

#### 6.5.13 Noise

As discussed in the Initial Study, the 2020 LRDP SEIR determined that all construction noise and vibration impacts of development on the UC Merced campus under the 2020 LRDP (which includes the proposed Project) would be reduced with implementation of **2020 LRDP Mitigation Measure**

**NOI-3, 2020 LRDP Mitigation Measure NOI-4a and 2020 LRDP Mitigation Measure NOI-4b.** Further, the proposed project would not expose people residing or working on the campus or in the UCM-ME Building to excessive noise levels associated with aircraft as there are no airports nearby.

Similarly, as the proposed Project is within the growth assumptions anticipated for the 2020 LRDP, the proposed Project's contribution to traffic-related increases in ambient noise levels is adequately analyzed in the 2020 LRDP noise analysis and determined to be a less than significant impact. Under the 2020 LRDP SEIR significance criteria, a noise impact would be considered significant if the proposed Project causes an increase of 5 dBA or more, where the noise levels without the proposed Project are 50 to 65 dBA  $L_{dn}$  for residential uses and the increase in noise due to the proposed Project would not cause the significance thresholds to be exceeded. The traffic added by the proposed Project would not generate noise that would exceed this threshold. As a result of the intervening distance and the fact that noise levels generated by the activities associated with the proposed Project would generally be low at the source, noise generated by daily activities at the proposed UCM-ME Building is not expected to exceed the noise standard of 65 dBA  $L_{dn}$  exterior and 45 dBA  $L_{dn}$  interior at the nearest off-site residential locations. On-site sensitive noise receptors could be exposed to noise levels from HVAC systems; however, typical commercial grade HVAC systems noise can be reduced to below noise standards for onsite residences and academic buildings with the installation of standard attenuation barriers. On- and off-site receptors are not expected to be exposed to noise levels in excess of the standards for noise-sensitive uses with implementation of the proposed Project.

Overall, the Project's impacts related to noise would be less than significant.

#### **6.5.14 Population and Housing**

The proposed Project would be developed on a portion of the UC Merced campus that is currently vacant. No residential units or student housing is located on the proposed Project site. As such, implementation of the proposed Project would not displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

It is anticipated that the maximum number of persons accommodated by the proposed building would be 2,811 students and 188 faculty and staff, for a total of 2,999 persons. Of the 2,811 students, 1,542 are existing under-grad and post-grad students enrolled in the Psychological Sciences and Public Health departments and about 1,269 would be new students. Of the 188 faculty and staff, 139 are existing faculty and staff in the Psychological Sciences and Public Health departments, and about 49 would be new hires. Thus, 1,681 of the 2,999 persons that would occupy the proposed UCM-ME Building are already enrolled as students or employed by the Campus as of 2022, and the net new population associated with this Project would be on the order of about 1,318 persons. It is acknowledged that the proposed Project would accommodate campus enrollment growth without a concurrent increase in on-campus student housing. However, the enrollment growth associated with the proposed Project is an element of the annual enrollment increase that is projected for UC Merced under the 2020 LRDP, and the UCM-ME Building occupancy would occur gradually within the 2020 LRDP planning horizon (i.e., by 2030) or potentially beyond. Furthermore, the 2020 LRDP SEIR concluded that enough housing is available and planned in the City of Merced and in communities within the 40-mile radius study area to house additional students, employees,

and dependents that would relocate into the study area under the 2020 LRDP. Thus, as with the 2020 LRDP, the proposed Project's impact on population growth and housing would be less than significant.

#### 6.5.15 Public Services

The UC Merced campus, including the Project site, is served by the UC Merced Police Department. Based on input from the UC Merced Chief of Police, the development of the proposed UCM-ME Building would require the hiring of additional policing staff. UC Merced anticipates that the new or expanded public safety building, currently in the early planning stages, would accommodate the additional police staff needed for the proposed Project. If the expanded public safety building is not operational prior to the completion of the proposed Project, any additional police staff would be accommodated in other existing spaces on campus. Therefore, while additional police staff will be required, the Project itself would not generate the need for an expansion of the campus public safety building that would result in a significant environmental impact.

Development of the UC Merced campus, including the proposed Project, under the 2020 LRDP would generate a demand for primary and secondary education facilities. As enrollment of the UC Merced campus grows and employees are hired within the parameters of the 2020 LRDP, homes will concurrently be developed throughout the surrounding area. Pursuant to SB 50, developers will be required to pay school impact fees as single-family homes or multi-family units are constructed. Students, faculty and staff associated with the proposed Project that are homeowners would also pay property taxes, a portion of which would go towards the funding of local K-12 public schools. As with the 2020 LRDP, the impact of the proposed Project on K-12 schools would be less than significant.

The library system of the campus would continue to meet the needs of a modern research and teaching institution, and thus provide a large array of library services to students, staff, and faculty of the campus, as well as the general public on a limited basis. Therefore, consistent with the analysis in the 2020 LRDP SEIR, the City library would not be impacted due to Project implementation.

In summary, the proposed Project's impacts on public services (police, school, parks, and other public services) would be less than significant. (The proposed Project's impact on fire service is analyzed in **Section 4.3, Public Services**, of this Draft EIR.)

#### 6.5.16 Recreation

The 2020 LRDP SEIR concluded that the population growth of the campus through 2030, which includes the population associated with the proposed Project, could contribute to the degradation of facilities at Lake Yosemite Regional Park. As such, **2020 LRDP Mitigation Measures PUB-6a** through **PUB-6b** would be implemented as part of the proposed Project, thus reducing impacts to the Lake Yosemite Regional Park.

### 6.5.17 Transportation

The proposed Project does not include any changes to transit service or infrastructure provided by non-University operators. UC Merced will continue to make improvements to CatTracks to serve the enrolled students, faculty and staff (including those associated with the proposed Project) and will continue to work with transit providers to coordinate service with the campus-provided service. The proposed Project does not include any infrastructure changes outside the campus and, thus, would not disrupt existing facilities, interfere with existing or planned pedestrian and bicycle facilities, nor conflict with adopted plans. The proposed Project would include connectivity to the existing pedestrian and bicycle facilities of the UC Merced Campus.

Implementation of the proposed Project would not include changes to off-campus roadways; as such, the proposed Project would not increase hazards due to a geometric design feature of roadways or intersections. The proposed UCM-ME Building would be developed on the campus in an area designated as CMU and therefore would be consistent with other types of structures and uses that exist in the same area of the campus or that would be developed in the future under the 2020 LRDP.

Bellevue Road and Cottonwood Loop Road would provide access to the proposed Project once it is completed and operational. Both Bellevue Road and Cottonwood Meadow Loop Road have been designed to accommodate emergency vehicles travel; as such, adequate emergency access to the Project site would be provided.

Overall, impacts related to plans or policies associated with pedestrian, transit, and pedestrian facilities, hazards due to a geometric design feature or incompatible use, or emergency access would be less than significant. (The proposed Project's impact on vehicle miles traveled (VMT) is analyzed in **Section 4.4, Transportation**, of this Draft EIR.)

### 6.5.18 Utilities and Service Systems (water, solid waste, electrical, and communications)

The 2020 LRDP SEIR determined that by 2030, the water demand for the UC Merced campus would be 612 acre-feet per year (AFY). The City of Merced, in its 2015 Urban Water Management Plan (UWMP), estimated and included a demand of 1,406 AFY of water for the campus in 2030. Thus, the total demand of the UC Merced campus under the 2020 LRDP is well below the 1,406 AFY of water per year accounted for in the approved 2015 UWMP. In addition, the 2015 UWMP concluded that the City of Merced has an adequate groundwater supply to meet water demands in its service area through 2035, including the UC Merced water demand under the 2020 LRDP, during normal, single dry, and multi-dry years.<sup>3</sup> As the proposed Project's additional campus population growth and building space are within the space and population increases projected for the campus under the 2020 LRDP, the proposed Project has been accounted for in the 2020 LRDP water demand. There

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<sup>3</sup> In August 2021, the City of Merced adopted the 2020 Urban Water Management Plan. That plan included the projected campus population growth under the 2020 LRDP and the associated increase in water demand at the campus. Similar to the 2015 UWMP, the 2020 UWMP also concluded that the City of Merced has an adequate water supply to meet water demands in its service area through 2040, including the UC Merced water demand under the 2020 LRDP, during normal, single dry, and multi-dry years.



would be sufficient water supplies available to adequately serve the Project during normal, dry and multiple dry periods.

The proposed Project would accommodate about 2,811 students and, therefore, assuming the same solid waste generation rate used in the 2020 LRDP SEIR, the Project generated solid waste would equate to 225 tons per year. This equates to 18.8 percent of the total solid waste estimated to be generated by the UC Merced campus under the 2020 LRDP by 2030. As the Campus (which includes the proposed Project) anticipates that 90 percent of solid waste would be diverted from the landfill in the future, the amount disposed at the landfill annually would be even lower. As there is adequate capacity available in the landfill, an expansion of the landfill would not be required. Thus, implementation of the proposed Project would not generate solid waste in excessive of state or local standards, or in excess of the capacity of the Highway 59 Landfill.

In addition, implementation of the proposed Project would not require additional electrical conveyance infrastructure beyond what is needed for buildout of the UC Merced campus under the 2020 LRDP. The Project would not use piped natural gas. The proposed Project would connect to the existing telecommunication utilities on the UC Merced campus and would not require additional infrastructure to be adequately supported.

Therefore, the proposed Project's impacts to electrical, natural gas, telecommunication facilities, water supply, and solid waste would be less than significant.

#### **6.5.19 Wildfire**

According to the California Department of Forest and Fire Protection (CalFire), the campus, including the Project site, is not located in a State Responsibility Area (SRA) or Local Responsibility Area (LRA) Very High Fire Hazard Severity Zone (VHFHSZ). UC Merced has adopted both an Emergency Operations Plan and a Crisis Communications Plan. The Campus emergency response team is trained and equipped to respond to campus emergencies including fires. UC Merced provides sufficient resources to respond to campus emergencies, in coordination with the County of Merced, if necessary. The departments occupying the new building associated with the proposed Project would also prepare and implement an individual emergency response plan that would provide evacuation procedures in the event of a fire or wildfire in the area. Further, the Project would be landscaped with drought-tolerant, low water use, and low fire fuel volume plant materials (mostly grasses) to minimize fire hazard. Finally, the proposed Project would be designed to comply with the most current California Fire Code requirements and would include such features as fire sprinkler systems. Implementation of the proposed Project would not impair an adopted emergency response or evacuation plan or exacerbate wildfire risks, and thereby would not expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. Therefore, the proposed Project would have no impact related to wildfire.



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## 7.0 2020 LRDP SEIR TRANSPORTATION SUPPLEMENT

### 7.1 INTRODUCTION

In March 2020, The Regents certified a program-level Subsequent Environmental Impact Report (SEIR)<sup>1</sup> that analyzed and disclosed the impacts from the implementation of an updated Long Range Development Plan (LRDP)<sup>2</sup> for the UC Merced campus, and adopted the UC Merced 2020 LRDP as a guide for physical development of the campus to accommodate population growth projected through 2030. The 2020 LRDP SEIR addressed the development of the campus to accommodate the enrollment of 15,000 Full Time Equivalent (FTE) students and 2,411 faculty and staff for a total population of 17,411 persons by 2030 within a 1,026-acre campus footprint.

The 2020 LRDP SEIR analyzed potential impacts of traffic generated by campus growth through 2030 on roadway facilities based on an analysis of level of service (LOS) impacts. However, since the certification of the 2020 LRDP SEIR in March 2020, the California Environmental Quality Act (CEQA) has been revised pursuant to Senate Bill (SB) 743 to clarify that, as of July 1, 2020, automobile delay, as measured by “level of service” and other similar metrics, no longer constitutes a significant environmental effect under CEQA, except in locations specifically identified in the guidelines, if any (Public Resources Code, Section 21099, subd. (b)(2)). Instead, as specified by SB 743 and the associated updates to the *State CEQA Guidelines*, CEQA documents prepared as of July 1, 2020 or later must include an evaluation of transportation impacts based on vehicle miles traveled (VMT). UC Merced has commenced the growth and development of the campus under the 2020 LRDP and has proposed the construction of a new academic building, UCM-ME Building, to accommodate existing and new educational programs at the campus. In conjunction with the environmental review of the new building, the Campus has prepared an updated transportation impact analysis for the buildout of the campus under the 2020 LRDP that complies with the *State CEQA Guidelines* and presents the transportation impacts from the implementation of the 2020 LRDP, including the UCM-ME Building Project, based on VMT. This section of the EIR presents an updated supplemental program-level transportation impact analysis of campus growth through 2030 under the 2020 LRDP based on a VMT metric consistent with *State CEQA Guidelines* Section 15064.3, subdivision (b). The analysis in this section replaces in full the prior program-level LOS transportation analysis presented in Section 4.8 of the 2020 LRDP SEIR that was certified in March 2020. Mitigation measures previously adopted to reduce or avoid LOS-related impacts associated with the 2020 LRDP have also been deleted, because automobile delay, as described solely by LOS or other similar measures of vehicle congestion, is no longer considered a significant impact under CEQA. The University intends to rely upon this revised program-level analysis in analyzing the project-specific transportation impacts of future projects that are proposed under the 2020 LRDP.

<sup>1</sup> University of California, Merced. 2020b. *UC Merced 2020 Long-Range Development Plan Final Subsequent Environmental Impact Report*, March 2020.

<sup>2</sup> University of California, Merced. 2020a. *UC Merced 2020 Long-Range Development Plan*, March 2020.

This section is based on the VMT Impact Analysis<sup>3</sup> prepared for the UC Merced 2020 LRDP, which is included in **Appendix 4.0**. The VMT Impact Analysis was prepared in June 2021, using the analysis tools and supporting assumptions available and appropriate at that time.

### 7.1.1 Environmental Setting

#### 7.1.1.1 Roadway Network

The roadway network in the UC Merced campus vicinity is shown in **Figure 7-1, Roadway Network**. The roadway network reflects the primary access routes to and from the campus and extends from Bellevue Road on the north to State Route 99 on the south, and from Highway 59 on the west to Lake Road on the east. Roadway facilities in downtown Merced between V Street and G Street along W 16<sup>th</sup> Street are also depicted. The area surrounding the UC Merced campus is largely undeveloped with the exception of development on the campus and rural residences in the surrounding areas. Limited roadway infrastructure is in place. The UC Merced campus site can be accessed by two two-lane rural roads, namely Bellevue Road and Lake Road. Descriptions of the local and regional roadways in the vicinity of the campus that are relevant to the 2020 LRDP project area are provided below.

**State Route 99** (hereinafter SR 99 or Highway 99 as it is locally known) is the primary regional facility in the Merced area. Highway 99 provides access to San Francisco and Sacramento to the north, and Fresno and Bakersfield to the south. Through the City of Merced, Highway 99 is a four-lane freeway with two lanes in each direction. Future plans call for improvements to Highway 99 throughout the Central Valley.

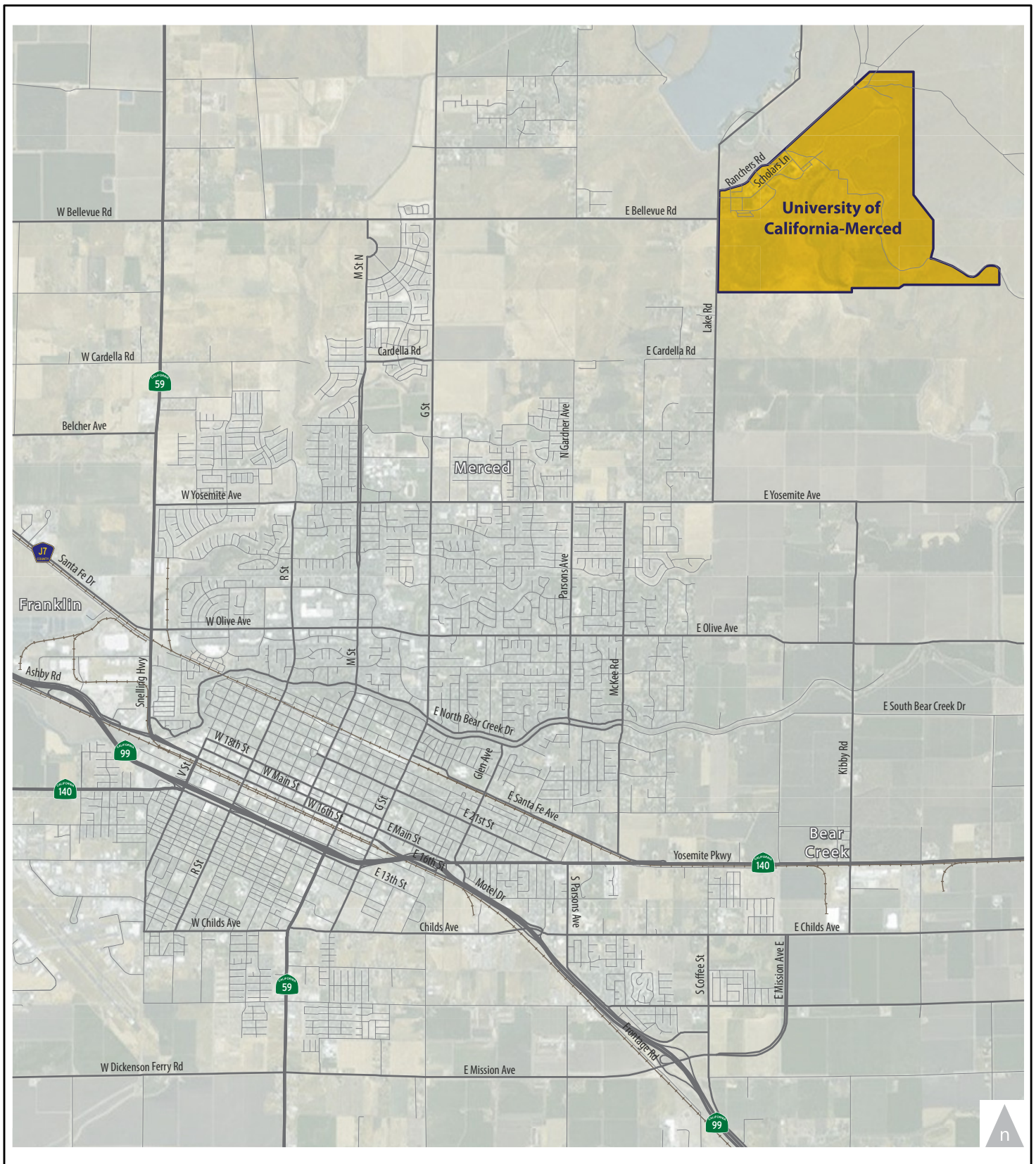
**State Route 140** (hereinafter Highway 140 or Yosemite Parkway as it is locally known) is a major east-west highway serving recreational and local traffic. Highway 140 is a two-lane rural highway that provides regional access to Yosemite National Park to the east.

**State Route 59** (hereinafter Highway 59 as it is locally known) is a north-south facility extending from State Route 152 (near Los Banos) to Snelling, a community located north of the City of Merced. Highway 59 is a two-lane rural highway through Merced.

**G Street** is a north-south roadway extending from Highway 99 to La Paloma Road, where it turns into Snelling Road (Highway 59). G Street is a four-lane roadway south of Yosemite Avenue with left-turn pockets at major intersections. North of Yosemite Avenue, G Street expands to five lanes, three southbound and two northbound, with left-turn pockets until Mercy Avenue, where G Street narrows to become two lanes. North of Cardella Road, G Street expands back to four lanes until Farmland Avenue, where G Street narrows back to two lanes.

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<sup>3</sup> Fehr & Peers. 2021. *VMT Impact Analysis for the UC Merced Health and Behavioral Science – Medical Education (HBS-ME) Building Project and 2020 LRDP*. June.



UNIVERSITY OF CALIFORNIA  
**MERCED**

LEGEND

 UC Merced Campus

FIGURE 7-1



SOURCE: UC Merced, 2019

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UC Merced 2020 Long Range Development Plan Project  
Roadway Network

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**Olive Avenue** is an east-west street providing cross-town access. West Olive Avenue connects Highway 59 and R, M, and G Streets. It is a six-lane facility west of G Street, primarily serving a commercial corridor. West of Highway 59, Olive Avenue becomes Santa Fe Drive, connecting the northern portions of Merced to the City of Atwater and Castle Air Force Base. East of G Street, East Olive Avenue transitions from four lanes to two lanes and provides access to one of Merced's largest residential areas.

**Yosemite Avenue** is an east-west road extending from Highway 59 to its eastern terminus at Arboleda Drive. Yosemite Avenue is a two-lane facility west of Arboleda Drive until Lake Road, where the roadway becomes a four-lane roadway. West of McKee Road, Yosemite Avenue narrows to three travel lanes (two eastbound and one westbound) and expands back to four lanes west of North Gardner Avenue.

**Bellevue Road** is a two-lane east-west road extending from Fox Road on the west to its eastern terminus at Lake Road and is one of the two access roads to the campus. This roadway carries approximately 8,500 vehicles per day, west of Lake Road.

**Lake Road** is a two-lane north-south road extending from Yosemite Avenue to its northern terminus at Lake Yosemite and is the other access road to the campus. This roadway carries approximately 5,600 vehicles per day, south of Bellevue Road.

#### 7.1.1.2 Transit Service

The UC Merced campus is accessible by transit both locally and regionally, as described below.

**Amtrak** provides regional train service to Merced on the *San Joaquins* line with six trains per day operating in each direction. This service connects Merced with the San Francisco Bay Area, Fresno, Bakersfield, and other cities in the Central Valley. Connections are also available to southern California, including San Diego, Oceanside, Santa Ana, and Los Angeles.

**The Bus** provides transit service for Merced County. The Bus operates 17 routes (13 of which serve Merced), including a UC Merced Route which serves the UC Merced campus. Service to the campus is provided Monday through Friday between 6:10 a.m. and 8:02 p.m.

**CatTracks** is funded by UC Merced and provides local bus service to the campus. CatTracks connects the campus and surrounding areas, including downtown Merced. The following routes are provided when classes are in regular session:

- Bobcat Express connects the campus with Merced College, retail locations along Yosemite Avenue and Loughborough Drive, the Amtrak Station, and multiple housing locations. Service is provided between 6:29 a.m. and 7:55 p.m. Monday – Friday with 40-minute headways.
- Route C-1 connects the campus with retail locations along West Olive Avenue and G Street, and to the Granville Apartments. Service is provided between 6:20 a.m. and 10:29 p.m. Monday – Friday with 70-minute and 85-minute headways. A round-trip takes 80 minutes.



- Route C-2 connects the campus with Merced College, retail locations along Yosemite Avenue and Loughborough Drive, and multiple housing locations. Service is provided between 6:20 a.m. and 10:11 p.m. Monday – Friday with 60-minute and 80-minute headways. A round-trip takes about 60 minutes.
- Route E-1 connects the campus with Merced College, Amtrak station, retail and entertainment locations in downtown and along Yosemite and Olive Avenues in the city of Merced, and various housing complexes. Service is provided on weekends only, from 8:30 a.m. to 9:02 p.m.
- Route E-2 connects the campus to Merced Mall, retail locations on Yosemite Avenue, and to various housing locations north of Olive Avenue. Service is provided on weekends only, from 11:05 a.m. to 9:44 p.m.
- Route G connects the campus to downtown Merced and Amtrak along O and K Streets and runs on a one-directional loop Monday – Friday between 6:30 a.m. and 9:53 p.m. Five trips are provided in the a.m. with 65-minute and 80-minute headways, and eight trips in the p.m.
- FastCat connects the campus to the Moraga and Bellevue subdivisions, Mercy Hospital, Yosemite Church, and various medical offices. Service is provided Monday – Friday between 6:35 a.m. and 10:30 p.m. with 65-minute and 80-minute headways. A round-trip takes 65 minutes.
- Yosemite Express connects the campus with Merced College, G Street, University Surgery Center, and the Moraga Subdivision. Service is provided Monday – Friday between 9:00 a.m. and 10:15 p.m. with 45-minute and 60-minute headways. A round-trip takes between 45 and 60 minutes.

**YARTS** (Yosemite Area Regional Transportation System) connects the city of Merced to Yosemite National Park. In the eastbound direction, six trips (five a.m., one p.m.) are provided between Merced and Yosemite National Park. In the westbound direction, six trips (one a.m., five p.m.) are provided.

#### 7.1.1.3 Pedestrian and Bicycle Facilities

Pedestrian facilities include sidewalks, off-street paths, crosswalks, and pedestrian signals. Sidewalks are generally provided in developed areas in Merced and are being added in undeveloped areas as the adjacent parcels are developed. No sidewalks exist along Bellevue Avenue or Lake Road within 2 miles of the UC Merced campus. Crosswalks and pedestrian signals are provided at all signalized intersections in the area. The trail along Lake Road provides direct access to the UC Merced campus and joins with existing sidewalks along Yosemite Avenue and the Black Rascal Creek trail connector.

Bicycle facilities include the following:

- Bike paths (Class I) – Paved trails that are separated from roadways.



- Bike lanes (Class II) – Lanes on roadways designated for use by bicycles through striping, pavement legends, and signs.
- Bike routes (Class III) – Designated roadways for bicycle use by signs only; may or may not include additional pavement width for cyclists.
- Class IV bikeways (cycle tracks or “separated” bike lanes) - Provide a right-of-way designated exclusively for bicycle travel within a roadway and are protected from other vehicle traffic with devices, including, but not limited to, grade separation, flexible posts, inflexible physical barriers, or parked cars.

Class I bicycle facilities are provided along Fahrens Creek, Cottonwood Creek, Bear Creek, Black Rascal Creek, and Lake Road. Lake Road provides direct access to the UC Merced campus and can be accessed via Class II bicycle lanes along Yosemite Avenue and the recently completed Black Rascal Creek trail connector.

Class II bicycle facilities include many of the arterial streets within the City of Merced, including major sections of G Street, M Street, Yosemite Avenue, and McKee Road. Designated bicycle lanes are provided along R Street, V Street, West Avenue, Main Street, 18th Street, 21st Street, Grogan Avenue, and Parsons Avenue.

Class III bicycle facilities are located on some sections arterials streets and various collector streets, including V Street, 26th Street, Glen Avenue, 13th Street, 14th Street, and Childs Avenue. The nearest Class III bicycle route to the project site is over 2 miles away.

## 7.1.2 Regulatory Considerations

### 7.1.2.1 State Laws and Regulations

**Senate Bill 743.** Senate Bill 743 (CEQA Section 21099(b)(1)) requires that Governor’s Office of Planning and Research (OPR) develop revisions to the *State CEQA Guidelines* establishing criteria for determining the significance of transportation impacts of projects that “promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses.” CEQA Section 21099(b)(2) states that upon certification of the revised guidelines for determining transportation impacts pursuant to CEQA Section 21099(b)(1), automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion, shall not be considered a significant impact on the environment under CEQA.

In January 2016, OPR published for public review and comment a *Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA* recommending that transportation impacts for projects be measured using a VMT metric.<sup>4</sup> In December 2018, the California Natural Resources Agency certified and adopted the CEQA Guidelines update package, including the section implementing SB 743 (*State CEQA Guidelines* Section 15064.3). OPR developed

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<sup>4</sup> California Office of Planning and Research (OPR). 2016. *Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA, Implementing Senate Bill 743* (Steinberg, 2013). January 20

a *Technical Advisory on Evaluating Transportation Impacts in CEQA*, which contains technical recommendations regarding assessment of VMT, thresholds of significance, and mitigation measures.<sup>5</sup>

The Technical Advisory sets forth guidance regarding metrics that may be developed and used to evaluate VMT impacts from land development projects and transportation projects. With regard to land development projects, the Technical Advisory identifies three types of land uses: residential, office, and retail. As each of these land uses is distinct in its trip generation and other attributes, the Technical Advisory recommends that different VMT metrics be used to analyze the transportation impacts of each land use type.

An institutional land use, such as a university campus, is not specifically addressed in the advisory. However, for purposes of this EIR analysis, the campus is treated as a mixed-use development with its residential land uses (student housing) corresponding to the residential land uses addressed in the Technical Advisory and its non-residential land uses (i.e., teaching, research, and student-support facilities) corresponding to office use in the Technical Advisory. Non-residential uses are treated as “office development,” because, like an office development that generates daily vehicle trips that are made by workers to and from office buildings and other workplaces, non-residential development on the campus would generate new daily vehicle trips that would be made by faculty and staff that would work on the campus and by the students who would travel within and to and from the campus to study and conduct research. Retail land use is not applicable to the campus.

With regard to metrics, the Technical Advisory recommends use of VMT metrics that reflect the transportation efficiency of a project and are expressed in per capita terms. For residential land uses, the Technical Advisory suggests a metric based on home-based vehicle trips, i.e., the number of daily trips that a resident makes to various destinations each day and the distance traveled in making those trips. For office uses, it suggests a metric based on home-based work vehicle trips, i.e., the number of daily trips that a worker makes between home and place of work, including trips made for lunch or other reasons, and the distance traveled in making those trips.

The Technical Advisory does not mandate the use of specific significance thresholds, but recommends that, for residential projects, a VMT per resident that is 15 percent below that of existing residential development in the project’s study area may be a reasonable threshold for determining the significance of a residential project’s transportation impacts. For an office/employment-generating project, a VMT per employee/worker that is 15 percent below that of existing employment development in the project’s study area may be a reasonable threshold for determining the significance of an employment project’s transportation impacts. For mixed-use projects, the Technical Advisory suggests evaluating each component independently, and applying the significance threshold for each land use type included. Alternatively, the lead agency may consider only the project’s dominant land use.

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<sup>5</sup> State of California Governor’s Office of Planning and Research (OPR). 2018. *Technical Advisory on Evaluating Transportation Impacts in CEQA*. December.

#### 7.1.2.2 University of California Policies

**The University of California Policy on Sustainable Practices.** The University of California Policy on Sustainable Practices (Sustainability Policy), most recently updated in 2022,<sup>6</sup> is a system-wide commitment to minimize the University's impact on the environment and reduce its dependence on non-renewable energy sources. The Sustainability Policy states that "The University of California is committed to responsible stewardship of resources and to demonstrating leadership in sustainable business practices. The University's locations should be living laboratories for sustainability, contributing to the research and educational mission of the University, consistent with available funding and safe operational practices."

The Sustainability Policy contains the following goals related to reducing vehicle travel:

- The University recognizes that single-occupant vehicle (SOV) commuting is a primary contributor to commute greenhouse gas (GHG) emissions and localized transportation impacts.
  - By 2025, each location shall strive to reduce its percentage of employees and students commuting by SOV by 10 percent relative to its 2015 SOV commute rates.
  - By 2050, each location shall strive to have no more 40 percent of its employees and no more than 30 percent of all employees and students commuting to the location by SOV.
- Each location (campus) will develop a business-case analysis for any proposed parking structures serving University affiliates or visitors to campus to document how a capital investment in parking aligns with each campus' Climate Action Plans and/or sustainable transportation policies.

**UC Merced Sustainability Strategic Plan 2017-2022.** In 2017, UC Merced released a Sustainability Strategic Plan<sup>7</sup> to describe its approach to achieving its sustainability goals. The ambitious central focus of the plan is the achievement of zero net energy usage, zero landfill waste, and zero net greenhouse gas emissions by 2020. Not only does the plan provide campus principles related to sustainability, but it also provides insight about the specific actions that will allow UC Merced to maintain its principles and meet its goals, even as the campus expands. The plan includes the following actions related to increasing alternative modes of transportation usage among the campus constituency to reduce the carbon footprint of transportation, parking, and fleet services:

- Action 1: Promote Sustainable Commuting – Encourage alternative modes of transportation for students, faculty, and staff by promoting ridesharing, car sharing, vanpool, and carpool incentives.
- Action 2: Environmentally Friendly Fleet – Sourcing fuel efficient and low emission fleets that reduce environmental impact.
- Action 3: Greenhouse Gas Reduction – Develop GHG emission reduction goals for campus fleet.

<sup>6</sup> <https://policy.ucop.edu/doc/3100155/SustainablePractices>

<sup>7</sup> University of California, Merced. 2017. *Sustainability Strategic Plan 2017-2022*.

- **Action 4: Transportation Demand Management (TDM)** – Expand TDM programs and projects while developing marketing and educational campaigns focused on alternative transportation.

**UC Merced Transportation Demand Management Program.** The Campus is implementing a number of TDM programs to minimize transportation-related emissions. A TDM program is a set of policies and programs that include incentives, information, and education to encourage employees to commute to work by modes other than driving alone. The existing and future TDM programs at UC Merced are described below.

#### ***Existing TDM programs***

- Subsidized transit
- Ridesharing and carsharing opportunities
- Carpool and vanpool incentives
- Emergency Ride Home Program (for employees)
- Bicycle incentives
- Marketing/Educational campaigns focused on alternative transportation options
- Increased the number of clean air commuter permits for eligible carpools to promote ridesharing
- Secured grants to fund purchase of fuel efficient and low emission fleet vehicles
- Electric charging stations in the North Bowl, Le Grand, and Library Lots
- Annual surveying of campus community commuting patterns
- Information table at both New Student Orientations (NSO) and New Employee Orientations (NEO)
- ZipCar self-service, on-demand car sharing, and Zimride rideshare and commute programs

#### ***Programs Under Development***

- Bicycle program
- Refinement of marketing and advertising campaign of "UC Merced Commuter Club" to increase participation in alternative transportation initiatives
- Increase the number of electric charging stations for electric carts

#### ***Future Goals***

- Expansion of hybrid and/or battery-operated fleet
- Reduction of SOV VMT rates through aggressive marketing and development of incentives to participate in alternative transportation programs (i.e., message boards, departmental competitions)
- Adapt a clean-fleet procurement policy

- Standardize fleet ordering cycles
- Zero-emission vehicle incentives

### 7.1.2.3 Local Plans and Policies

The University of California, a constitutionally created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by the University that are in furtherance of the University's education purposes. However, the University may consider, for coordination purposes, aspects of local plans and policies for the communities surrounding a UC campus when it is appropriate and feasible, but it is not bound by those plans and policies in its planning efforts. This section summarizes the planning and policy documents that relate to the provision of transportation services in Merced County.

**2018 Regional Transportation Plan/Sustainable Communities Strategy.** The 2018 Regional Transportation Plan/ Sustainable Communities Strategy (RTP/SCS) provides a comprehensive long-range view of transportation issues, opportunities, and needs of Merced County.<sup>8</sup> It establishes the goals, objectives, and policies for future transportation improvements. The plan identifies the actions that should be taken and the funding needs and options available for successful implementation. Some of the relevant policies contained in the 2018 RTP/SCS include:

#### 1. Highways, Streets, and Roads

**Goal:** Provide a safe and efficient regional road system that accommodates the demand for the movement of people and goods.

- |                      |   |
|----------------------|---|
| <b>Objective 1.1</b> | Maintain a Level of Service D on all regionally significant roads.  |
| <b>Objective 1.2</b> | Identify and prioritize improvements to the regional road system.   |
| <b>Objective 1.3</b> | Use the existing street and road system in the most efficient possible manner to improve local circulation. |
| <b>Objective 1.4</b> | Monitor the impact of development on the regional road system.  |

#### 2. Transit

**Goal:** Provide an efficient, effective, coordinated regional transit system that increases mobility for urban and rural populations, including transportation disadvantaged persons.

- |                      |  |
|----------------------|--|
| <b>Objective 2.1</b> | Meet all transit needs that are "reasonable to meet."                            |
| <b>Objective 2.2</b> | Increase transit ridership at a rate that exceeds annual population growth rate. |

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<sup>8</sup> Merced County Council of Governments. 2018. *2018 Regional Transportation Plan/Sustainable Communities Strategy for Merced County*.

- Objective 2.3** Promote citizen participation and education in transit planning.
- Objective 2.4** Promote transit ridership to and from Mariposa County and Yosemite National Park.

## **6. Active Transportation (Bicycle & Pedestrian)**

**Goal:** A regional transportation system for bicyclists and pedestrians. Create a safe, connected, and integrated regional transportation system for bicyclists and pedestrians.

- Objective 6.1** Develop and construct bike and walkway facilities in urban areas and other communities where non-motorized systems do not currently exist.

**Merced County General Plan.** The 2030 Merced County General Plan Circulation Element includes policies to ensure that adequate access is provided and maintained for all county land uses. The following presents the General Plan Circulation Element policies relevant to transportation systems near the proposed campus.

**Goal CIR-1:** Maintain an efficient roadway system for the movement of people and goods that enhances the physical, economic, and social environment while being safe, efficient, and cost-effective.

- Policy CIR-1.5** **County Level of Service Standards.** Implement a Countywide roadway system that achieves the following level-of-service (LOS) standards during peak traffic periods:
- a) For roadways located within rural areas: LOS "C" or better.
  - b) For roadways located outside Urban Communities that serve as connectors between Urban Communities: LOS of "D" or better.
  - c) For roadways located within Urban Communities: LOS of "D" or better.

**Goal CIR-3:** Maintain a public transit system that provides an alternative to automobile travel, supports ridesharing, and meets the needs of the entire community.

- Policy CIR-3.2** **Transit Improvements.** Continue to support transit efforts by the Merced County Association of Governments, Dial-A-Ride, UC Merced Transit, other public entities, private social service providers, and other various private charter services to improve and expand public transit throughout the County.

**Goal CIR-4:** Maintain and expand a safe, continuous, and easily accessible bicycle and pedestrian circulation system.

**Policy CIR-4.1**      **Bicycle and Pedestrian System.** Encourage a complete, safe, and interconnected bicycle and pedestrian circulation system that serves both commuter and recreational travel and provides access to major destinations within and between Urban Communities and cities. Prioritize Class I bicycle paths and separate trails between communities as part of the Merced County Association of Governments (MCAG) Regional Bikeway Plan. To the extent possible, use railroad and canal as right-of-way instead of streets to promote safety.

**Merced Vision 2030 General Plan.** The City's General Plan Circulation Element includes policies to ensure that adequate access is provided and maintained for all city land uses. Some of the relevant policies contained in the Merced Vision 2030 General Plan include:

**Policy T-1.2**      Coordinate circulation and transportation planning with pertinent regional, state, and federal agencies.

**Policy T-1.6**      Minimize adverse impacts on the environment from existing and proposed road systems.

**Policy T-2.1**      Provide for and maintain a Major Transitway along "M" Street and Possibly along the Bellevue Road/Merced-Atwater Expressway and Campus Parkway corridors.

**Policy T-2.3**      Support a Safe and Effective Public Transit System.

**Policy T-2.5**      Provide Convenient Bicycle Support Facilities to Encourage Bicycle Use. Maintain and expand the community's existing bicycle circulation system.

**Merced County Regional Commuter Bicycle Plan.** The Merced County Regional Commuter Bicycle Plan, prepared by MCAG in October 2008, is intended to improve and enhance bicycle transportation in Merced County. Relevant goals from the plan include:

**Goal 1 – Bicycle Safety:**      Provide a safe bicycle system as an alternative to vehicular travel. Establish and maintain routes that are designed to ensure safety. Establish a system that is secure for riders.

**Objectives:**      Build and maintain street surfaces to avoid pavement conditions unsafe to bicyclists. As collision events and bicycle injuries/accidents are recorded, identify possible remedial improvements.

**Goal 2 – Bicycle Education:**      Encourage bicycling through education. Provide literature and up-to-date bikeway maps for the public promoting safe bicycle use.

**Objectives:**      Promote safe bicycle use to riders as well as car drivers. Cooperate with other agencies and groups to promote and educate the public regarding bicycle facilities in the plan area. Establish helmet programs that educate and



encourage safe bicycle use. Support bicycle safety awareness through public information and education programs.

**Goal 3 – Connectivity/Accessibility:** Accommodate bicycling as part of the County’s multi-modal transportation system. Establish and maintain an integrated network of bicycle facilities to support bicycle commuting. Establish and maintain an integrated network of bicycle facilities to support recreational bicycling. Establish and maintain an integrated network that connects to other countries.

**Objectives:** Establish right-of-way requirements that accommodate the complete bikeway system, including sidewalks and multi-use paths throughout Merced County. Maintain a bicycle planning committee to oversee bicycle transportation planning and implementation projects for the purposeful movement of people and goods by the most efficient means available. Plan in coordination with the development of UC Merced. Promote bicycle routes to regional recreational and commuter destinations. Link trip origins and destinations with on-street bikeways designed to serve transportation and recreation purposes. Integrate bicycling into the transit system with bus mounted bicycle carriers. Establish nodes of connectivity to encourage tourism and commuting. Devise lane specifications for specific bicycle rider classifications. Include funding for regular facility expansion, maintenance, and repair, as well as funding to review development and zoning proposals for impact on bicycle mobility in the annual local operations and maintenance budgets. Maintain a local capital improvement plan that provides regular funding for the bicycle program to acquire right of way, to construct new facilities, to retrofit inadequate facilities and to refurbish older facilities.

**Short Range Transit Plan.** The Short Range Transit Plan, prepared by MCAG in June 2017, has the following purposes: evaluate current transit services; update system goals, objectives, and performance standards; describe future transit needs; and present a service plan and financial plan. The goals and objectives contained in the Plan are listed below.

- Provide increased mobility in Merced County
- Provide safe and high quality service
- Provide cost-effective and efficient service

### 7.1.3 Impacts and Mitigation Measures

#### 7.1.3.1 Significance Criteria

This supplemental program-level analysis for the 2020 LRDP uses significance criteria derived from Appendix G of the *State CEQA Guidelines*. For the purposes of this supplemental analysis, impacts related to transportation would be significant if implementation of the 2020 LRDP would result in any of the following:

- Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.
- Conflict or be inconsistent with *State CEQA Guidelines* Section 15064.3, subdivision (b).
- Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses.
- Result in inadequate emergency access.

#### 7.1.3.2 VMT Metrics and Related Significance Thresholds

**Project VMT Metrics and Thresholds.** As noted earlier, the 2020 LRDP is designed to guide the growth and development of the campus between 2020 and 2030 for a campus population of about 15,000 students, including about half the students housed in on-campus housing, as well as a total projected faculty and staff of about 2,411 persons by 2030. All of the new students who would live on campus are analyzed as residential population; and all of the new students (those that live on campus and those that live off campus), new faculty, and new staff are considered “workers” for purposes of VMT analysis. The effect of this new population on transportation is analyzed in this section based on metrics and the significance thresholds that are set forth in **Table 7-1** below.

**Table 7-1: VMT Metrics and Significance Thresholds for Project Impacts**

Metric	Significance Threshold
1. Campus residential VMT per resident	Impact would be less than significant if the campus residential VMT per resident is at least 15 percent below the existing regional average residential VMT per resident
2. Campus worker VMT per worker	Impact would be less than significant if the campus worker VMT per worker is at least 15 percent below the existing regional average worker VMT per worker

Source: Fehr & Peers, June 2021

Metrics 1 and 2 are recommended in the Technical Advisory for use in evaluating the transportation impacts of projects involving residential and office/employment land uses, including for use in analyzing the impacts of mixed-use projects. The concept underlying both metrics is to compare the project’s transportation efficiency (project VMT per resident or worker), with the existing regional efficiency (regional VMT per resident or worker) and to determine whether the project would be more or less efficient than the existing development in the region. If the project is sufficiently more efficient, it would result in a less-than-significant transportation impact. As noted earlier and in the table above, in order to be considered more efficient and result in a less-than-significant impact, the project’s VMT per resident or worker must be at least 15 percent below the regional average VMT per resident or worker.

The regional residential and worker averages used in this EIR are the Merced Countywide averages. There are substantially different travel and VMT characteristics between the three counties in the MCAG Model, and since the campus is located in Merced County and most students and staff live in Merced County (about 90 percent and 60 percent, respectively), Merced County was chosen as the

regional comparison metric. The average VMT per resident includes all home-based trips; i.e., trips beginning or ending at the home. The average VMT per worker includes all home-work trips; i.e., all trips made between the home and the workplace.

To evaluate the transportation impacts of campus development under the 2020 LRDP, the transportation effect of all new on-campus student residents was assessed relative to Metric 1, and all new faculty, staff and students added to the campus as a result of the 2020 LRDP were considered workers and their transportation effect was assessed relative to Metric 2. This is because the campus functions as a workplace not only for faculty and staff, but for students who attend class, study and conduct research on-site.

**Cumulative VMT Metrics and Thresholds.** With regard to cumulative impacts, the Technical Advisory notes that “[a] project that falls below an efficiency-based threshold that is aligned with long-term environmental goals and relevant plans would have no cumulative impact distinct from the project impact. Accordingly, a finding of a less-than-significant project impact would imply a less than significant cumulative impact, and vice versa. This is similar to the analysis typically conducted for greenhouse gas emissions, air quality impacts, and impacts that utilize plan compliance as a threshold of significance.” As this Draft EIR uses efficiency-based metrics listed in **Table 7-1** above, VMT metrics that separately analyze cumulative impacts are not required. Nevertheless, the University has developed Metrics 3 and 4 to evaluate whether the addition of residential and worker population to the study area as a result of campus growth would have the potential to cause the forecasted regional VMT per capita to increase compared to the no project conditions. The metrics and corresponding significance thresholds are set forth in **Table 7-2** below.

**Table 7-2: VMT Metrics and Significance Thresholds for Cumulative Impacts**

Metric	Significance Threshold
3. Regional average VMT per resident	Impact would be less than significant if there is no increase in the forecasted regional average VMT per resident due to the Project
4. Regional average VMT per worker	Impact would be less than significant if there is no increase in the forecasted regional average VMT per worker due to the Project

Source: Fehr & Peers, June 2021

Metric 3 is designed to estimate whether the addition of the on-campus student residents to the region due to new housing built under the 2020 LRDP would result in a change in the forecasted (2030) regional average VMT per resident, and Metric 4 is designed to estimate whether the addition of new workers to the region by the 2020 LRDP would result in a change in the forecasted (2030) regional average VMT per worker. For this analysis, new on-campus student residents are considered new residents of the region, and all new faculty, staff and students are considered new workers in the region. Any increase in the forecasted regional average VMT per resident or worker due to the addition of the campus population would be considered a significant cumulative impact. Conversely, if there is no increase in the forecasted regional average VMT per resident or worker due to the project, the cumulative impact would be less than significant.

### 7.1.3.3 Methodology

Merced County and the City of Merced do not currently have adopted VMT guidelines. The Merced County Association of Governments (MCAG) *Three-County Regional Travel Demand Model* (MCAG Model) was used as the basis of estimating regional and project total VMT and VMT per capita (residential and worker). The MCAG Model includes a base year of 2018 and multiple forecast years, including 2020, 2030, 2035, and 2042. The MCAG Model contains land use, roadway network, and travel characteristics information for Merced, Stanislaus, and San Joaquin Counties, and divides the three-county area into several traffic analysis zones (TAZs). As reflected in the VMT Impact Analysis<sup>9</sup> the 2020 model was used as the baseline model for the analysis, and the year 2030 model was used for the forecast year, consistent with the expected build-out of the 2020 LRDP.

The model allows calculation of VMT based on the trip generation of each land use and the trip lengths for each trip. The four basic steps are as follows:

- **Trip Generation:** The generation of trip origins and destinations of different land uses within each TAZ by trip purpose, as a function of variables such as land use type, demographics, and other socioeconomic factors.
- **Trip Distribution:** The matching of trip origins and destinations, taking into account the relative activity level at each location and the travel times between each, among other factors.
- **Travel Mode Choice:** The proportion of trips between each origin and destination that uses a particular transportation mode.
- **Route Assignment:** The allocation of trips between each origin and destination by a particular mode to a route on the roadway network.

The models were reviewed and adjusted as described below to facilitate the VMT analysis.

### MCAG Model Adjustments

**Land Use.** The MCAG Model land uses reflect the Merced County Association of Governments (MCAG) 2018 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) for the land uses and roadway network outside of the UC Merced campus. However, an examination of the land use files in the model revealed that the model does not contain the correct current and projected campus staff and student populations. Therefore, the land use information in the model for the TAZs that contain the campus was updated to reflect the correct campus populations under existing conditions (year 2020) and under future scenarios (2030 No Project and 2030 With LRDP Build-Out). Since the model does not have a specific student housing land use and housing in the model behaves similar to a typical household, the trip generation characteristics of on-campus housing were modified to reflect on-campus housing trip generation rates based on observed campus housing trip generation.

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<sup>9</sup> Fehr & Peers. 2021. op. cit.

The MCAG Model does not include any development on the Virginia Smith Trust (VST) property to the south of the campus (see Figure 7-1). However, VST is in the process of obtaining land development approval from the County, and it is possible that some of the proposed development on the VST property might be constructed by 2030. In the event that new housing is constructed on the VST property by 2030, it is reasonable to assume that some of the students, faculty, and staff at UC Merced would choose to live on the VST property in close proximity to the campus, rather than in other housing more distant from the campus. This would have the effect of lowering the VMT of the campus population. Therefore, an additional analysis was prepared that includes development of a portion of the VST property. The portion assumed was based on current VST development plans, which indicate that Phases 1A – 1C may be completed by 2030.<sup>10</sup> It is noted that this development has not yet been entitled, however an application for this development was submitted to Merced County in June 2021.

The 2020 Baseline and 2030 Forecast housing, population, and employment for Merced County and the City of Merced, as included in the MCAG Model, are summarized in **Table 7-3, MCAG Model – Regional Housing, Population, and Employment**. The land use for the VST development south of the campus is shown in **Table 7-4, VST Land Uses (Phases 1A – 1C)**.

**Table 7-3: MCAG Model – Regional Housing, Population, and Employment**

Area	Households	Population	Employees
<b>2020 Baseline</b>			
City of Merced	30,806	79,219	33,695
Merced County	90,989	243,426	87,067
<b>2030 Forecast</b>			
City of Merced	36,538	93,908	37,717
Merced County	105,992	284,922	97,462

Source: Fehr & Peers, June 2021

Note: The values for the County include those within the City of Merced.

**Table 7-4: VST Land Uses (Phases 1A – 1C)**

Single Family	Multi-Family	Retail Employees <sup>1</sup>	Office Employees <sup>2</sup>
343	1,726	650	908

Source: Fehr & Peers, June 2021

<sup>1</sup> Retail employees estimated by Fehr & Peers using 3.3 employees per thousand square feet.

<sup>2</sup> Office employees estimated by Fehr & Peers using 2 employees per thousand square feet.

**Roadway Network.** The roadway networks in the MCAG Model for the years 2020 and 2030 are consistent with the MCAG RTP/SCS. The 2020 network includes completion of Campus Parkway between State Route 99 and Childs Avenue. The 2030 network includes completion of Campus Parkway to Yosemite Avenue. No adjustments were made to the model networks.

<sup>10</sup> Peck Planning and Development LLC. 2021. 'Building with Phasing Dates', transmitted to UC Merced on February 26, 2021.

**Analysis Scenarios.** The campus populations for the baseline year (2020) and completion of the 2020 LRDP are shown in **Table 7-5, Study Populations by Scenario**. The full development of the camps under the 2020 LRDP would result in 15,000 students, including 7,200 residents, and 2,411 faculty and staff.

**Table 7-5: Study Populations by Scenario**

Scenario	On-Campus Students	Off-Campus Students	Total Students	Faculty and Staff
Baseline/No Project	3,667	5,333	9,000	1,269
LRDP Build-Out	7,200	7,800	15,000	2,411

Source: UC Merced, May 2021

The following scenarios were analyzed:

- Baseline (2020) No Project
- Future (2030) No Project
- Future (2030) No Project with VST Development
- Future with LRDP Build-Out
- Future with VST Development with LRDP Build-Out

The Future (2030) No Project scenario assumes that while there would be no growth on the campus, the rest of the study area would experience population and employment growth. The Future No Project with VST Development assumes no growth would occur on the campus but that, in addition to other regional growth, there would be population and employment growth on the VST property by 2030. Both the Future with LRDP Build-Out scenarios include the growth of the campus under the 2020 LRDP to a projected enrollment level of 15,000 students and about 2,411 faculty and staff. Both LRDP Build-Out scenarios include the completion and full occupancy of the UCM-ME Building (since the UCM-ME Building Project is within the development space and population projections of the 2020 LRDP).

**COVID-19 Considerations.** The current Coronavirus disease 2019 (COVID-19) pandemic has introduced a substantial amount of uncertainty in human lives. The pandemic has directly affected human behavior, requiring people to temporarily reduce mobility and make other changes to the manner in which they live. Indirectly it has affected the economy resulting in reduced consumer spending, business closures, and widespread unemployment. While some of these trends are considered short-term and are expected to reverse, it is likely that there could be more permanent changes in the ways humans live and behave in the post pandemic world. As with humans, institutions such as UC Merced are also expected to make changes to the manner in which they operate. As a result of the pandemic, UC Merced will likely consider operational changes such as increases in telework and remote learning. Similarly, it is reasonable to assume that the travel behaviors of the rest of the regional population will likely change in the post pandemic world, including more remote learning, work, and online shopping. The analysis of VMT in this section is model-based and reflects trip generation rates and travel behaviors that are pre-pandemic. The net

effect of the pandemic on UC Merced development and operations, including its effect on the campus VMT metrics, as well as the regional average VMT metrics, cannot be predicted at this point in time without speculation. However, the analysis presented below reflects a good faith and reasonable effort to analyze VMT impacts with the best available analysis tools and assumptions.

#### 7.1.4 LRDP Impacts and Mitigation Measures

**LRDP Impact TRANS-1      Implementation of the 2020 LRDP would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. (*Less than Significant*)**

##### Consistency with University Plans and Policies

The 2020 LRDP is a projected development program for the Merced campus for the years 2020 through 2030. Under the plan, the campus is anticipated to add about 1.83 million square feet of building space by 2030. The campus population is projected to increase to about 17,400 persons by 2030. The additional population would result in more persons commuting to the campus. As reflected in Section 3.7.7 of the 2020 LRDP SEIR,<sup>11</sup> UC Merced will continue to incorporate alternate means of transportation to and from the campus with a particular focus on the commute behaviors of faculty, staff, and students. As part of the implementation of the 2020 LRDP, UC Merced will:

- Support improved transportation options such as working with local transportation agencies/providers to improve bus service to and near the campus;
- Identify potential improvements to the campus-operated transit service;
- Implement appropriate alternate mode use incentives such as discounted transit passes, carpool matching services, preferential parking for carpools, vanpools and low emissions vehicles, and flexible car share programs for the campus;
- Implement parking management policies, such as not issuing parking permits to freshmen students living on campus to discourage use of automobiles, and pricing parking to encourage use of alternate modes; and
- Encourage students in particular to live in close proximity of the campus to reduce commuting by automobile.

The Circulation Element of the 2020 LRDP<sup>12</sup> is supported by six guiding goals that include expanding and enhancing the circulation system; expanding and enhancing the bicycle system; increasing pedestrian mobility; transit service that connects to campus activity centers; integrated parking strategy; and utilization of alternative modes of transportation strategies. The 2020 LRDP contains the following circulation goals:

<sup>11</sup> University of California, Merced. 2019. UC Merced 2020 Long-Range Development Plan Recirculated Draft Subsequent Environmental Impact Report, December 2019.

<sup>12</sup> University of California, Merced. 2020a. op. cit.



- LRDP Goal C-1: Expand and enhance the campus multi-modal circulation network to ensure efficient and safe access to the campus.
- LRDP Goal C-2: Expand and enhance the bicycle network to facilitate travel by bicycle.
- LRDP Goal C-3: Enhance the pedestrian experience on campus to facilitate an increase in pedestrian mobility.
- LRDP Goal C-4: Develop a convenient and efficient transit service that seamlessly connects to the major activity centers on campus.
- LRDP Goal C-5: Implement an integrated parking strategy for efficient use, safe movement and convenient access.
- LRDP Goal C-6: Enhance and encourage the utilization of alternative modes of transportation that reduces dependence on single-occupant vehicles and reduce vehicle trips.
- LRDP Goal C-7: Collaborate with the City of Merced and Merced County on opportunities that will improve transportation connectivity to and from UC Merced campus.

Based on the preceding 2020 LRDP implementation strategy and goals, the 2020 LRDP is consistent with the transportation-related goals and policies in the University's Sustainability Policy and UC Merced Sustainability Strategic Plan as these goals encourage fewer SOV commute trips, which are a primary contributor to commute GHG emissions and high levels of VMT. As under existing conditions, campus development under the 2020 LRDP would continue to be completed in a manner that it is compliant with the Sustainability Policy and the UC Merced Sustainability Strategic Plan. This impact would be less than significant.

#### Consistency with Local Plans and Policies

The 2020 LRDP will include roadway, transit, bicycle, and pedestrian facilities that connect to City and County facilities, with the goal of providing a highly connected campus/off-campus network. The 2020 LRDP includes the following objective to support consistency with local plans and policies:

- LRDP GOAL C-7: Collaborate with the City of Merced and Merced County on opportunities that will improve transportation connectivity to and from UC Merced campus.

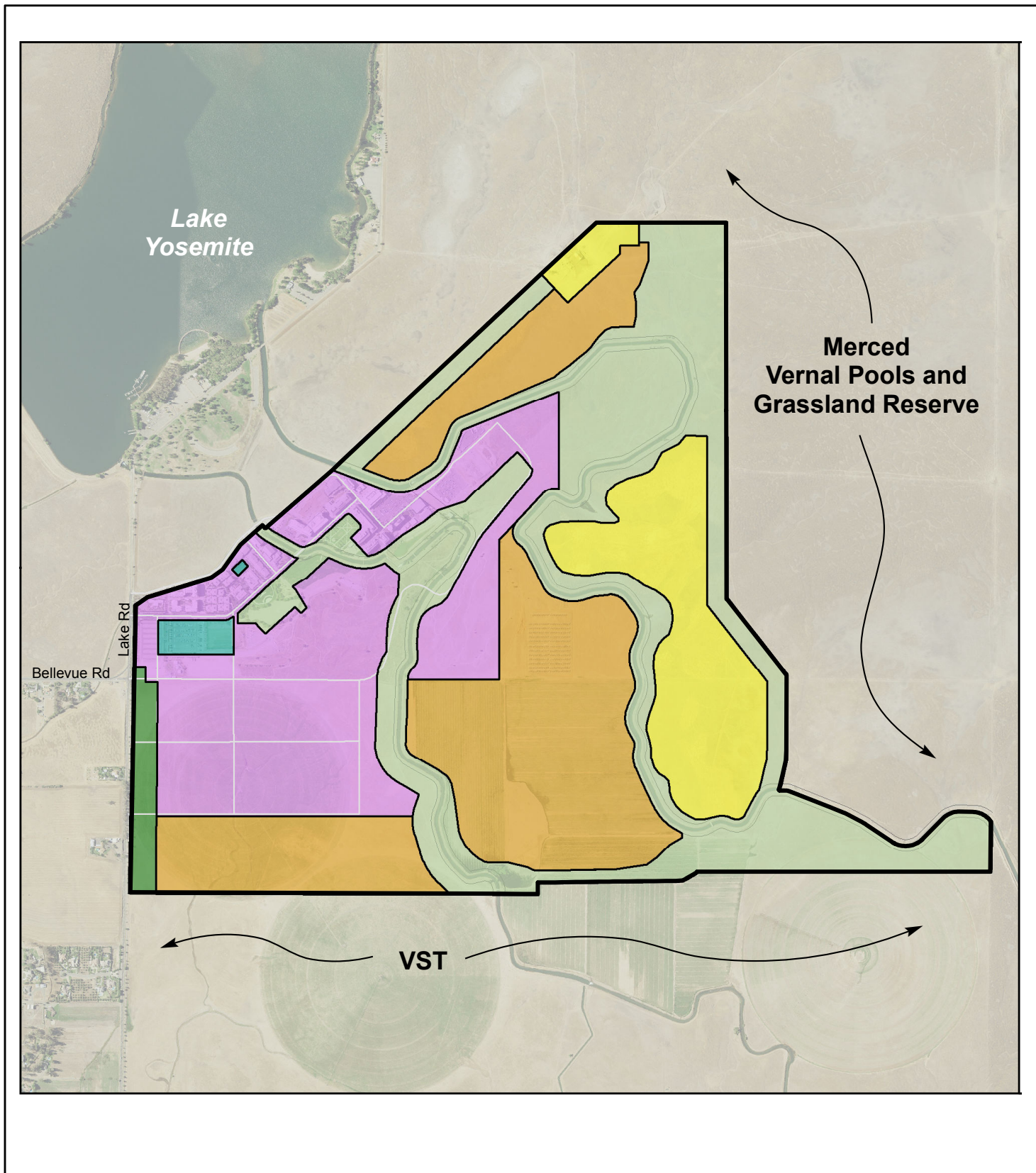
As referenced in the discussion above, the 2020 LRDP contains implementation strategies and goals that are intended to improve access to and throughout the UC Merced campus by all travel modes, with an emphasis on non-automobile modes. The University will continue to work with the City of Merced and Merced County to improve transportation connectivity that includes enhancing safety and providing efficient access to and from the UC Merced campus. However, as indicated above, UC Merced is a constitutionally created state agency that is not subject to the policies and requirements of Merced County or the City of Merced whenever using property under its control in furtherance of its educational mission. The following discussion provides information on the general consistency of the 2020 LRDP with several relevant County and City plans and policies.

**Roadway Facilities.** As discussed in Section 3.6.4 of the 2020 LRDP SEIR,<sup>13</sup> in addition to the main entrance to the campus via the Bellevue extension, two additional roadways off of Lake Road, south of the Bellevue/Lake Road intersection, would be established as part of the 2030 circulation network. The existing Scholar's Lane, Bellevue Road, and Rancher's Road entrances would also be maintained. The internal campus circulation system would be designed to control traffic routing, volumes, and speeds on streets in order to disperse traffic and provide multiple connections to most destinations for all travel modes. The 2020 LRDP's circulation changes would be contained on the UC Merced campus and would not impede the County's or City's roadway network infrastructure improvements. As stated above in **Section 7.4.3.3**, through previous County and City agreements, the University has contributed funding to roadway improvements in the campus vicinity, including the Lake/Bellevue Road intersection and Campus Parkway Phase I, and will continue to coordinate with the City and County on traffic signalization and the connectivity of the campus to the surrounding transportation network as indicated in the 2020 LRDP.<sup>14</sup> For example, as shown in **Figure 7-2**, the 2020 LRDP land use diagram provides for an extension of Campus Parkway Phase III, which will terminate at Yosemite Avenue south of the campus. Construction of this segment is currently underway with an anticipated completion in 2023.

As the proposed 2020 LRDP roadway modifications would add campus access points and provide a more interconnected campus roadway network, they would further improve internal campus circulation and access to the campus from the surrounding transportation network. These modifications are consistent with and do not impede the implementation of regional, County, and City goals and policies related to circulation and connectivity, including RTP/SCS Goal 1 (*Provide a safe and efficient roadway system that accommodates the demand*), Merced County General Plan Goal CIR-1 (*Maintain an efficient roadway system for the movement of people and goods*), and City of Merced General Plan Policy T-1.2 (*Coordinate circulation and transportation planning with pertinent regional, state, and federal agencies*). Further, while the RTP/SCS and Merced County General Plan include policies related to LOS, any conflict of the 2020 LRDP with these policies would not constitute an impact to the environment under CEQA because as of July 1, 2020, VMT (not LOS) is the legally acceptable metric for evaluation of transportation-related environmental impacts pursuant to CEQA, and automobile delay is not recognized as an environmental impact under the CEQA Guidelines. Furthermore, as reflected under LRDP Impact TRANS-2 below, the proposed Project would not result in VMT that would exceed an applicable VMT threshold of significance. Therefore, the 2020 LRDP is generally consistent with the objectives and policies related to roadway facilities set forth in the 2018 RTP/SCS, Merced County General Plan, and City of Merced General Plan. This impact would be less than significant.

<sup>13</sup> University of California, Merced. 2019. op. cit.

<sup>14</sup> University of California, Merced. 2020a. op. cit.



UNIVERSITY OF CALIFORNIA  
**MERCED**



SOURCE: UC Merced, 2020

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**LEGEND**

	Campus Mixed Use (CMU)	274 ac.
	Campus Building Reserve & Support Land (CBRSL)	306 ac.
	Research Open Space (ROS)	135 ac.
	Active Open Space (POS)	9 ac.
	Passive Open Space (POS)	283 ac.
	Campus Parkway & Support Land (CBRSL)	19 ac.
	<b>Total Area</b>	<b>1,026 ac.</b>

FIGURE 7-2

*UC Merced 2020 Long Range Development Plan Project*  
**2020 LRDP Land Use Designations**

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**Transit Facilities.** The UC Merced campus is accessible by transit both locally and regionally. The Campus supports several alternative transportation programs to provide affordable and convenient options to personal-vehicle use, including CatTracks, the campus bus transit line that provides service to and from the campus to nearby neighborhoods and communities and downtown Merced.

The 2020 LRDP emphasizes community connectivity and promotes transit ridership to reduce dependence on the automobile. As described in the 2020 LRDP, the future expansion of the campus will incorporate a transit network that promotes public access to major campus facilities.<sup>15</sup> Further, as reflected in the 2020 LRDP, to promote transit ridership and support regional transit providers, UC Merced will:

- Work with local and regional transit providers to coordinate transit service and establish convenient transfers between transit and other modes of travel.
- Promote the transit system by expanding service as necessary and providing shuttle stops.
- Design and locate bus stops to maximize ease of use and information access and promote safety.
- Maximize ease of use and information access by incorporating appropriate and visible signage, shuttle route map, and timetable service information at every stop.
- Implement parking management policies, such as pricing, to encourage use of alternate modes of transportation that include carpooling and public transportation.
- Evaluate opportunities to incorporate bus locations at high activity commuter nodes and provide facilities to assist in attracting riders to the transit system.

These actions are consistent with and do not impede the implementation of regional, County, and City goals and policies related to circulation and connectivity, including the MCAG Short Range Transit Plan objective to provide increased mobility in Merced County; RTP/SCS Highways, Streets, and Roads Goal 2 (*Provide an efficient, effective, coordinated regional transit system that increases mobility*); Merced County General Plan Goal CIR-3 (*Maintain a public transit system that provides an alternative to automobile travel*); and City of Merced General Plan Policy T-2.3 (*Support a safe and effective public transit system*). Furthermore, the 2020 LRDP does not propose any changes to transit service or infrastructure provided by non-University operators. UC Merced will continue to make improvements to CatTracks to serve the enrolled students, faculty, and staff and will continue to work with transit providers to coordinate their services with the campus-provided service. Thus, the 2020 LRDP is generally consistent with the goals and policies identified by other regional and local plans related to transit, and this impact would be less than significant.

**Bicycle and Pedestrian Facilities.** The existing regional and campus bicycle network routes serve both recreational purposes as well as those that maximize efficient and direct access to key locations on campus. A Class I bike path is located along the eastern side of Lake Road between

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<sup>15</sup> University of California, Merced. 2020a. op. cit.



Yosemite Avenue and Lake Yosemite and provides direct access to the UC Merced campus. There is also a bike path along Bellevue Road between Lake Road and G Street. The 2020 LRDP does not propose any infrastructure changes outside the campus and, thus, would not disrupt or interfere with these existing or other planned pedestrian and bicycle facilities. The 2020 LRDP includes a new entrance into the campus off Lake Road and incorporates another new entrance off Lake Road that was constructed as part of the 2020 Project, which was completed in fall 2020. The entrance constructed as part of the 2020 Project does not interfere with the off-street multi-use path that runs along the east side of Lake Road. The second new entrance will also be appropriately designed to avoid any impact on the off-street multi-use path. Furthermore, under the 2020 LRDP, UC Merced will link the campus bicycle system with the regional bike routes to encourage travel by bicycle and expand the existing system to connect to the campus transit center, bus stops, parking facilities, major academic and administrative buildings, on-campus housing, and recreational facilities.<sup>16</sup> New buildings will have additional bicycle amenities, including short-term parking facilities, and other amenities will be provided throughout the campus such as bicycle and repair tools, campus maps, secure bicycle parking and lockers, and showers and changing rooms. The 2020 LRDP also proposes to improve campus circulation by creating pedestrian routes that include connections to building entryways and transportation hubs on the UC Merced campus.

These proposed improvements under the 2020 LRDP align with and would not impede relevant goals and objectives related to County and City bicycle and pedestrian facilities. In particular, the 2020 LRDP is consistent with RTP/SCS Active Transportation Objective 6.1 (*Develop and construct bike and walkway facilities in urban areas*), Merced County General Plan Goal CIR-4 (*Maintain and expand a safe, continuous, and easily accessible bicycle and pedestrian circulation system*), and City of Merced General Plan Policy T-2.5 (*Provide convenient bicycle support facilities and expand the existing bicycle circulation system*), as well as Goals 1 through 3 in the Merced County Regional Commuter Bicycle Plan aimed to improve and enhance bicycle transportation in Merced County. In addition, the 2020 LRDP does not propose any modifications off-campus that would impede any local bicycle or pedestrian improvements. Thus, the 2020 LRDP is generally consistent with the goals and policies identified by other regional and local plans related to bicycle and pedestrian facilities. This impact would be less than significant.

**Mitigation Measures:** No mitigation is required.

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**LRDP Impact TRANS-2**      **Implementation of the 2020 LRDP would not exceed an applicable VMT threshold of significance under 2030 with LRDP conditions and therefore would not conflict with State CEQA Guidelines Section 15064.3, subdivision (b). (*Less than Significant*)**

The proposed 2020 LRDP is designed to guide the development of the campus between 2020 and 2030, so that by 2030, the campus can accommodate a campus population of 15,000 students and about 2,411 faculty and staff, for a total population of approximately 17,400 persons. Further, the 2020 LRDP is a plan to guide campus development, and not itself a development project. Assuming

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<sup>16</sup> University of California, Merced. 2020a. op. cit.

that campus enrollment increases as currently projected, the full effects of the 2020 LRDP would be experienced by 2030 when campus population increases to approximately 17,400 persons. Therefore, the transportation impacts of the 2020 LRDP based on a VMT metric are evaluated under 2030 conditions below.

### Baseline VMT Metrics

**Table 7-6, 2020 Baseline VMT Results** presents the Baseline VMT metrics based on the current (2020) populations of the campus and the region (Merced County). At the present time, the campus generates substantially lower residential and worker VMT per capita than the county as a whole: 5.77 VMT per campus resident versus 22.10 VMT per resident regional average, and 14.52 VMT per campus worker versus 19.79 VMT per worker regional average. Factors that underlie these results for the campus include the following:

- Students, both on-campus residents and commuters, tend to have lower auto ownership than typical county residents.
- Students living on campus generate nearly zero VMT for their home-work trips between campus housing and campus class/study/research locations.
- The campus is located near Merced County's largest population center, providing greater opportunities for off-campus residents to live relatively close to the campus.

**Table 7-6: 2020 Baseline VMT Results**

VMT Type	Metric	Region	Campus
Residential	Population	243,426	3,667
	Home-Based VMT	5,379,412	21,143
	<b>VMT per Resident</b>	<b>22.10</b>	<b>5.77</b>
Worker	Employees	87,067	1,269
	Students	19,800	9,000
	Home-Work VMT	2,114,776	149,130
	<b>VMT per Worker</b>	<b>19.79</b>	<b>14.52</b>

Source: Fehr & Peers, June 2021

Based on the existing regional average of 22.10 VMT per resident, the threshold that is used below to evaluate the 2020 LRDP's impact is calculated to be 18.78 VMT per resident (15% below the existing regional VMT per resident). If the 2020 LRDP's VMT per resident is less than 18.78 VMT per resident, the project's impact would be less than significant.

Similarly, based on the existing regional average of 19.79 VMT per worker, the threshold that is used below to evaluate the 2020 LRDP's impact is calculated to be 16.82 VMT per worker (15% below the existing regional VMT per worker). If the 2020 LRDP's VMT per worker is less than 16.82 VMT per worker, the project's impact would be less than significant.



### LRDP VMT Metrics (No VST Development Assumed)

**Table 7-7, LRDP VMT Impacts – Metrics 1 and 2**, presents the VMT results for campus development at full implementation of the 2020 LRDP, relative to Metrics 1 and 2. These results are derived from the MCAG Model assuming no development of VST property (no Phases 1A – 1C) to the south of the campus. As the table shows, VMT per campus resident at LRDP Buildout would be 5.38 which is substantially less than the Metric 1 threshold value of 18.79 VMT per resident. Similarly, VMT per campus worker at LRDP Buildout would be 14.86, which is lower than the Metric 2 threshold value of 16.82. As both Metrics 1 and 2 fall below the applicable thresholds, the impact of campus development under the 2020 LRDP on VMT would be less than significant.

**Table 7-7: LRDP VMT Impacts – Metrics 1 and 2**

VMT Type	Metric	2020	2030 No Project	2030 With LRDP
Residential	Population (Campus)	3,667	3,667	7,200
	Home-Based VMT (Campus)	21,143	20,796	38,760
	VMT per resident (Campus)	5.77	5.67	5.38
	Regional Average VMT per resident (County)	22.10	21.62	21.36
	Metric 1 Threshold: VMT per resident that would be 15% below the existing regional average	<b>18.79</b>	---	---
	Is the Project VMT per resident at least 15% below the existing regional average?	---	---	<b>Yes</b>
Worker	Employees (Campus)	1,269	1,269	2,411
	Students (Campus)	9,000	9,000	15,000
	Home-work VMT (Campus)	149,130	149,130	258,805
	VMT per worker (Campus)	14.52	14.52	14.86
	Regional Average VMT per worker (County)	19.79	20.76	19.70
	Metric 2 Threshold: VMT per worker that would be 15% below the existing regional average	<b>16.82</b>	---	---
	Is the Project VMT per worker at least 15% below the existing regional average?	---	---	<b>Yes</b>

Source: Fehr & Peers, June 2021

### LRDP VMT Metrics (With VST Development Assumed)

**Table 7-8, LRDP VMT Impacts – Metrics 1 and 2 (With VST Development)** presents the VMT results for the 2020 LRDP, relative to Metrics 1 and 2. These results are derived from the MCAG Model assuming the development of VST Phases 1A – 1C. As the table shows, VMT per campus resident at LRDP Buildout would be 5.22 which is substantially less than the Metric 1 threshold value of 18.79. Similarly, VMT per campus worker at LRDP Buildout would be 14.68, which is lower than the Metric 2 threshold value of 16.82. Both Metrics 1 and 2 fall below the applicable thresholds, and therefore the impact of the 2020 LRDP on VMT would be less than significant.

**Table 7-8: LRDP VMT Impacts– Metrics 1 and 2 (With VST Development)**

VMT Type	Metric	2020	2030 No Project	2030 With LRDP
Residential	Population (Campus)	3,667	3,667	7,200
	Home-Based VMT (Campus)	21,143	20,200	37,581
	VMT per resident (Campus)	5.77	5.51	5.22
	Regional Average VMT per resident (County)	22.10	21.38	21.20
	Metric 1 Threshold: VMT per resident level that would be 15% below the existing regional average	<b>18.79</b>	---	---
	Is the Project VMT per resident at least 15% below the existing regional average?	---	---	<b>Yes</b>
Worker	Employees (Campus)	1,269	1,269	2,411
	Students (Campus)	9,000	9,000	15,000
	Home-work VMT (Campus)	149,130	149,559	255,527
	VMT per worker (Campus)	14.52	14.56	14.68
	Regional Average VMT per worker (County)	19.79	20.74	19.63
	Metric 2 Threshold: VMT per worker level that would be 15% below the existing regional average	<b>16.82</b>	---	---
	Is the Project VMT per worker at least 15% below the existing regional average?	---	---	<b>Yes</b>

Source: Fehr &amp; Peers, June 2021

**Mitigation Measures:** No mitigation is required.**Deletion of LOS-Based Mitigation**

The 2020 LRDP SEIR that was certified in March 2020 concluded that implementation of the 2020 LRDP would significantly affect the level of service at study area intersections during peak commute hours under 2030 plus project conditions.<sup>17</sup> **2020 LRDP Mitigation Measure TRANS-1 (LRDP MM TRANS-1)** was identified to mitigate the level of service impact of campus-related traffic growth under the 2020 LRDP on the study area intersections. The measure specified that the University minimize its traffic growth to the extent feasible by further expanding its TDM program; monitor the campus traffic increase; and make a fair-share contribution to the cost of identified local intersection and roadway segment improvements, based on its proportion of traffic growth at each intersection in the year 2030. Because the development conditions triggering the significant impact

<sup>17</sup> University of California, Merced. 2019. op. cit.

on study area intersections (2030 plus project conditions) have not yet occurred, **LRDP MM TRANS-1** has not been implemented by UC Merced.

Because automobile delay, as described solely by level of service or other similar measures of vehicle congestion, is no longer considered a significant effect under CEQA, **LRDP MM TRANS-1** is no longer applicable to new development on the campus and will be deleted from the 2020 LRDP MMRP. As described below, while no longer required to mitigate an environmental effect under CEQA, deletion of **LRDP MM TRANS-1** would not itself result in a new or substantially more severe significant environmental impact in other, non-transportation areas. The campus development under the 2020 LRDP would increase traffic volumes on the local roadway network compared to existing conditions. The air quality, GHG emissions, and noise impact analyses in the 2020 LRDP SEIR were assessed, in part, based on the anticipated vehicle trip generation attributed to the campus under 2030 buildout conditions (i.e., 15,000 students and 2,411 faculty and staff). The SEIR's traffic noise analysis did not assume implementation of **LRDP MM TRANS-1**, and the analysis concluded that the 2020 LRDP's contribution to traffic-related increases in ambient noise levels would be a less-than-significant impact, requiring no mitigation. Similarly, the air quality and GHG emissions impact analysis did not assume implementation of **LRDP MM TRANS-1**. Mitigation measures were identified to reduce potentially significant impacts related to air quality and GHG emissions. However, as summarized below, the air quality and GHG impact analyses in the SEIR did not rely upon **LRDP MM TRANS-1** to reduce or avoid potentially significant impacts.

**Air Quality.** Section 4.1 of the 2020 LRDP SEIR analyzed the potential for campus development under the 2020 LRDP to result in an impact on air quality from campus operations, including vehicle trips. That analysis, which was presented under LRDP Impact AQ-2, analyzed impacts of a 15,000-student campus in 2030. CalEEMod 2016.3.2 (CalEEMod) was used to estimate operational emissions from the campus under 2030 conditions. Mobile source emissions were calculated based on project trip generation data from the Traffic Impact Assessment prepared for the SEIR. The 2020 LRDP also analyzed the potential for campus development under the 2020 LRDP to cause high levels of carbon monoxide (CO) due to traffic associated with the campus. That analysis was presented under LRDP Impact AQ-3.

The results of the emissions modeling indicated that campus operations would result in a significant and unavoidable impact on air quality due to emissions of reactive organic gases (ROG) and nitrogen oxide (NO<sub>x</sub>) that would exceed San Joaquin Valley Air Pollution Control District (SJVAPCD) thresholds. However, the results of the modeling indicated that campus-related traffic would not result in CO concentrations that would exceed the state CO standards, and that a less-than-significant impact would occur.

**2020 LRDP Mitigation Measures AQ-2a and AQ-2b** were included in the SEIR to reduce the increase in the campus's operational air emissions of ROG and NO<sub>x</sub>. **LRDP Mitigation Measure AQ-2a** requires UC Merced to promote the use of alternative transportation, alternative-fuel vehicles, and other measures to reduce campus traffic. **LRDP Mitigation Measure AQ-2b** includes measures to reduce ROG emissions, by planting low maintenance landscaping, and utilizing electric landscaping equipment, low-VOC cleaning supplies and consumer products, and low-VOC paints in campus maintenance. **LRDP Mitigation Measure AQ-2b** also recommends the use of solar water heating systems to reduce the combustion of natural gas for water heating.

With the implementation of **2020 LRDP Mitigation Measures AQ-2a and AQ-2b**, although the emissions would be reduced, campus operations would still result in annual emissions that exceed the SJVAPCD significance threshold for NO<sub>x</sub>, and thereby still result in a cumulatively considerable net increase in ozone for which the air basin is in non-attainment. The SEIR concluded that operational emissions of NO<sub>x</sub> generated by the campus would result in a significant and unavoidable impact on air quality.

The analysis in the SEIR did not rely on the implementation of **LRDP MM TRANS-1** for the reduction of LRDP Impact AQ-2. Therefore, elimination of **LRDP MM TRANS-1** would not itself result in a new significant impact nor would it further increase the severity of the previously identified significant LRDP Impact AQ-2.

**GHG Emissions.** Section 4.3 of the 2020 LRDP SEIR evaluated GHG impacts based on emissions reduction goals set forth in Assembly Bill (AB) 32 and Senate Bill (SB) 32. The 2020 LRDP SEIR used a total emissions threshold of 3,300 metric tons of CO<sub>2</sub>e per year and an efficiency threshold of 2.44 metric tons of CO<sub>2</sub>e per capita per year in 2030, which, if exceeded, would represent a significant impact.

The 2020 LRDP SEIR found that the campus' per capita emissions of 0.63 metric tons of CO<sub>2</sub>e per capita per year in 2030 would be well below the UC Merced 2030 target of 2.44 metric tons of CO<sub>2</sub>e per capita per year. However, the 2020 LRDP SEIR found that the campus' total emissions of 10,137 metric tons of CO<sub>2</sub>e in 2030 would exceed the total emissions threshold of 3,300 metric tons of CO<sub>2</sub>e per year. As such, the 2020 LRDP SEIR found that implementation of the 2020 LRDP would result in a potentially significant impact. The 2020 LRDP SEIR identified **2020 LRDP Mitigation Measures GHG-1a, GHG-1b, and GHG-1c** to reduce this impact to a less-than-significant level.

**2020 LRDP Mitigation Measure GHG-1a** requires UC Merced to implement additional measures to reduce its emissions, and if adequate reductions are not achieved, the mitigation measure requires UC Merced to purchase GHG offsets. **LRDP Mitigation Measure GHG-1b** requires the campus to implement **LRDP Mitigation Measure AQ-2a** which, as described above, includes measures to reduce combustion emissions from a variety of sources, and **LRDP Mitigation Measure AQ-2b** to reduce mobile source emissions. Both measures would reduce GHG emissions. **LRDP Mitigation Measure GHG-1c** commits UC Merced to continue to evaluate and implement new technologies that would reduce its GHG emissions.

The analysis in the SEIR did not rely on the implementation of **LRDP MM TRANS-1** for the reduction of GHG emissions. Therefore, elimination of the **LRDP MM TRANS-1** would not itself result in a new or substantially more severe significant GHG emissions impact, compared to the impact as identified in the SEIR.

**Conclusion.** As described above, **LRDP MM TRANS-1** is no longer required under *State CEQA Guidelines* Section 15126.4 because the automobile delay impact it was designed to address is no longer considered an environmental impact under CEQA. Further, elimination of **LRDP MM TRANS-1** would itself not result in a new or substantially more severe significant environmental impact in other, non-transportation areas, as summarized above. UC Merced will still implement **2020 LRDP Mitigation Measures AQ-2a and AQ-2b** and **Mitigation Measures GHG-1a, GHG-1b, and GHG-1c**, as

specified in the SEIR. The Campus will also continue to implement TDM programs to minimize increases in daily vehicle trips to the campus and associated transportation-related emissions. The Campus' TDM program and mitigation measures for air quality and GHG impacts will further reduce the less-than-significant VMT impacts of the 2020 LRDP.

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**LRDP Impact TRANS-3      Implementation of the 2020 LRDP would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). (*Less than Significant*)**

The 2020 LRDP is an overarching plan to guide long-term physical planning and development of the next phase of campus growth from about 10,000 to 15,000 students; therefore, it would not introduce an incompatible use with the potential to create a transportation hazard. The 2020 LRDP includes conceptual roadway network changes and has not progressed to the stage of developing detailed designs. Any roadway extensions and new streets would be required to comply with the UC Facilities Manual, which requires UC Merced to comply with the Title 24 California Building Standards Code, Parts 1-12, and all amendments. To the extent indicated in the UC Facilities Manual, UC Merced would also comply with current best practice roadway design guidance such as the Caltrans Highway Design Manual and the California Manual on Uniform Traffic Control Devices.

Though UC Merced is the Authority Having Jurisdiction (AHJ) for matters of code regulations on University projects, local jurisdictions can review the emergency access plans for UC Merced projects, analyzing items such as road location, configuration, turning radius, and width. This would be particularly important for locations where the UC Merced and County/City networks interface. As the AHJ, UC Merced would ensure all proposed on-campus transportation network changes meet the above-mentioned code requirements, and would work collaboratively with Merced County and the City of Merced to ensure that connections to non-campus facilities are appropriately designed to minimize hazards and meet the local jurisdictions' standards. Therefore, development of the 2020 LRDP would be subject to, and constructed in accordance with, applicable University and industry standard roadway design and safety guidelines and would not create hazards due to geometric design or incompatible uses. This impact is considered less than significant.

**Mitigation Measures:** No mitigation is required.

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**LRDP Impact TRANS-4      The campus road network system would be adequately sized and designed to facilitate emergency access vehicles. (*Less than Significant*)**

The transportation facilities, including connections to the off-campus facilities, anticipated under the 2020 LRDP will be constructed according to State of California design standards for roadway and intersection design and operations. In addition, no infrastructure changes outside the campus are proposed under the 2020 LRDP. For these reasons, implementation of the 2020 LRDP would not substantially increase hazards due to a design feature or incompatible uses nor would it result in inadequate emergency access. This impact is considered less than significant.

**Mitigation Measures:** No mitigation is required.

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### 7.1.5 Cumulative Impacts and Mitigation Measures

The cumulative transportation impact assessment focuses on Significance Criterion 2 (i.e., bullet number two listed in **Section 7.4.4.1**), which is based on whether the proposed project would conflict or be inconsistent with CEQA Guidelines 15064.3, subdivision (b). Impact assessments for Criteria 1, 3, and 4 would be the same as described above for LRDP Impacts TRANS-1, TRANS-3, and TRANS-4, as these impacts are site-specific and not cumulative in nature.

**LRDP Cumulative Impact C-TRANS-1      Implementation of the 2020 LRDP would not exceed an applicable VMT threshold of significance under 2030 plus LRDP conditions. (*Less than Significant*)**

As noted earlier, according to the Technical Advisory, a project that falls below an efficiency-based threshold that is aligned with long-term environmental goals and relevant plans would have no cumulative impact distinct from the project impact. As reflected in the analysis in **Section 7.4.5**, campus development under the 2020 LRDP would result in a VMT per resident and per worker which is more than 15 percent lower than the regional VMT per resident and per worker under existing (2020) conditions as well as 2030 No Project conditions. Therefore, based on the guidance in the Technical Advisory, the LRDP would result in a less-than-significant cumulative impact with respect to VMT.

Although not required, the University has completed an additional analysis of the LRDP's cumulative impact by modeling whether the addition of campus population under the 2020 LRDP would have the potential to increase the forecasted regional average VMT per capita. That analysis, based on Metrics 3 and 4, is presented below.

#### LRDP VMT Metrics (No VST Development Assumed)

**Table 7-9, LRDP VMT Impacts – Metrics 3 and 4**, presents the VMT results for the 2020 LRDP relative to Metrics 3 and 4. These results are derived from the MCAG Model assuming no development of VST property (no Phases 1A – 1C). As the table shows, while the regional average VMT per resident would increase, in the absence of development under the 2020 LRDP, from 22.10 per regional resident in 2020 to 21.62 per regional resident by 2030, the addition of the campus population under the 2020 LRDP to the region would have the effect of decreasing the regional average VMT to 21.26 per regional resident in 2030. Similarly, the regional average VMT per worker would increase from 19.79 in 2020 to 20.76 in 2030 in the absence of development under the 2020 LRDP, but the addition of the campus population under the 2020 LRDP would cause the regional average VMT per worker to decrease to 19.70 per regional worker. Thus, the implementation of the 2020 LRDP would not contribute to an increase the regional average VMT metrics and therefore would result in a less-than-significant cumulative impact.

**Table 7-9: LRDP VMT Impacts – Metrics 3 and 4**

VMT Type	Metric	2020	2030 No Project	2030 With LRDP
Residential	Population	243,426	284,922	288,455
	Home-Based VMT	5,379,412	6,158,956	6,160,587
	<b>VMT per resident</b>	<b>22.10</b>	<b>21.62</b>	<b>21.36</b>
	Does the Regional VMT per Resident Increase with Project?	---	---	<b>No</b>
Worker	Employees	87,067	97,462	98,604
	Students	19,800	19,800	25,800
	Home-work VMT	2,114,776	2,434,438	2,451,123
	<b>VMT per worker</b>	<b>19.79</b>	<b>20.76</b>	<b>19.70</b>
	Does the Regional VMT per Worker Increase with Project?	---	---	<b>No</b>

Source: Fehr & Peers, June 2021

#### LRDP VMT Metrics (With VST Development Assumed)

**Table 7-10, LRDP VMT Impacts – Metrics 3 and 4 (With VST Development)** presents the VMT results for the 2020 LRDP, in combination with VST development, relative to Metrics 3 and 4. These results are derived from the MCAG Model assuming the development of Phases 1A – 1C on the VST property immediately south of the campus. As with the table above, this table also shows that while, if VST development occurs along with other regional growth, the regional average VMT per resident in the county would increase from 22.10 in 2020 to 21.38 by 2030 in the absence of development under the LRDP, but the addition of the campus population under the 2020 LRDP to the region would have the effect of decreasing the regional average VMT to 21.20 in 2030. Similarly, if the VST development occurs along with other regional growth, the regional average VMT per worker in the county would increase from 19.79 in 2020 to 20.74 in 2030 in the absence of development under the 2020 LRDP, but the addition of the campus population under the 2020 LRDP would cause the forecasted regional average VMT per worker to decrease to 19.63. Thus, the implementation of the 2020 LRDP would not increase the forecasted regional average VMT metrics (assuming VST development) and would result in a less-than-significant cumulative impact.

**Mitigation Measures:** No mitigation is required.



**Table 7-10: LRDP VMT Impacts – Metrics 3 and 4 (With VST Development)**

VMT Type	Metric	2020	2030 No Project	2030 With LRDP
Residential	Population	243,426	290,095	293,628
	Home-Based VMT	5,379,412	6,203,472	6,224,716
	VMT per resident	<b>22.10</b>	<b>21.38</b>	<b>21.20</b>
	Does Regional VMT per Resident Increase with Project?	---	---	<b>No</b>
Worker	Employees	87,067	99,220	100,362
	Students	19,800	19,800	25,800
	Home-work VMT	2,114,776	2,468,186	2,476,638
	VMT per worker	<b>19.79</b>	<b>20.74</b>	<b>19.63</b>
	Does Regional VMT per Worker Increase with Project?	---	---	<b>No</b>

Source: Fehr & Peers, June 2021

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## **8.0 REPORT PREPARATION**

### **8.1 LEAD AGENCY**

#### **8.1.1 University of California, Merced**

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Alvaro Arias, Principal Environmental Planner  
Fran Telechea, Executive Director of Planning, Design, & Construction Management  
Allison Costa, Project Director  
Maggie Saunders, Executive Director of Capital and Space Strategies and Real Estate

#### **8.1.2 University of California, Office of the President**

Brian Harrington, Director, Physical and Environmental Planning  
Ha Ly, Associate Director, Physical and Environmental Planning

#### **8.1.3 University of California, Office of the General Counsel**

Alison Krumbein, Principal Counsel

### **8.2 EIR CONSULTANTS**

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Chris Graham, Senior Environmental Planner  
Cara Carlucci, Senior Environmental Planner, Air Quality  
Kendra Kolar, Cultural Resources Analyst  
Greg Gallagher, Geographic Information System (GIS) Specialist

### **8.3 TRANSPORTATION**

Ellen Poling, P.E., Transportation Project Manager, Fehr & Peers

## **8.4 INDIVIDUALS AND AGENCIES CONSULTED DURING EIR PREPARATION**

Al Gray, Merced County Development Services Division, Planning Technician

Kim Espinosa, City of Merced Planning Division, Planning Manager

Mark Pimentel, California Department of Forestry and Fire Protection (Cal Fire) - Merced County,  
Battalion Chief

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## **APPENDIX 1.0**

### **NOP, INITIAL STUDY, SCOPING MEETING NOTES, AND COMMENT LETTERS**

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UNIVERSITY OF CALIFORNIA MERCED  
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## NOTICE OF PREPARATION ENVIRONMENTAL IMPACT REPORT

**Project Title:** Health and Behavioral Sciences-Medical Education Building Project

**Lead Agency:** University of California

**Project Location:** University of California, Merced  
5200 North Lake Road, Merced, CA 95343

**County:** Merced

**Contact Person:** University of California, Merced  
Physical & Environmental Planning  
5200 North Lake Road  
Merced, California 95343  
Attn: Phillip Woods

**Project Description:** The University of California, Merced (UC Merced) proposes to develop a new academic building to house the Campus' Health and Behavioral Sciences-Medical Education (HBS-ME) programs. The HBS-ME Building Project ("proposed Project" or "Project") would be located within the existing UC Merced campus at 5200 Lake Road, Merced, CA 95343 (Figure 1). The proposed building would be developed on the southeastern side of the campus, between Cottonwood Loop Road and the existing Arts and Computational Sciences Building (Figure 2). Modifications to existing campus storm water detention basins would occur within Cottonwood Meadow to accommodate the siting of the new academic building and to provide detention capacity for storm water runoff generated by the proposed building, parking lot, and other improvements.

The proposed HBS-ME Building would become home to the Departments of Psychological Sciences and Public Health, UC Merced's Medical Education program, and the Health Sciences Research Institute. The Departments of Psychological Sciences and Public Health would be relocated from the existing Social Sciences and Management building to the proposed building. The four-story HBS-ME Building would include approximately 182,698 gross square feet (gsf) of building space, including instructional, academic office, research, community facing space, and common areas.

**Background:** The 2020 Long Range Development Plan (LRDP), which was adopted by the University of California in March 2020, sets forth the development plans for the UC Merced campus to the year 2030. The 2020 LRDP Subsequent Environmental Impact Report (SEIR) (SCH # 2018041010) addressed the development of the campus to the full buildout enrollment of 15,000 students by 2030 on a 1,026-acre campus footprint.



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As described in the 2020 LRDP SEIR, based on an enrollment level of 9,700 students in 2020, the campus population is projected to increase by about 5,300 students by 2030, and employment at the campus is projected to increase by 1,131 faculty and staff during the same period. Approximately 1.83 million gsf of building space would need to be added to the campus between 2020 and 2030 to accommodate the projected enrollment increase and expanding academic programs.

The proposed Project would include development of approximately 182,698 gsf of additional building space and a population addition of about 2,999 people (2,811 students and 188 staff/faculty). Thus, the building space and population growth associated with the proposed Project are within the program-level growth assumptions used in the 2020 LRDP SEIR analyses.

**Environmental Review and Comment:** The University of California will be the lead agency under the California Environmental Quality Act (CEQA) and has determined that an Environmental Impact Report (EIR) must be prepared to evaluate the environmental impacts from the approval and implementation of the proposed HBS-ME Building Project. An Initial Study has been prepared in accordance with CEQA and the CEQA Guidelines to identify environmental impacts that are adequately addressed in the 2020 LRDP SEIR or are not an issue for the proposed Project, and those potential environmental impacts that will be analyzed in the EIR. The Initial Study also includes a description of the proposed Project. At this time, based on the analysis in the Initial Study, it is anticipated that the EIR will address environmental impacts in the following topic areas: air quality, hydrology/water quality, public services, transportation, tribal cultural resources, and utilities/service systems.

The 2020 LRDP SEIR analyzed potential impacts of traffic generated by campus growth through 2030 on roadway facilities based on an analysis of level of service (LOS) impacts. However, since the certification of the 2020 LRDP SEIR in March 2020, CEQA documents (as of July 1, 2020) must include an evaluation of transportation impacts based on vehicle miles travelled (VMT), pursuant to Senate Bill (SB) 743. As specified by SB 743 and the associated updates to the CEQA Guidelines, automobile delay, as measured by "level of service" and other similar metrics, no longer constitutes a significant environmental effect under CEQA (Public Resources Code, Section 21099, subd. (b)(3)). Therefore, the EIR will include an updated supplemental program-level transportation impact analysis of campus growth through 2030 under the 2020 LRDP based on a VMT metric consistent with CEQA Guidelines Section 15064.3, subdivision (b).

A copy of this NOP and the Initial Study supporting the scoping of the proposed HBS-ME Building Project is available for viewing or downloading on UC Merced's Physical & Environmental Planning website at <https://planning.ucmerced.edu/ceqa-environmental-documents>.



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**Public Scoping Meeting:** The University will hold a public scoping meeting on Wednesday, April 21, 2021 for the EIR. Due to public safety concerns regarding COVID-19, the meeting will be held online via Zoom from 4:00 p.m. to 6:00 p.m. To attend this Zoom meeting:

1) Go to [www.zoom.us](https://www.zoom.us) select "Join a Meeting," and enter the following:

**Meeting ID:** 502 461 673

**Password:** 251644

2) For those calling in, dial 1-669-900-6833, Meeting ID: 502461673#

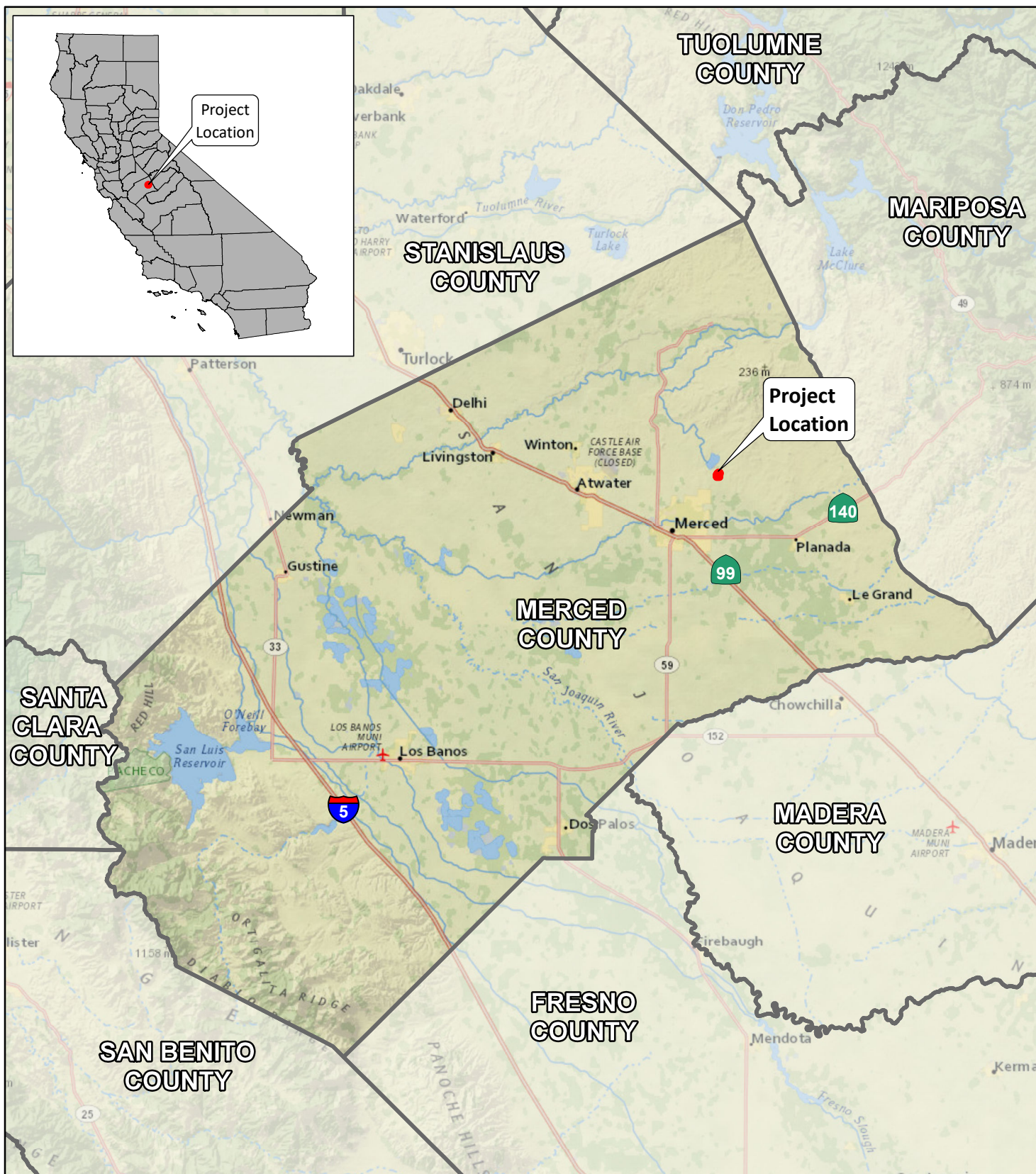
Please note that Spanish and Hmong translators will be available to translate upon request with a 7-day advance notice before the public scoping meeting on April 21, 2021.

**Public Comment Period:** We request your views as to the scope and contents of the EIR for the proposed Project. This NOP is being circulated for 30 days, from April 2, 2021 through May 3, 2021. Your comments must be received no later than 5:00 p.m. on May 3, 2021. Your name, email and/or address should be included with your comments. Please send your comments to the attention of Phillip Woods at the address noted above.

Comments may also be submitted via email to the following email address: [CEQA@ucmerced.edu](mailto:CEQA@ucmerced.edu). Email comments must also be received no later than 5:00 p.m. on May 3, 2021.

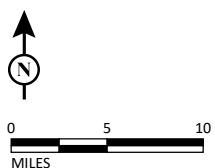
If you have any questions regarding this NOP, please contact Phillip Woods at the above address or via email at [CEQA@ucmerced.edu](mailto:CEQA@ucmerced.edu).





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FIGURE 1

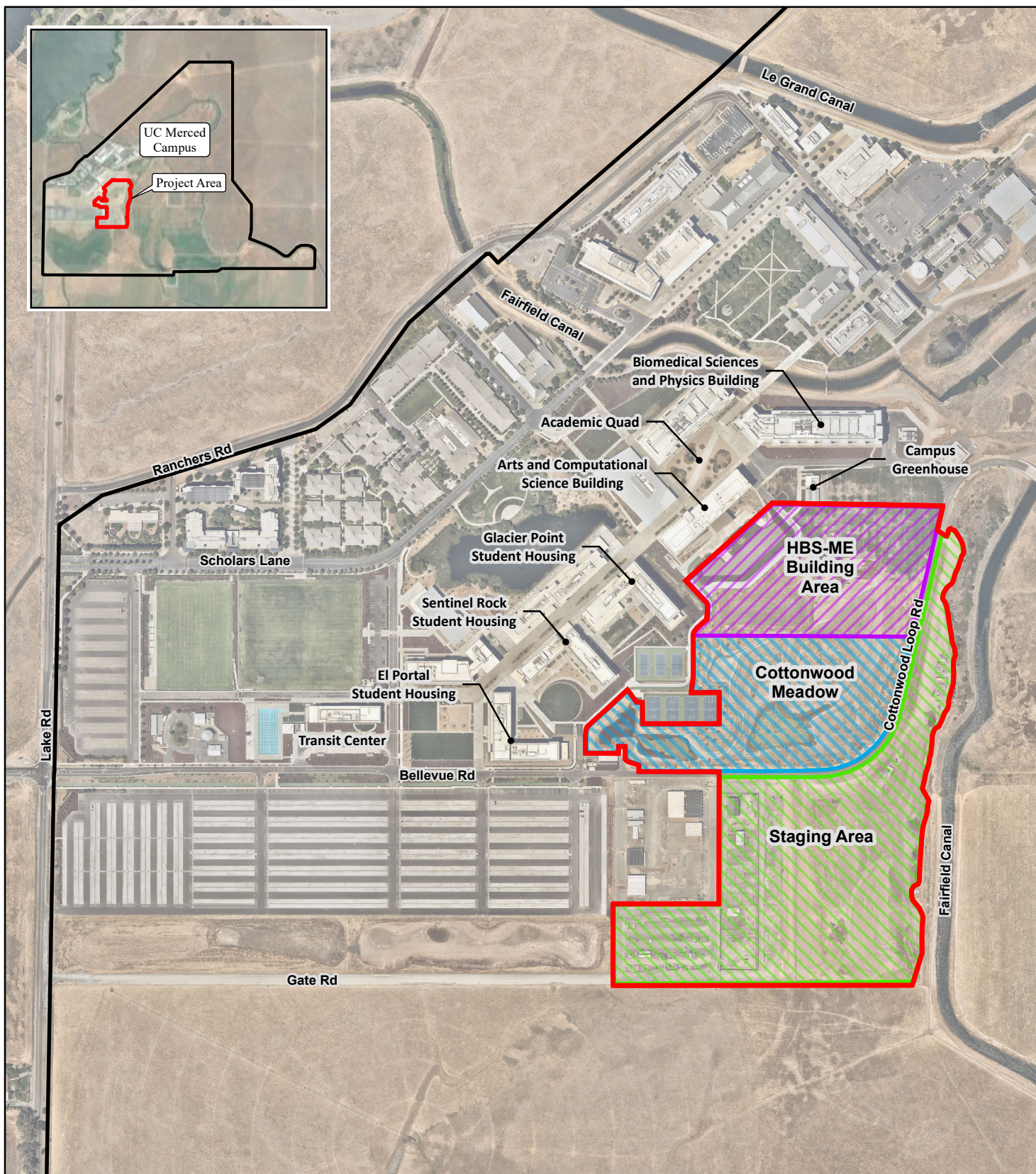


SOURCE: National Geographic World Map (2021).

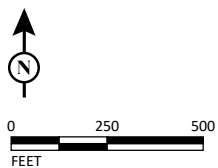
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*Health & Behavioral Sciences – Medical Education  
(HBS-ME) Building Project, UC Merced  
Merced County, California  
Regional Location*





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**LEGEND**

- Project Area (36.9 acres)\*
- HBS-ME Building Area (8.5 acres)
- Staging Area (18.0 acres)
- Stormwater Management Area (9.5 acres)
- UC Merced Campus Boundary

SOURCE: Aerial from Nearmap (07/2020).

\* Project Area also includes 0.9 acre internal access roads

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**FIGURE 2**

*Health & Behavioral Sciences – Medical Education  
(HBS-ME) Building Project, UC Merced  
Merced County, California  
Project Area*





UCMERCED

INITIAL STUDY

**HEALTH AND BEHAVIORAL SCIENCES-MEDICAL EDUCATION (HBS-ME)  
BUILDING PROJECT**

**UNIVERSITY OF CALIFORNIA MERCED, MERCED COUNTY, CALIFORNIA**

April 2021

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UCMERCED

**INITIAL STUDY**

**HEALTH AND BEHAVIORAL SCIENCES-MEDICAL EDUCATION (HBS-ME)  
BUILDING PROJECT**

**UNIVERSITY OF CALIFORNIA MERCED, MERCED COUNTY, CALIFORNIA**

Submitted to:

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April 2021

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## TABLE OF CONTENTS

Table of Contents .....	i
Figures and Tables .....	ii
<b>INTRODUCTION .....</b>	<b>1</b>
Anticipated Project Approvals.....	2
Public and Agency Review.....	2
Organization of the Initial Study .....	2
<b>1.0 PROJECT INFORMATION .....</b>	<b>5</b>
<b>2.0 PROJECT DESCRIPTION .....</b>	<b>7</b>
2.1 Project Location and Context.....	8
2.2 Project Background .....	11
2.3 Project Objectives .....	13
2.4 Proposed Project.....	13
<b>3.0 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED.....</b>	<b>19</b>
<b>4.0 DETERMINATION.....</b>	<b>21</b>
<b>5.0 EVALUATION OF ENVIRONMENTAL IMPACTS .....</b>	<b>23</b>
5.1 Approach to the Impact Analysis .....	23
5.2 Determination of Significance.....	23
5.3 Aesthetics.....	24
5.4 Agriculture and Forestry Resources.....	27
5.5 Air Quality .....	30
5.6 Biological Resources.....	34
5.7 Cultural Resources .....	47
5.8 Energy.....	51
5.9 Geology and Soils .....	54
5.10 Greenhouse Gas Emissions .....	59
5.11 Hazards and Hazardous Materials.....	64
5.12 Hydrology and Water Quality .....	71
5.13 Land Use and Planning .....	76
5.14 Mineral Resources.....	78
5.15 Noise.....	79
5.16 Population and Housing .....	87
5.17 Public Services.....	91
5.18 Recreation .....	97
5.19 Transportation .....	99
5.20 Tribal Cultural Resources .....	102
5.21 Utilities and Service Systems.....	104
5.22 Wildfire.....	110
5.23 Mandatory Findings of Significance .....	113
<b>6.0 LIST OF PREPARERS .....</b>	<b>115</b>

6.1 LEAD AGENCY .....	115
6.2 CEQA CONSULTANTS .....	115
<b>7.0 REFERENCES .....</b>	<b>117</b>

## FIGURES AND TABLES

### FIGURES

Figure 1: Regional Location.....	9
Figure 2: Project Area .....	10

### TABLES

Table 1: Proposed HBS-ME Building Uses.....	14
Table 2: Special-Status Animal and Plant Species with the Potential to Occur Within or in the Vicinity of the Project Site .....	35
Table 3: Campus Student Population and Employees Under the 2020 LRDP.....	88
Table 4: 2020 Enrollment and 2020 Enrollment with HBS-ME Building Student Scenarios and Housing Demands .....	89



## INTRODUCTION

This Initial Study provides a preliminary evaluation of the potential environmental consequences of implementation of the proposed Health and Behavioral Sciences-Medical Education (HBS-ME) Building Project (Project). Pursuant to Section 15063 of the California Environmental Quality Act (CEQA) Guidelines (Title 14, California Code of Regulations, Sections 15000 et seq.), an Initial Study is a preliminary environmental analysis that is used by the lead agency (the public agency principally responsible for approving or carrying out the proposed project) as a basis for determining whether an Environmental Impact Report (EIR), a Mitigated Negative Declaration, or a Negative Declaration is required for a project. The CEQA Guidelines require that an Initial Study contain a project description; description of environmental setting; identification of environmental effects by checklist or other similar form; explanation of environmental effects; discussion of mitigation for significant environmental effects; evaluation of the project's consistency with existing, applicable land use controls; and the name of persons who prepared the study. The University of California (UC or University) is the "lead agency" for this Project consistent with CEQA, and the University of California, Merced (UC Merced or Campus) is the Project proponent. The Board of Regents of the University of California (The Regents) has the principal responsibility for approving this Project.

In March 2020, The Regents certified a program-level Subsequent EIR (SEIR)<sup>1</sup> that analyzed and disclosed the impacts from the implementation of an updated Long Range Development Plan (LRDP)<sup>2</sup> for the UC Merced campus, and adopted the UC Merced 2020 LRDP as a guide for physical development to accommodate enrollment growth projected through 2030. The 2020 LRDP SEIR addressed the development of the campus to accommodate the full buildout enrollment of 15,000 Full Time Equivalent (FTE) students within a 1,026-acre campus footprint.

In mid-2020, the Campus commenced the planning for the development of a new academic building to house the UC Merced's nascent Medical Education, Health Sciences and Health Policy program, as well as the Campus' largest and fastest growing Departments of Psychological Sciences and Public Health. The proposed HBS-ME Building Project consists of two components: 1) development of the proposed HBS-ME Building including a site access road and parking lot and 2) modifications to the storm water detention basins within Cottonwood Meadow. The purpose of this Initial Study is to evaluate the potential environmental impacts of the proposed Project to determine the appropriate level of environmental review. Based on the analysis in this Initial Study and as shown in **Section 4.0**, Determination, the University has determined that development of the proposed HBS-ME Building Project could result in potentially significant impacts related to air quality, hydrology/water quality, public services, transportation, tribal cultural resources, and utilities/service systems, and that an EIR must be prepared.

The 2020 LRDP SEIR analyzed potential impacts of traffic generated by campus growth through 2030 on roadway facilities based on an analysis of level of service (LOS) impacts. However, since the certification of the 2020 LRDP SEIR in March 2020, CEQA documents (as of July 1, 2020) must include

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<sup>1</sup> University of California, Merced. 2019. *UC Merced 2020 Long-Range Development Plan Final Subsequent Environmental Impact Report*, March 2020.

<sup>2</sup> University of California, Merced. 2020. *UC Merced 2020 Long-Range Development Plan*, March 2020.

an evaluation of transportation impacts based on vehicle miles traveled (VMT), pursuant to Senate Bill (SB) 743. As specified by SB 743 and the associated updates to the CEQA Guidelines, automobile delay, as measured by “level of service” and other similar metrics, no longer constitutes a significant environmental effect under CEQA (Public Resources Code, Section 21099, subd. (b)(3)). Therefore, the EIR will also include an updated supplemental program-level transportation impact analysis of campus growth through 2030 under the 2020 LRDP based on a VMT metric consistent with CEQA Guidelines Section 15064.3, subdivision (b).

## ANTICIPATED PROJECT APPROVALS

The University will prepare an EIR that fully evaluates the environmental effects associated with development of the proposed HBS-ME Building Project. Necessary Project actions and approvals are anticipated to include, but are not limited to, consideration of the following by The Regents (anticipated in late 2021):

- Certification of the HBS-ME Building Project EIR; and
- Approval of the development of the HBS-ME Building Project.

## PUBLIC AND AGENCY REVIEW

The Notice of Preparation (NOP) and this Initial Study will be circulated for public and agency review from April 2, 2021 through May 3, 2021. The NOP/Initial Study is available online at <https://planning.ucmerced.edu/ceqa-environmental-documents>. Please note that due to COVID-19 and California’s State of Emergency (Executive Order N-54-20) the UC Merced and Merced County libraries and UC Merced offices are closed. Providing paper copies of the NOP/Initial Study at these locations is not feasible at this time. Please contact the UC Merced Department of Physical & Environmental Planning if you need assistance obtaining paper copies of these documents.

Comments on the NOP/Initial Study must be received by 5:00 p.m. on May 3, 2021 and can be sent to:

Phillip Woods, AICP  
Campus Architect and Director of Physical & Environmental Planning  
Physical & Environmental Planning  
University of California, Merced  
5200 North Lake Road  
Merced, California 95343  
[CEQA@ucmerced.edu](mailto:CEQA@ucmerced.edu)

## ORGANIZATION OF THE INITIAL STUDY

The Initial Study is organized into the following sections:

**Section 1.0 – Project Information:** provides summary background information about the proposed Project, including project location, lead agency, and contact information.

**Section 2.0 – Project Description:** includes a description of the Project site and land use context; Project background and objectives; and details of the proposed Project itself.

**Section 3.0 – Environmental Factors Potentially Affected:** on the basis of the Initial Study, this section identifies the environmental topics that would involve at least one significant or potentially significant impact.

**Section 4.0 – Determination:** indicates whether impacts associated with the proposed Project would be significant, and what, if any, additional environmental documentation is required.

**Section 5.0 – Evaluation of Environmental Impacts:** contains the Environmental Checklist form (CEQA Guidelines, Appendix G) and presents a discussion of all environmental topics. The checklist is used to assist in evaluating the potential environmental impacts of the proposed Project and determining which impacts, if any, need to be mitigated or further evaluated in the EIR.

**Section 6.0 – Initial Study Preparers:** lists the names of individuals involved in the preparation of this document.

**Section 7.0 – References:** lists references used in the preparation of this document.

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## 1.0 PROJECT INFORMATION

**1. Project Title:**

Health and Behavioral Sciences-Medical Education (HBS-ME) Building Project

**2. Lead Agency Name and Address:**

The Regents of the University of California  
1111 Franklin Street  
Oakland, CA 94607

**3. Contact Person and Phone Number:**

Phillip Woods, AICP  
UC Merced Campus Architect and Director of Physical & Environmental Planning  
(209) 349-2561

**4. Project Location:**

The Project site is located within the existing UC Merced campus at 5200 Lake Road, Merced, CA 95343. The proposed HBS-ME Building Project would be developed on the southeastern side of the campus, between Cottonwood Loop Road and the existing Arts and Computational Sciences Building. Modifications to existing campus storm water detention basins would occur within Cottonwood Meadow to the south of the proposed building location.

**5. Project Sponsor's Name and Address:**

Physical & Environmental Planning  
University of California, Merced  
5200 North Lake Road  
Merced, CA 95343

**6. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resource Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?**

No California Native American tribes traditionally or culturally affiliated with the Project area have requested consultation pursuant to Public Resource Code (PRC) Section 21080.3.1. However, UC Merced proactively sent out letters on April 2, 2021 to Native American tribes with traditional lands or cultural places located within the region of the campus to determine if they wish to consult regarding this proposed Project. Tribal consultation will be discussed in the EIR.

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## 2.0 PROJECT DESCRIPTION

UC Merced proposes to develop a new academic building, including a site access road and parking lot, in the southeastern portion of the existing campus adjacent to Cottonwood Meadow. The building would house the Campus' Health and Behavioral Sciences-Medical Education (HBS-ME) programs. In addition, UC Merced plans to modify the existing Cottonwood Meadow storm water detention basins to accommodate the siting of the proposed building and to provide detention capacity for storm water runoff generated by the proposed building, parking lot, and other improvements. Both of these actions are herein referred to as either the "proposed Project" or "Project."

Because the proposed Project would be undertaken by the University, as the lead agency, the University must evaluate the potential environmental impacts of the proposed Project in compliance with CEQA. The University has completed an evaluation of the proposed Project pursuant to Section 15168(c)(2) of the CEQA Guidelines to determine if the proposed Project is within the scope of UC Merced's 2020 LRDP Program SEIR<sup>3</sup> that was certified by the University in March 2020 and the 2009 UC Merced and University Community Project joint Environmental Impact Statement (EIS) and Environmental Impact Report (EIR)<sup>4</sup> (2009 LRDP EIS/EIR) that was certified in 2009. The CEQA Guidelines state that if the lead agency can find that, pursuant to Section 15162, no new impacts could occur and no new mitigation measures are required, then the Project is within the scope of the previous program EIR, and no further evaluation is required. The University has determined – on the basis of the analysis in this Initial Study – that while the proposed Project is within the scope of the development that was analyzed in the 2020 LRDP SEIR and the 2009 LRDP EIS/EIR, the proposed Project has the potential to result in specific project-level impacts that may not be fully disclosed in the 2020 LRDP SEIR and the 2009 LRDP EIS/EIR. Therefore, the University will proceed with the preparation of a project-level EIR for the proposed Project that will be tiered from the 2020 LRDP SEIR and the 2009 LRDP EIS/EIR under the tiering provisions of CEQA.

The 2020 LRDP sets forth the development plans for the UC Merced campus to the year 2030. The 2020 LRDP SEIR addressed the development of the campus to the full buildout enrollment of 15,000 students by 2030 on a 1,026-acre campus footprint. As described in Section 2.3.1 of the 2020 LRDP SEIR, based on an enrollment level of 9,700 students in 2020, the campus population is projected to increase by about 5,300 students by 2030, and employment at the campus is projected to increase by 1,131 faculty and staff during the same period. As described in Section 2.3.2 of the 2020 LRDP SEIR, about 1.83 million gross square feet (gsf) of building space is projected to be added to the campus between 2020 and 2030 to accommodate the projected enrollment increase and expanding academic programs. The proposed Project would include development of an approximately 182,698 gsf building to provide facilities for the Campus' HBS-ME program and a population addition of

<sup>3</sup> University of California, Merced. 2020. *UC Merced 2020 Long-Range Development Plan Final Subsequent Environmental Impact Report*, March 2020.

<sup>4</sup> University of California, Merced. 2009. *UC Merced and University Community Project Environmental Impact Statement/Environmental Impact Report*. March 2009.



about 2,999<sup>5</sup> people (2,811 students and 188 staff/faculty). The building space and population growth associated with the proposed Project are within the program-level growth assumptions used in the 2020 LRDP SEIR analyses.

The 2020 LRDP identified areas of the campus that would be developed with new facilities under the 2020 LRDP and assigned land use designations to those lands to guide the development of facilities. The proposed building would be located on land within the campus that is designated as Campus Mixed Use (CMU) pursuant to the 2020 LRDP. The CMU designation permits for the development of academic, research, student housing, student and support services, athletic and recreational facilities, university affiliate dining and retail, administrative offices, service facilities, and parking. The proposed building would be a permitted use under the campus' CMU designation, as it would provide facilities for academic and research uses (as described in **Section 2.4**).

## 2.1 PROJECT LOCATION AND CONTEXT

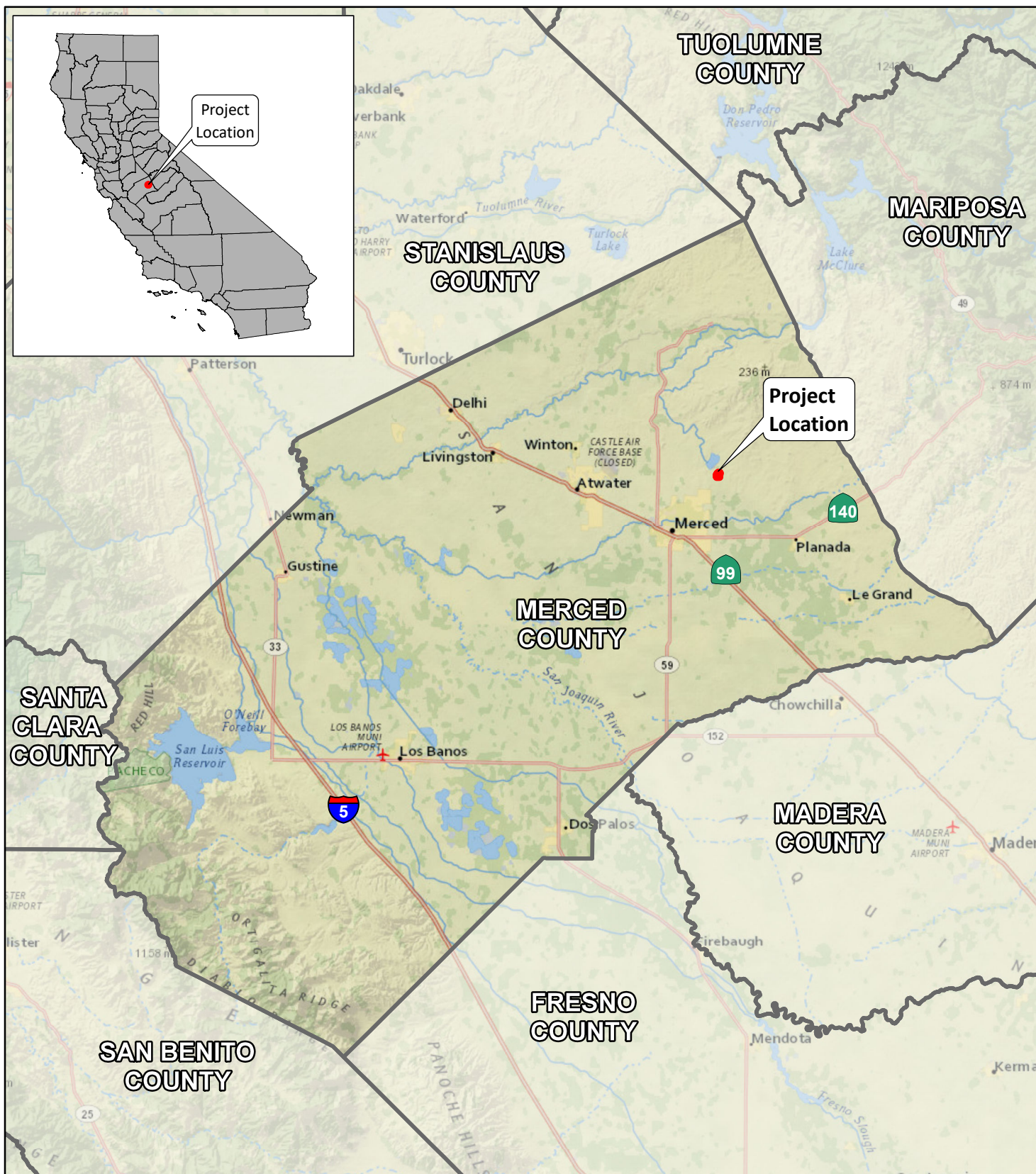
The UC Merced campus is located in the San Joaquin Valley (SJV) of California in eastern Merced County, within the sphere of influence (SOI) of the City of Merced, as shown in **Figure 1: Regional Location**. The campus is approximately 2 miles northeast of the Merced City limits and is regionally access via State Route 99 (SR-99). The Project site is located on the southeast portion of the UC Merced campus, north of Cottonwood Meadow, and east-southeast of the Academic Quad.

**Figure 2: Project Area** shows the location of the approximately 37-acre Project area within the campus, including the area where the proposed building would be developed, construction staging areas, and storm water management areas. Surrounding facilities include the campus greenhouse and Biomedical Sciences and Physics building to the north, the Arts and Computational Sciences building and Glacier Point residences to the west, Cottonwood Loop Road and the Fairfield Canal to the east, and the Cottonwood Meadow storm water detention facilities to the south.

The Project area is currently not developed with any campus buildings. As shown in **Figure 2**, the HBS-ME Building Area overlaps slightly with a paved and landscaped outdoor gathering area associated with the Arts and Computational Sciences building, as well as storm water detention basins within Cottonwood Meadow that were constructed as part of the 2020 Project. There are recently planted landscape trees and shrubs located throughout Cottonwood Meadow. Other portions of the Project area to the south of Cottonwood Meadow consist of graded (unpaved) areas currently being used for campus construction staging and parking.

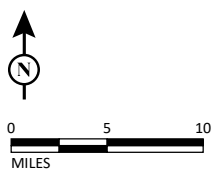
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<sup>5</sup> About 1,681 of the 2,999 persons that would occupy this building are already enrolled as students or employed in the Psychological Sciences and Public Health Departments as of 2020, and therefore the net new population due to this project would be on the order of about 1,318 persons. However, because the existing building space that would be vacated by the Psychological Sciences and Public Health Departments when those departments move to the proposed HBS-ME Building would be backfilled by the growth in other teaching and research programs, the analysis in this Initial Study conservatively assumes that the proposed Project would result in a campus population increase of about 2,999 persons.



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FIGURE 1

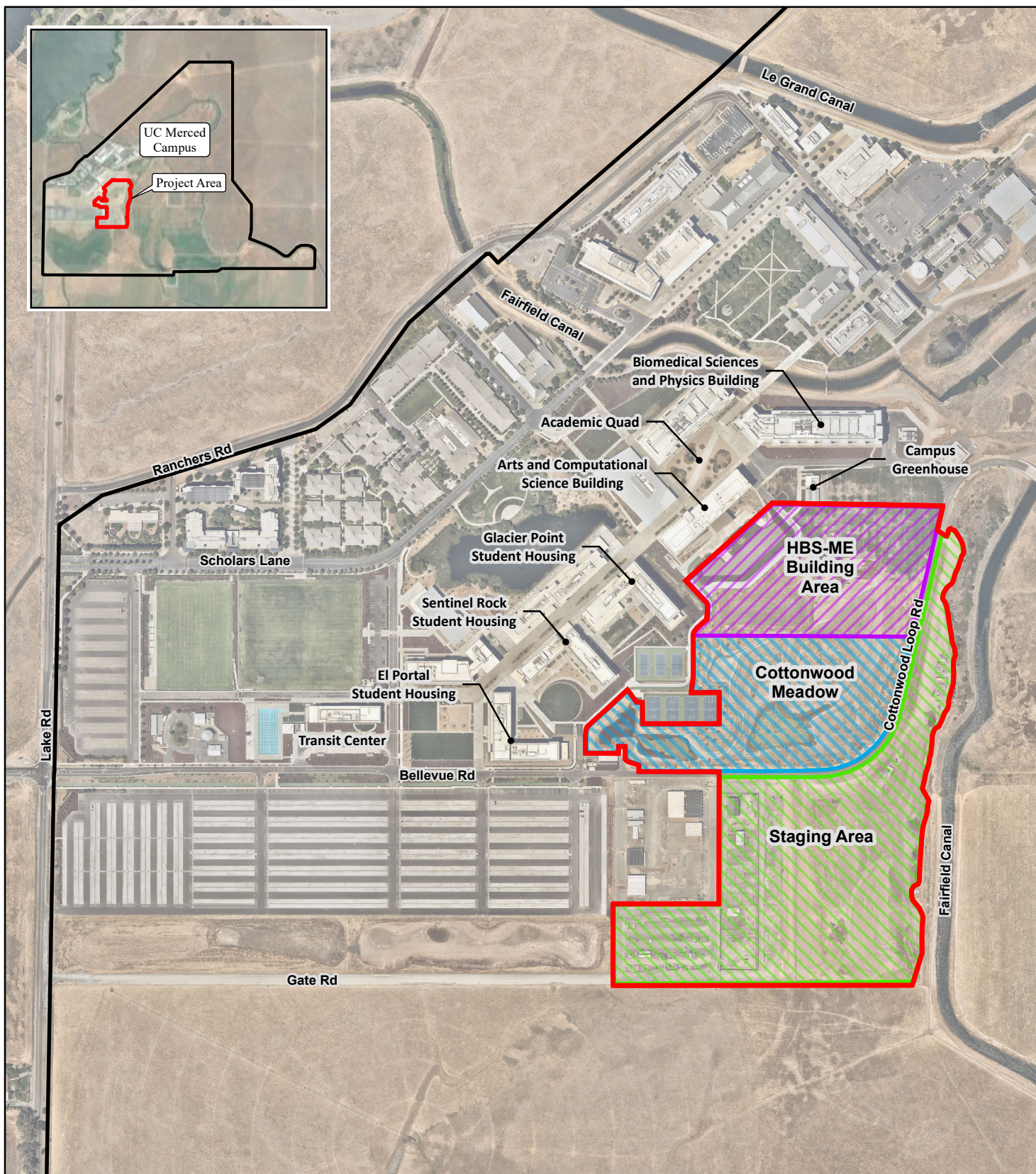


SOURCE: National Geographic World Map (2021).

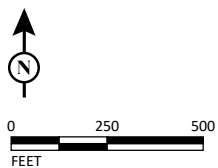
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*Health & Behavioral Sciences – Medical Education  
(HBS-ME) Building Project, UC Merced  
Merced County, California  
Regional Location*





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**LEGEND**

- Project Area (36.9 acres)\*
- HBS-ME Building Area (8.5 acres)
- Staging Area (18.0 acres)
- Stormwater Management Area (9.5 acres)
- UC Merced Campus Boundary

SOURCE: Aerial from Nearmap (07/2020).

\* Project Area also includes 0.9 acre internal access roads

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**FIGURE 2**

*Health & Behavioral Sciences – Medical Education  
(HBS-ME) Building Project, UC Merced  
Merced County, California  
Project Area*



## 2.2 PROJECT BACKGROUND

The COVID-19 epidemic has highlighted the critical need to address the scarcity of medical education opportunities and trained medical health professionals in the State of California, especially in the SJV. In its February 2019 Final Report,<sup>6</sup> the California Future Health Workforce Commission estimated a shortfall of over 4,000 primary care providers in the State by 2030. Recognizing this serious need for medical education and trained medical health professionals in the SJV, the Campus has been actively engaged in the development of a medical education program since 2016. UC Merced is partnering with UC San Francisco (UCSF)-Fresno on the UCSF San Joaquin Valley Program in Medical Education (SJV PRIME) to recruit and train a new generation of healthcare professionals who will provide high-quality, culturally sensitive, and accessible health care in the SJV. The proposed building would house the UC Merced's nascent Medical Education, Health Sciences and Health Policy program.

The remainder of the proposed building program has evolved directly from the results of a 2018 Comprehensive Campus Space Planning Study<sup>7</sup> and a 2018 Classroom Capacity Study<sup>8</sup>. Both studies identified several areas of vulnerability for the campus in the next decade (2018-2028). While the UC Merced 2020 Project facilities addressed many historical space issues, the comprehensive space plan identified several unmet campus space needs, including the space required to support medical education. Additionally, the studies revealed that insufficient and inadequate behavioral science research space is currently affecting future student enrollments and faculty hiring in the Departments of Psychological Sciences, Public Health, and Cognitive Science. Inability to hire faculty in these departments will increase the already above average student-to-faculty ratios in Psychological Sciences (55:1), Public Health (32:1), and Cognitive Science (33:1).

High student-to-faculty ratios in the classroom impede the ability of the existing faculty to develop the new Medical Education, Health Sciences and Health Policy education programs on campus and throughout the SJV. Hence, the Campus desires to build the necessary space to attract and house new, bright, and creative faculty to these programs to support existing students and new enrollments and to help develop the Medical Education and Health Policy programs. The space program for the proposed building would also enable the Developmental Psychology faculty to develop the Institute for Child and Family Sciences, plan for a future School of Public Health, and facilitate the delivery of the psychology and public health curricula and new curricula in anatomy and medicine. Further, enrollment growth will continue to put pressure on UC Merced's general classroom inventory as the 2018 Classroom Capacity Study indicates. The UC Merced 2020 Project, completed in summer 2020, is intended to support classroom instruction for up to 10,000 students. Recent classroom utilization studies conducted by UC Merced predict that 90 to 100 percent

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<sup>6</sup> California Future Health Workforce Commission. 2019. Meeting the Demand of Health: Final Report of the California Future Health Workforce Commission, February. Website: <https://futurehealthworkforce.org/>. Website accessed on February 18, 2021.

<sup>7</sup> University of California, Merced. 2018a. 2020 Project and Backfill Space Allocation Plan. December.

<sup>8</sup> University of California, Merced. 2018b. UC Merced Spring 2018 Capacity Analysis (Ad Astra Information Systems).

utilization will occur in all sizes of classrooms by the time that enrollment reaches 12,500 students (approximately 2025).

The space program for the proposed building would provide both specific types of learning spaces for medical education as well as distance learning and general assignment classrooms and class laboratories for the campus. The classrooms would support the delivery of a broad range of academic programs and partnerships in the health sciences arena, in addition to overall growth in campus enrollment.

Construction of the proposed building would allow for relocation of the Departments of Psychological Sciences and Public Health from the Social Sciences and Management (SSM) building to the new building. The resulting vacancy in the SSM building would enable the emerging School of Management to integrate the Departments of Economics and Cognitive Science under one roof while also providing sufficient space for future growth of the School of Management. Finally, relocation of the Department of Economics from the School of Social Sciences, Humanities and Arts (SSHA) into the SSM building would alleviate the overcrowding experienced by other departments in the SSHA building that was not resolved through the 2020 Project.

The proposed HBS-ME Building would become home to the Departments of Psychological Sciences and Public Health, UC Merced's nascent Medical Education program, and the Health Sciences Research Institute (HSRI). UC Merced's Psychological Sciences and Public Health Departments are structured by a regional, rural focus providing training in the deep and specific issues of marginalized, rural, and underserved populations and would help to provide essential research and training opportunities for undergraduate medical education. Multidisciplinary research is necessary to address the complex health problems facing the SJV. HSRI's overarching mission is to facilitate these research collaborations among UC Merced's health sciences faculty. The Campus believes that by bringing these particular departments and programs together in the proposed building that the outcomes will be greater than the sum of their parts.

In summary, the proposed Project is intended to address the following conditions:

- **Medical Education and Allied Healthcare Programs.** UC Merced currently does not have the appropriate facilities to support the UCSF-Fresno and SJV Prime partnership nor other partnerships with community colleges or other SJV healthcare worker training programs. For example, the campus currently does not have anatomy training facilities, adequate distance learning classrooms, or clinical or simulation skills training areas.
- **Obstacles to Faculty Hiring/Program Growth.** Additional office, research lab, graduate student and post doc space is needed to facilitate future growth in the Departments of Psychological Sciences, Public Health, Cognitive Sciences, and the emerging School of Management. Without additional space, these four existing programs will not be able to continue to support enrollment growth at the undergraduate and graduate level nor hire the additional faculty required to develop the anticipated new programs necessary to deliver a flourishing medical education pipeline program and affect the clinical research and healthcare in the region.

- **Obstacles to Creation of New Community-Based Programs.** The campus has no capacity to create and house new programs (i.e., Institute for Child and Family Sciences) without the creation of more and new types of space. Partnerships with community colleges, secondary schools, the Accreditation Council for Graduate Medical Education (ACGME) programs in the SJV and the other Health Center Program Look-Alikes in the SJV require facilities that promote community access and interaction.
- **General Assignment Classrooms.** Recent classroom utilization studies have shown that capacity in all classrooms will be reached by the time student enrollment reaches 12,500 students (approximately 2025) and capacity has already been reached in certain types of classrooms. The campus is at over 100 percent utilization of its computer classrooms, over 90 percent utilization in auditorium spaces, and between 70 and 80 percent utilization in large- or mid-sized lecture hall spaces. The recent experience of COVID-19 also emphasizes the need for the Campus to make distance learning capable classrooms a priority in any future buildings.

## 2.3 PROJECT OBJECTIVES

Based on the above conditions, the key objectives of the proposed Project are to:

- Provide space for the development of a new Medical Education program, initially in partnership with the UCSF-Fresno and SJV/PRIME program.
- Provide space for growth in the Department of Public Health and nascent plans for the creation of a School of Public Health.
- Provide space for growth in the Department of Psychological Sciences and creation of an Institute for Child and Family Sciences.
- Consolidate and collocate these existing and new programs in one facility so as to optimally draw upon the intellectual, technological, and material resources of the UC Merced programs and facilities, and enhance intellectual exchange and collaboration between related programs.
- Provide classroom space to support enrollment growth beyond 12,500 students.
- Maximize energy efficiency, sustainability, and cost-effectiveness of these programs by housing them in a consolidated, state-of-the-art building designed to balance energy use and cost efficiencies.

## 2.4 PROPOSED PROJECT

The proposed Project consists of two components: 1) development of the proposed HBS-ME Building including a site access road and a parking lot and 2) modifications to the storm water detention basins within Cottonwood Meadow. As reflected in **Figure 2**, the Project site is approximately 37 acres in size and consists of the following individual areas: approximately 8.5 acres for the proposed building area; approximately 18.0 acres for construction staging; and

approximately 9.5 acres of potential storm water management system modifications within Cottonwood Meadow. As the proposed building site overlaps with Cottonwood Meadow, modifications for storm water management may also occur within portions of the proposed building area, as shown in **Figure 2**. The remainder of the Project site (approximately 0.9 acre) is comprised of internal access roads. Individual Project components are further described below.

### 2.4.1 Proposed Building Program

The proposed building would include approximately 182,698 gsf of building space. After the space associated with common areas, such as lobbies, hallways and restrooms, is deducted, there would be approximately 118,751 assignable square feet (asf)<sup>9</sup> of instructional, academic office, research, and community facing space in the proposed building. **Table 1: Proposed HBS-ME Building Uses** summarizes the uses that would be within the proposed building and the area of each type of space.

**Table 1: Proposed HBS-ME Building Uses**

Category	Square Feet
Academic Office and Support	17,222
Research and Research Support	48,789
Instructional and Instructional Support	33,350
Student Support/Study	6,680
Community Facing Space	12,710
<b>Total Assignable Square Feet</b>	<b>118,751</b>
<b>Total Gross Square Feet</b>	<b>182,698</b>

Source: UC Merced (March 2021).

As currently envisioned, the proposed building would include faculty offices, graduate student, post doc, and undergraduate research space for the Departments of Psychological Sciences and Public Health, and Medical Education programs. Further, it would support the growth of new medical education and allied healthcare worker training programs by providing the capacity for advanced new instructional facilities in digital anatomy, clinical and simulation skills training and distance learning. Existing biology and physiology students as well as students in various partnership programs in the healthcare community would also utilize these new specialized instructional facilities. The proposed building would also house the HSRI and associated research facilities, thus integrating the new building with a significant cross section of the campus research community.

The Institute for Child and Family Sciences and the Community Public Health Sample Collection and Analysis Labs would be conveniently accessible to the community on the ground floor and with accessible parking. Finally, creating an opportunity for community forums and dialog, a minimum 300 seat auditorium is planned in addition to large and medium sized lecture halls outfitted for distance learning, panel discussions, clinical and research symposiums, and introductory social and basic science courses.

<sup>9</sup> "Assignable square feet (asf)" comprises the portion of building area assigned to or available for an occupant or specific use. Common areas such as restrooms, hallways, or mechanical space are excluded.



The proposed building would be programmed and designed to provide instructional facilities for medical education and other allied healthcare-related courses that can evolve as these programs mature. Space types would be functionally programmed to serve dual and triple uses to ensure that as research priorities change and the medical education program progresses towards accreditation, the campus fully utilizes the capacity that the proposed building would provide. The building would be designed to facilitate vibrant and interactive collaboration among researchers, students across all levels, instructors, and the community. The proposed building would provide multiple areas for learning and collaborating, including multiple distance learning classrooms, a community sample collection and analysis lab, developmental psychology intake labs, social sciences faculty research labs, clinical practicum spaces, digital anatomy, simulation trainer environments, and a café.

The proposed building would be a four-story (approximately 55 feet in height [50 feet plus a 5-foot parapet]) structure with a partial basement. The first floor would be occupied by the Public Health and Psychological Sciences Departments and the Medical Education program, and also include an auditorium, lecture halls, wet labs, core space, a lobby, a café, and a receiving dock. The second floor would be occupied by seminar rooms and collaboration areas. The top two stories would include faculty offices, social science research labs, computational labs, core space, and collaboration areas. The basement would house a vivarium, anatomy lab, computer labs, chemical waste storage, canister gas storage, and a receiving dock.

The proposed building would be designed to be consistent with goals of the 2020 LRDP, follow the design guidance in the campus Physical Design Framework, and will be an important campus addition that will serve as a place for engagement of and interaction with the community. The architectural design of the new building would adhere to the campus aesthetic vision and reflect UC Merced's vision for a distinctive environment that is dynamic and engaging for learning, living, and working. The arrangement of building design elements would emphasize academic-oriented social interactions in ways that reinforce interactive learning. The proposed building would create a visual connection with strong building lines, complementary forms and careful arrangement of building massing. The proposed building would be oriented towards existing academic core buildings, view corridors, and open spaces to facilitate "way-finding." In addition, the public spaces would be designed to expand the visual experience for users, with the orientation towards views and campus landmarks. The proposed building would incorporate visible entryways, arcades and common spaces to engage the public at the ground level. The proposed building would incorporate bird-safe design practices to reduce potential injury or mortality impacts to birds from building strikes.

#### **2.4.2 Project Sustainability**

The proposed building would comply with the University of California Policy on Sustainable Practices (Sustainability Policy) and the Campus's sustainable practice design guidelines. Project sustainability targets and goals include Leadership in Energy and Environmental Design (LEED) minimum building certification level of Gold under the LEED Green Building Rating System, with incentives for Platinum.

The Campus anticipates that the proposed building would be its first fully electrified project. UC Merced will study whether a fully electrified research building can be more energy efficient as a standalone building as opposed to tiering into UC Merced's already highly efficient Central Plant for

provision of heat and chilled water. The proposed Project would outperform the California Energy Code by 20 percent or better as required by Sustainability Policy and would also meet UC's Whole Building Energy Performance Targets. The 2020 LRDP establishes a "triple zero commitment" to produce zero net emissions, zero waste, and zero net water. Strategies to maintain this commitment would be studied during the design phases of the Project.

### **2.4.3 Roadway and Pedestrian Access, On-Site Circulation, and Parking**

The site planning and other aspects of the proposed HBS-ME Building would ensure the integration of the new building within the existing campus fabric. The site selection criteria that were used to identify the preferred site included the following: site suitability to ensure compatibility with the physical context of the campus; location and proximity to the academic core; pedestrian access; community access; future site considerations, and infrastructure connections.

Automobile access to the site would be via Cottonwood Loop Road and the Bellevue Road extension. The research vision for the proposed HBS-ME Building requires design that is sensitive to access by the general community, including children and disabled individuals. To facilitate community participation in research studies in developmental psychology and community-based public health initiatives, parking would be provided adjacent to the proposed building with direct access to Cottonwood Loop Road.

The proposed Project would also include bicycle spaces, showers, and locker rooms in order to encourage the use of bicycles for travel to the site. Public transportation would be available through the UC Merced shuttle system. The shuttle provides service to downtown Merced. The transit hub at the campus Health and Athletics Center north of the Bellevue Road extension would be the shuttle stop that is nearest to the proposed HBS-ME Building.

### **2.4.4 Hazardous Waste**

The proposed Project would include laboratory research and the use of hazardous chemicals as well as radioactive materials; animal testing procedures would also be included in the laboratory research work. These activities would generate hazardous waste, regulated medical waste, radioactive waste, and mixed waste that would require off campus disposal.

Hazardous wastes generated in the proposed HBS-ME Building would be managed in basement storage areas prior to packaging and preparation for transport by a licensed vendor directly to a Treatment, Storage, and Disposal Facility (TSDF) or alternatively transported to the central waste storage facility on campus. Waste management activities would be conducted in full compliance with all applicable local, state, and federal regulatory requirements to ensure compliant accumulation, storage, transport, treatment, and disposal. In addition, a variety of best management practices (BMPs) (e.g., building design elements to prevent runoff in the event of a spill or release of liquid waste, weekly inspections of containerized and stored waste, etc.) would help ensure these activities are conducted with minimal issues.

#### 2.4.5 Project Population

It is anticipated that the maximum number of persons accommodated by the proposed building would be 2,811 students and 188 faculty and staff. Of the 2,811 students, 1,542 are existing undergrad and post-grad students enrolled in the Psychological Sciences and Public Health departments and about 1,269 would be new students. Of the 188 faculty and staff, 139 are existing faculty and staff in the Psychological Sciences and Public Health departments. Thus, 1,681 of the 2,999 persons that would occupy the proposed HBS-ME Building are already enrolled as students or employed by the Campus as of 2020, and therefore the net new population due to this Project would be on the order of about 1,318 persons.

Because the existing building space in the SSM Building that would be vacated by the Psychological Sciences and Public Health Departments when those departments move to the proposed HBS-ME Building would be backfilled by the Department of Economics and the SSM Building would be ultimately retrofitted into the School of Management, for the purposes of the analyses in this Initial Study, all students, faculty, and staff were conservatively assumed to be “new” or additional to the existing students and employees on the campus. Therefore, the proposed building is conservatively assumed to increase the daily population of the campus by about 2,999 persons.

The increase in campus enrollment due to the expanded and new programs in the HBS-ME building would not occur immediately upon the completion of the building but would occur over time. In other words, the estimated 1,269 new students associated with the HBS-ME Building or the total 2,811 students (which include the 1,269 new students and 1,542 existing students due to backfill of vacated space in the SSM Building) would be incrementally added to the campus population over a period of time.

#### 2.4.6 Storm Water Detention Improvements

Development of the proposed building would increase the area of impervious surfaces at the Project site, as the site is currently not developed with impervious surfaces. The Project site is located in Cottonwood Meadow, which is used to manage storm water runoff from the campus. Cottonwood Meadow was engineered and constructed as a storm water management area with basins that detain storm water to allow for evaporation and groundwater recharge. The basins were designed to detain runoff from the 100-year, 24-hour storm event. During severe storm events greater than the 100-year storm, an emergency overflow structure discharges excess flows to an unnamed tributary to Cottonwood Creek south of the campus. Discharge overflow may also be stored in a storm water basin located south of the Bellevue Road parking lot.

The proposed Project would affect the Cottonwood Meadow storm water management system in two ways: first, it would add impervious surfaces that would potentially increase the amount of storm water that is discharged into the retention/detention basins in Cottonwood Meadow; and, second, the Project development would intrude into the area currently used for detention, resulting in a decrease in the detention capacity and change for the design storm event. As such, the proposed Project includes modifications to the Cottonwood Meadow detention basins to provide added detention capacity to serve storm water runoff from the proposed Project along with providing detention capacity for the capacity that would be removed.

#### 2.4.7 Project Construction

Project construction is anticipated to occur over a 36-month period beginning in spring 2023 and continuing through mid-2025. Construction would take place Monday through Friday and would involve typical construction hours that extend from early morning through mid-afternoon.

As shown in **Figure 2**, construction staging would occur within an approximately 18-acre portion of the campus that was recently disturbed as part of the 2020 Project. The staging area, which is located east of Cottonwood Loop Road and south of Bellevue Road, is centrally situated adjacent to the proposed building and the Cottonwood Meadow storm water management area.

### 3.0 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by the proposed Project, involving at least one impact that is a “Potentially Significant Impact” as indicated by the checklist in **Section 5.0**. The checked environmental factors will be discussed in the Project EIR. For the remaining environmental factors, the analysis in Section 5.0 supports the determination that the Project would have no impact or a less than significant impact, or that impacts would be less than significant with implementation of required mitigation measures. Therefore, these environmental factors will not be further evaluated in the Project EIR.

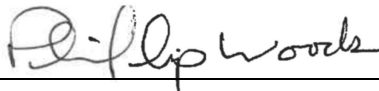
- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Aesthetics                           | <input type="checkbox"/> Agriculture and Forestry Resources | <input checked="" type="checkbox"/> Air Quality                        |
| <input type="checkbox"/> Biological Resources                 | <input type="checkbox"/> Cultural Resources                 | <input type="checkbox"/> Energy  |
| <input type="checkbox"/> Geology/Soils                        | <input type="checkbox"/> Greenhouse Gas Emissions           | <input type="checkbox"/> Hazards & Hazardous Materials                 |
| <input checked="" type="checkbox"/> Hydrology/Water Quality   | <input type="checkbox"/> Land Use/Planning                  | <input type="checkbox"/> Mineral Resources                             |
| <input type="checkbox"/> Noise                                | <input type="checkbox"/> Population/Housing                 | <input checked="" type="checkbox"/> Public Services                    |
| <input type="checkbox"/> Recreation                           | <input checked="" type="checkbox"/> Transportation          | <input checked="" type="checkbox"/> Tribal Cultural Resources          |
| <input checked="" type="checkbox"/> Utilities/Service Systems | <input type="checkbox"/> Wildfire                           | <input checked="" type="checkbox"/> Mandatory Findings of Significance |

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## 4.0 DETERMINATION

On the basis of this initial evaluation:

- ☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☒ I find that the proposed project MAY have a "Potentially Significant Impact" or "Potentially Significant Unless Mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.



Signature

April 2, 2021

Date



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## 5.0 EVALUATION OF ENVIRONMENTAL IMPACTS

### 5.1 APPROACH TO THE IMPACT ANALYSIS

The proposed Project would serve and fit within the growth projections of the 2020 LRDP; as such, where possible, this environmental document tiers off the 2020 LRDP SEIR and the 2009 LRDP EIS/EIR. Many of the environmental topics discussed in this Initial Study will not be further evaluated in the Project EIR. This approach is used because under a number of issue topics, the proposed Project would not result in a new or more severe project impact than the programmatic impacts of the LRDP identified in the 2020 LRDP SEIR and the 2009 LRDP EIS/EIR. Mitigation measures adopted by The Regents in conjunction with the approval of the 2020 LRDP that are relevant to the proposed Project have been included in and are a part of the proposed Project. The analysis presented in **Sections 5.3 through 5.23** evaluates environmental impacts that would result from proposed Project implementation following the application of the 2020 LRDP SEIR mitigation measures as standard Project features. These mitigation measures are a part of the proposed Project and will not be readopted.

### 5.2 DETERMINATION OF SIGNIFICANCE

The Environmental Checklist uses the following response headings to identify potential environmental effects that will be addressed in the Project EIR.

**Impact to be analyzed in the EIR:** This category includes those impacts that were previously evaluated in the 2020 LRDP SEIR and the 2009 LRDP EIS/EIR but it cannot be determined at the time that this Initial Study was prepared whether the impacts associated with the proposed Project are adequately addressed by the previous analyses. It includes effects that are determined to be potentially significant. The effect may be an impact for which further analysis is necessary or desirable before a determination of significance can be made; an impact that is potentially significant but may be reduced to a less-than-significant level with the adoption of mitigation measures; or an impact that may be significant and unavoidable.

**No Additional Analysis in the EIR Required:** This category includes those impacts that were sufficiently analyzed in the 2020 LRDP SEIR and the 2009 LRDP EIS/EIR for which the proposed HBS-ME Building Project would not increase the severity of the previously analyzed impacts or result in new impacts. It also includes environmental topics where the Project would clearly not result in an impact or would clearly result in a less-than-significant impact under CEQA, and no additional analysis in the Project EIR beyond that provided in this Initial Study is necessary.

## 5.3 AESTHETICS

	Impacts to be Analyzed in the EIR	No Additional Analysis in the EIR Required
Except as provided in Public Resources Code Section 21099, would the project:		
a. Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 5.3.1 Impact Analysis

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

A scenic vista is generally defined as an expansive view of highly valued landscape as observable from a publicly accessible vantage point. The area around the UC Merced campus is primarily agricultural with views of the Sierra Nevada Mountains in the distance. Previous analysis in the 2020 LRDP SEIR concluded that impacts to scenic vistas from future development on the campus could be reduced to a less-than-significant level with implementation of **2020 LRDP Mitigation Measures AES-1b** and **AES-3a** (see **Section 5.3.3**). The proposed Project would be developed on a portion of the campus that is designated CMU. The proposed building and other facilities associated with the proposed Project would be located near the existing academic core and would be similar in height and scale to other development in the southeastern portion of the campus, where building heights range between approximately 45 and 80 feet in height. The proposed building would be a four-story building that would be about 55 feet in height and would not be taller than any of the other surrounding buildings in this portion of the campus. Further, **2020 LRDP Mitigation Measures AES-1b** and **AES-3a** would be incorporated into the proposed Project to reduce impacts on scenic vistas. As such, development of the proposed Project would not have a substantial adverse effect on a scenic vista. The impact would be **less than significant** and further evaluation in the Project EIR is not required.

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

The Project site, which is located within the existing UC Merced campus, is not adjacent to or within view of a State scenic highway and therefore, implementation of the proposed Project would not result in any impacts on scenic resources within a State scenic highway. Furthermore, there are no unique trees, rocky outcrops or historic buildings within the Project footprint that could qualify as a scenic resource. As a result, **no impact** on scenic resources within a State scenic highway would occur, and further evaluation in the Project EIR is not required.

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

The proposed Project is located on the UC Merced campus in a non-urbanized area within the sphere of influence of the City of Merced. The visual character of the campus surrounding the Project site includes student housing and academic buildings to the north and west, Cottonwood Meadow, and undeveloped campus lands and conservation lands to the south and east. The Project footprint, which includes the proposed building area and storm water facilities, has already been disturbed and is not occupied by natural features that enhance the visual character above that of other developed portions of the UC Merced campus. As discussed in the Initial Study prepared as part of the 2020 LRDP SEIR, development of facilities, such as the proposed Project, on CMU designated land would not result in any greater impacts on visual character or quality than previously analyzed in the 2009 LRDP EIS/EIR. The proposed building would be designed to be consistent with goals of the 2020 LRDP and follow the design guidance in the campus Physical Design Framework. The architectural design of the proposed building would adhere to the campus aesthetic vision and reflect UC Merced's vision for a distinctive environment that is dynamic and engaging for learning, living, and working. The arrangement of building design elements would emphasize academic-oriented social interactions in ways that reinforce interactive learning. The proposed building would create a visual connection with strong building lines, complementary forms, and careful arrangement of building massing. The proposed building would be oriented towards existing academic core buildings, view corridors, and open spaces to facilitate "way-finding." In addition, any public spaces associated with the proposed Project would be designed to expand the visual experience for users, with the orientation towards views and campus landmarks. The proposed building would incorporate visible entryways, arcades and common spaces to engage the public at the ground level. Finally, the proposed Project would implement **2020 LRDP Mitigation Measure AES-3a** to ensure the new building and associated infrastructure improvements meet UC Merced design standards.

Implementation of the proposed Project would not substantially degrade the existing visual character or quality of public views of the site and UC Merced campus. The impact would be **less than significant** and further evaluation in the Project EIR is not required.

- d. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?*

Impacts related to light and glare from the development of the UC Merced campus were analyzed in the Initial Study prepared for the 2020 LRDP SEIR. The area where the proposed Project would be located, within the CMU designated area of the campus, would not result in any greater light or glare impacts than other developed portions of the campus. The proposed building would be designed to be consistent with goals of the 2020 LRDP and follow the design guidance in the campus Physical Design Framework (i.e., "dark-sky" friendly lighting). Any lighting proposed for the outside of the proposed building would be designed to be directed downward to avoid spill over. The proposed building and window façades would be developed with materials that do not generate

glare. The guidelines of the 2020 LRDP would also be implemented for building design to reduce glare and excessive lighting.

Implementation of the proposed Project would not create a new source of substantial light or glare which would adversely affect daytime or nighttime views on the UC Merced campus and surrounding off-campus area. The impact would be **less than significant** and further evaluation in the Project EIR is not required.

### 5.3.2 Cumulative Impacts

As discussed above, the impacts of the proposed Project are adequately analyzed in the 2009 LRDP EIS/EIR and 2020 LRDP SEIR, and the Project would not result in new or more severe impacts on visual resources. Therefore, the cumulative impacts of the Project are also fully analyzed in the 2009 LRDP EIS/EIR and 2020 LRDP SEIR. There are no changes in circumstances since the 2009 and the 2020 analysis that would change the conclusions of the prior cumulative analysis. Further evaluation of cumulative aesthetic impacts in the Project EIR is not required.

### 5.3.3 2020 LRDP SEIR Mitigation Measures Applicable to the Proposed Project

The following mitigation measures that were adopted at the time of the approval of the 2009 LRDP and/or the 2020 LRDP would apply to the proposed Project:

**2020 LRDP MM 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.

**2020 LRDP MM AES-3a:** The University shall design all new aboveground infrastructure on the Campus to the following standards: (a) Screen aboveground 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 aboveground 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.

### 5.3.4 Project Specific Mitigation Measures Not included in the 2020 LRDP SEIR

As the Project would not result in any new or more severe aesthetic impacts than the impacts that were previously analyzed and disclosed in the 2009 LRDP EIS/EIR and 2020 LRDP SEIR, no Project-specific mitigation measures are required.

## 5.4 AGRICULTURE AND FORESTRY RESOURCES

CEQA Guidelines state that in determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.

	Impacts to be Analyzed in the EIR	No Additional Analysis in the EIR Required
Would the project:		
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 5.4.1 Impact Analysis

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

Impacts on farmland were analyzed in the 2009 LRDP EIS/EIR and in the Initial Study for the 2020 LRDP SEIR. The analysis was based on the Farmland Mapping and Monitoring Program (FMMP) of the California Department of Conservation, which maps the distribution of Prime Farmland, Unique Farmland, and Farmland of Statewide Importance (collectively known as Important Farmland) on a biannual basis. The analysis concluded that approximately 40 acres of Important Farmland would be impacted by buildout of the UC Merced campus under the 2020 LRDP. However, this impact was not considered significant because the University has already placed a substantial number of acres of land in eastern Merced County under conservation easements. The most current Important Farmland data for Merced County is from 2016.<sup>10</sup> According to the FMMP, the Campus is designated

<sup>10</sup> California Department of Conservation, Farmland Mapping and Monitoring Program, 2016 Merced County, <https://www.conservation.ca.gov/dlrp/fmmp>. Accessed November 18, 2021.

“Other Land,” and the Project site is designated as Vacant or Disturbed Land (V) under the Rural Land Mapping Project, which provides more detail on the distribution of the Other Land (X) category in nine California counties, including Merced County. Designated (V) land is defined as, “open field areas that do not qualify as an agricultural category, mineral and oil extraction areas, off road vehicle areas, electrical substations, channelized canals, and rural freeway interchanges.”<sup>11</sup> As the Project site is not in an area designated as Important Farmland, implementation of the proposed Project would not convert Important Farmland to non-agricultural uses. **No impact** would occur and no additional analysis is required in the Project EIR.

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

The UC Merced campus and Project site is zoned by the County of Merced as Exclusive Agricultural (A-2); however, as the campus and site are State owned, the County Zoning code does not apply. The 2020 LRDP SEIR determined that the UC Merced campus, including the Project site, is not under a Williamson Act contract. As such, implementation of the proposed Project would not conflict with existing zoning for agricultural use nor would it conflict with a Williamson Act contract. **No impact** would occur and no additional analysis is required in the Project EIR.

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

The UC Merced campus and Project site are not zoned for/as forest land, timberland, or timberland zoned Timberland Production. As such, implementation of the proposed Project would not conflict with existing forestland/timberland zoning designations/uses. **No impact** would occur and no additional analysis is required in the Project EIR.

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

The UC Merced campus is developed with buildings and associated improvements as well as open space. The Project site is primarily vacant although some areas are currently used for storm water detention or as construction staging areas for other construction projects on the UC Merced campus. There is no forest land on the UC Merced campus nor on the Project site. As such, implementation of the proposed Project would not result in the loss of forest land or conversion of forest land to non-forest use. **No impact** would occur and no additional analysis is required in the Project EIR.

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<sup>11</sup> California Department of Conservation, FMMP – Rural Land Mapping Project, [https://www.conservation.ca.gov/dlrp/fmmp/Pages/rural\\_land\\_mapping.aspx](https://www.conservation.ca.gov/dlrp/fmmp/Pages/rural_land_mapping.aspx). Website accessed January, 18, 2021.



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

The Project site does not contain farmland nor forestland. Areas around the Project site (off the UC Merced campus) do not include forestland although they do include some farmland. However, implementation of the proposed Project would not involve other changes in the existing environment that would result in conversion of nearby farmland (e.g., existing agricultural uses directly south of the campus) to non-agricultural use. **No impact** would occur and no additional analysis is required in the Project EIR.

#### 5.4.2 Cumulative Impacts

The 2020 LRDP SEIR concluded that past, present and reasonably foreseeable development in Merced County, including campus development under the 2020 LRDP, would result in a significant cumulative impact with respect to the loss of Important Farmland. However, UC Merced has already placed substantial number of acres of land in eastern Merced County under conservation easements for the protection of biological resources. There are approximately 70 acres of Important Farmlands and approximately 26,435 acres of grazing land within the Conservation Lands that have been permanently protected from development. There are no changes in circumstances since the prior analysis that would alter the conclusions of that analysis. Furthermore, the Project site is not designated as Important Farmland; as such, the proposed Project would not contribute to the cumulative impact associated with the conversion of Important Farmland in the County or in California. The Project site is not zoned for forestland use nor is it occupied by forestland or timberland. As such, implementation of the proposed Project would not contribute to the cumulative impact associated with the loss of forestland in the County or in California. Further evaluation of cumulative agriculture and forestland impacts in the Project EIR is not required.

#### 5.4.3 2020 LRDP SEIR Mitigation Measures Applicable to the Proposed Project

The 2020 LRDP SEIR did not include mitigation measures under this environmental topic as no potentially significant impacts associated with agriculture and forestry resources were identified.

#### 5.4.4 Project Specific Mitigation Measures Not included in the 2020 LRDP SEIR

As the proposed Project would not result in any new or more severe impacts to agricultural and forestry resources than the impacts that were previously analyzed and disclosed in the 2020 LRDP SEIR, no Project-specific mitigation measures are required.

## 5.5 AIR QUALITY

According to the CEQA Guidelines, where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations.

	Impacts to be Analyzed in the EIR	No Additional Analysis in the EIR Required
Would the project:		
a. Conflict with or obstruct implementation of the applicable air quality plan?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Expose sensitive receptors to substantial pollutant concentrations?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 5.5.1 Impact Analysis

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

The 2020 LRDP SEIR analyzed the potential for campus development under the 2020 LRDP to result in emissions that would exceed applicable thresholds and would represent emissions that are not accounted for in the regional air quality plans. Although the proposed Project is accounted for under the population and building space buildout projections for the 2020 LRDP, project-level analysis is required to determine if the proposed Project as an individual project would conflict with or obstruct implementation of the applicable air quality plan covering the UC Merced campus in conjunction with the vehicle miles travelled (VMT) analysis that will be conducted for the Project as described in **Section 5.19**, Transportation, of this Initial Study. The Project EIR will include an analysis of both construction and operational emissions that would be estimated using the California Emissions Estimator Model (CalEEMod) and compared to quantitative thresholds to determine the level of significance of this impact. The San Joaquin Valley Air Pollution Control District (SJVAPCD) has established air quality significance thresholds that can be used by a lead agency to determine whether air quality impacts from implementing proposed projects will be significant. These thresholds are contained in the SJVAPCD's Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI) and will be used to evaluate the impact from emissions associated implementation of the proposed Project. Appropriate project-level mitigation will be proposed, if necessary.

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

For the same reason presented above in **Section 5.5.1.a**, potential short-term (i.e., construction) and long-term (i.e., operational) air quality impacts from the implementation of the proposed Project will be evaluated in the Project EIR. As noted above, CalEEMod will be used to estimate and report in the Project EIR the construction and operational emissions that could result from the

implementation of the proposed Project, and the estimated emissions will be compared to significance thresholds provided by the local air district.

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

Construction and operation of the proposed Project under the 2020 LRDP could result in exposure of sensitive receptors to substantial concentrations of carbon monoxide (CO) due to traffic. The Project EIR will describe whether or not project-related traffic would result in CO concentrations in excess of established standards. It is possible that development of the proposed Project under the 2020 LRDP could include sources that emit toxic air contaminants (TACs). As a result, construction and operation of the proposed Project could expose sensitive receptors on- and off-campus to substantial pollutant concentrations of TACs. The Project EIR will include an evaluation of project-related traffic and TAC sources and their potential to result in substantial pollutant concentrations that could affect sensitive receptors.

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

Construction of the proposed Project would require the use of diesel-fueled equipment and architectural coatings, both of which generate odors. However, these odors would be short-term and temporary and would not be pervasive enough to affect a substantial number of people. Routine operation of the proposed Project would not involve activities that typically produce odors such as wastewater treatment, manufacturing, agriculture, etc. Occasional use of maintenance products around and within the proposed building could produce localized odors, but they would be temporary and limited in area. In addition, the proposed Project would include laboratory fume hoods; however, these fume hoods would be required to comply with standards for determining permissible exposure limits and would not create odors or other emissions that could affect a substantial number of persons. Consequently, short-term construction and long-term operation of the proposed Project would not create odors that could affect a substantial number of persons, nor would the proposed Project expose Project site occupants to substantial odors, and the impact would be **less than significant**. No additional analysis is required in the Project EIR.

### 5.5.2 Cumulative Impacts

As discussed above, the proposed Project would not create new odors affecting a substantial number of people; therefore, the proposed Project would not contribute to a cumulative impact with respect to this topic. The potential for a significant cumulative impact on air quality from emissions from the proposed Project, other development on the campus under the 2020 LRDP, and other existing and reasonably foreseeable local development projects that could adversely affect air quality will be addressed in the Project EIR.

### 5.5.3 2020 LRDP SEIR Mitigation Measures Applicable to the Proposed Project

The Project EIR will analyze potential air quality impacts generated by the proposed Project during construction and operations. The following mitigation measures that were adopted at the time of the approval of the 2020 LRDP (as shown below) may be applicable to the proposed Project and their application will be confirmed in the Project EIR.

**2020 LRDP MM AQ-1a:** The construction contractors shall be required via contract specifications to use construction equipment rated by the U.S. EPA as meeting Tier 4 (model year 2008 or newer) emission limits for engines between 50 and 750 horsepower.

**2020 LRDP MM AQ-1b:** UC Merced shall include in all construction contracts the measures specified in SJVAPCD Regulation VIII (as it may be amended for application to all construction projects generally) to reduce fugitive dust impacts, including but not limited to the following:

- All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, or vegetative ground cover.
- All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions using application of water or by presoaking.
- When materials are transported off-site, all material shall be covered, effectively wetted to limit visible dust emissions, or at least 6 inches of freeboard space from the top of the container shall be maintained.
- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit visible dust emissions. Use of blower devices is expressly forbidden.)
- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, storage piles shall be effectively stabilized of fugitive dust emissions by using sufficient water or chemical stabilizer/ suppressant.

**2020 LRDP MM AQ-2a:** UC Merced 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, such as bicycle parking, bicycle lanes, bicycle lockers; and showers and changing facilities for employees.
- Provide preferential carpool and vanpool parking for non-residential uses.

- Provide transit-enhancing infrastructure to promote the use of public transportation, such as covered bus stops and information kiosks.
- Provide facilities, such as electric car charging stations and a CNG refueling station, to encourage the use of alternative-fuel vehicles.
- Improve traffic flows and congestion by timing of traffic signals at intersections adjacent to the campus to facilitate uninterrupted travel.
- Work with campus transit provider to replace CatTracks buses with either electric buses or buses operated on alternative fuels.
- Work with the City of Merced to establish park and ride lots and provide enhanced transit service between the park and ride lots and the campus.
- Replace campus fleet vehicles with electric vehicles or vehicles that operate on alternative fuels.
- Reduce the number of daily vehicle trips by providing more housing on campus.

**2020 LRDP MM AQ-2b:** UC Merced shall implement the following measures to reduce emissions from area and energy sources, as feasible:

- Utilize low-VOC cleaning supplies and low-VOC paints (100 grams/liter or less) in building maintenance.
- Utilize electric equipment for landscape maintenance.
- Plant low maintenance landscaping.
- Implement a public information program for resident students to minimize the use of personal consumer products that result in ROG emissions, including information on alternate products.
- Instead of natural gas water heaters, install solar water heating systems.

**Cumulative MM C-AQ-1:** Implement LRDP MM AQ-2a and AQ-2b.

#### **5.5.4 Project Specific Mitigation Measures Not included in the 2020 LRDP SEIR**

The Project EIR will analyze air quality impacts associated with the proposed Project and Project specific mitigation measures will be identified, if warranted.

## 5.6 BIOLOGICAL RESOURCES

	Impacts to be Analyzed in the EIR	No Additional Analysis in the EIR Required
Would the project:		
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 5.6.1 Impact Analysis

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

Impacts on biological resources, including special-status plant and wildlife species, that would occur with development of the campus, were evaluated in the 2020 LRDP SEIR. The portion of the Project site proposed for construction of the proposed HBS-ME Building, which is located within an area designated for development by the 2020 LRDP, was previously graded and developed for storm water management or used for construction access and staging as part of the 2020 Project. Thus, the vernal pool and swale complexes that historically occurred within the Project site no longer exist. Existing land cover types within the Project area, as described in the 2020 LRDP SEIR, include California annual grassland and developed or landscaped areas. The Fairfield Canal and a fringe riparian vegetation zone is located to the east of the Project site. Suitable habitat for special-status plant and wildlife species within the Project site is primarily associated with the constructed detention basins used to manage campus storm water runoff and the grassland areas with recently planted landscape trees and shrubs throughout Cottonwood Meadow.

**Table 2** lists the special-status species with the potential to occur within or in the vicinity of the Project area. This assessment is based on recent preconstruction surveys and biological monitoring conducted between 2015 and 2020 for the 2020 Project, consistent with the mitigation measures in the 2009 LRDP EIS/EIR, the 2020 LRDP SEIR, as well as the conditions specified by UC Merced's existing State and federal permits for campus development. Updated species lists from the U.S. Fish

and Wildlife Service's (USFWS) Information for Planning and Consultation (IPaC)<sup>12</sup>, California Natural Diversity Data Base (CNDDB)<sup>13</sup>, and California Native Plant Society Online Database<sup>14</sup> were also reviewed.

**Table 2: Special-Status Animal and Plant Species with the Potential to Occur Within or in the Vicinity of the Project Site**

Name	Scientific Name	Listing <sup>1</sup>		
		Federal	State	Other
Plants				
Colusa grass	<i>Neostapfia colusana</i>	T	E	1B.1
Dwarf dowingia	<i>Downingia pusilla</i>	--	--	1B.2
San Joaquin valley orcutt grass	<i>Orcuttia inaequalis</i>	T	E	1B.1
Shining navarretia	<i>Navarretia nigelliformis radians</i>	--	--	1B.1
Succulent owl’s clover	<i>Castilleja campestris ssp. succulenta</i>	T	E	1B.1
Wildlife				
Bald eagle	<i>Haliaeetus leucocephalus</i>	--	E, FP	--
Burrowing owl	<i>Athene cunicularia</i>	--	SSC	--
California horned lark	<i>Eremophila alpestris actia</i>	--	SSC	--
California tiger salamander	<i>Ambystoma californiense</i>	T	T	--
Crotch bumble bee	<i>Bombus crotchii</i>	--	CE	--
Ferruginous hawk	<i>Buteo regalis</i>	--	SSC	--
Golden eagle	<i>Aquila chrysaetos</i>	--	FP	--
Loggerhead shrike	<i>Lanius ludovicianus</i>	--	SSC	--
Mountain plover	<i>Charadrius montanus</i>	--	SSC	--
Northern harrier	<i>Circus cyaneus</i>	--	SSC	--
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	E	T	--
Short-eared owl	<i>Asio flammeus</i>	--	SSC	--
Swainson’s hawk	<i>Buteo swainsoni</i>	--	T	--
Tricolored blackbird	<i>Agelaius tricolor</i>	--	T	--
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	T	--	--
Vernal pool tadpole shrimp	<i>Lepidurus packardii</i>	E	--	--
White-tailed kite	<i>Elanus leucurus</i>	--	FP	--
Western pond turtle	<i>Actinemys marmorata</i>	--	SSC	--
Western spadefoot	<i>Spea hammondii</i>	--	SSC	--

<sup>1</sup> Endangered (E), Threatened (T), Candidate for Listing (C), Species of Special Concern (SSC), Fully Protected (FP), California Rare Plant Rank 1B.1, 1B.2

- <sup>12</sup> U.S. Fish and Wildlife Service. 2021. Information for Planning and Consultation (IPaC) Online Threatened and Endangered Species Lists. Sacramento Fish and Wildlife Office. Records search executed February 1, 2021.
- <sup>13</sup> California Department of Fish and Wildlife (CDFW). 2021. California Natural Diversity Database - Rarefind 5 online computer program. Sacramento, CA. Records search executed February 1, 2021. Sacramento, California.
- <sup>14</sup> California Native Plant Society, Rare Plant Program. 2021. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website: <http://www.rareplants.cnps.org>. Accessed on February 1, 2021.



A discussion of the potential for these species to occur, based on the analysis in the 2020 LRDP SEIR, is included below.

**Special-Status Plant Species.** As described in Section 4.2 of the 2020 LRDP SEIR, although potentially suitable habitat exists within undeveloped areas of the overall 1,026-acre campus site for 17 special-status plant species, surveys conducted to date (including those conducted in advance of the 2009 LRDP EIS/EIR and for the 2020 Project, as reflected in Table 4.2-4 of the 2020 LRDP SEIR) have not identified many of these species within the campus site. The 2020 LRDP SEIR reflects that five special-status plant species—succulent owl’s clover (*Castilleja campestris* ssp. *succulent*), Colusa grass (*Neostapfia colusana*), San Joaquin Valley Orcutt grass (*Orcuttia inaequalis*), dwarf downingia (*Downingia pusilla*), and shining navarretia (*Navarretia nigelliformis* subsp. *radians*)—are known to occur within the vicinity of the Project area based on documented sightings. However, all species are associated with vernal pool or clay flat wetland habitat, which was previously graded and filled as part of the 2020 Project. While the constructed detention basins may still provide marginally suitable habitat for these special-status plants based on the presence of an underlying clay hardpan layer and any remaining seed bank, these species are not anticipated to occur. Focused preconstruction surveys conducted within the 2020 Project area for state-listed succulent owl’s clover, Colusa grass, and San Joaquin Valley Orcutt grass, as required by UC Merced’s Incidental Take Permit (ITP) (No. 2081-2009-010-04)<sup>15</sup> and documented in the 2020 LRDP SEIR, did not identify these species. These species were also not detected within the existing storm water management areas during botanical surveys conducted in advance of initial campus development.<sup>16</sup> The presumed extant occurrences of shining navarretia and dwarf downingia, based on previous surveys, are located more than 0.25 mile to the north and south of the Project area. Finally, UC Merced has already fully compensated for the loss of habitat for special-status plant species. The 2020 LRDP SEIR documents UC Merced’s compensation for the loss of special-status vernal pool plant species as a result of overall campus development (i.e., preservation of nearly 24,000 acres of Tier 1 and Tier 2 Conservation Lands with suitable habitat).

As the Project site was previously graded, the loss of special-status plant habitat was previously compensated for, and all campus development, including the proposed Project, would be subject to the conditions specified by UC Merced’s ITP (i.e., preconstruction surveys, plant salvage and relocation), the proposed Project’s impacts on special-status plant species would be **less than significant**. No additional analysis is required in the Project EIR.

**Special-Status Wildlife Species.** The Project’s potential to impact special-status wildlife species is described below.

**Special-Status Amphibians and Reptiles.** As described in Section 4.2 of the 2020 LRDP SEIR, California tiger salamander (CTS) (*Ambystoma californiense*), western pond turtle (*Actinemys marmorata*), and western spadefoot (*Spea hammondi*) are known to occur within the vicinity of the Project area based on documented sightings. Both western pond turtle and western

<sup>15</sup> California Department of Fish and Wildlife. 2011. *Incidental Take Permit for the University of California, Merced Campus and Community North Project (with amendments)*. (2081-2009-010-04). Fresno, CA.

<sup>16</sup> EIP Associates. 2001. UC Merced/University Community Plan 2001 Special-Status Plant Survey Report. August. (10300-13.JH.) Prepared for University of California and Merced County. Sacramento, CA.

spadefoot are State species of special concern, while CTS is both State- and federally-listed as threatened.

California Tiger Salamander. All undeveloped areas within the 1,026-acre campus site that were evaluated in the 2020 LRDP SEIR are considered occupied upland habitat for CTS. As described in the 2020 LRDP SEIR, 171 acres of the campus site have been previously graded or developed, which includes the proposed Project building site and associated improvement areas. However, UC Merced has already mitigated for the loss of 1,648 acres of CTS upland habitat via the preservation of nearly 17,600 acres of Conservation Lands. Therefore, due to the mitigation that has already been put in place, the Project would have **no impact** related to the loss of CTS upland habitat. No additional analysis is required in the Project EIR.

While individual CTS is unlikely to occur within the Project site due to the previous disturbance and the existing exclusion fencing that was installed as part of the 2020 Project, their occurrence within the Project site cannot be ruled out due to known or potential breeding ponds to the north and east. Project implementation could thus result in injury or mortality to individual CTS. UC Merced's existing ITP and Biological Opinion (BO) (USFWS file number 1-1-02-F-0107)<sup>17</sup> contain a number of measures to avoid and minimize take of CTS. These measures include requirements for a USFWS and California Department of Fish and Wildlife (CDFW)-approved Designated Biologist to conduct preconstruction surveys, excavate small mammal burrows, and monitor construction activities. UC Merced also provides an education program for all workers on the construction site that describes CTS and measures that must be implemented to protect this species. A CTS relocation plan has been developed and approved to salvage individual CTS found within the campus site. The ITP also requires the installation of a CTS exclusion fence around construction sites and excavation of small mammal burrows within 0.25-mile of known or potential CTS breeding habitat (ITP Amendment No. 3). UC Merced would continue to implement all requirements of the ITP and BO as part of the proposed Project. Therefore, the Project would have a **less-than-significant** impact on CTS during construction. No additional analysis is required in the Project EIR.

Western Spadefoot. Habitats suitable for CTS are often also suitable for western spadefoot. However, hand excavation of burrows on the 2020 Project site and extensive dip net surveys of aquatic features on the adjacent Tier 1(a) Conservation Lands have not resulted in the detection of western spadefoot. Therefore, it is not expected that western spadefoot would be affected either directly or indirectly by the proposed Project. Furthermore, the avoidance and protection measures for CTS would also help protect this species, should an individual enter a work site. Therefore, the Project impact on western spadefoot would be **less than significant**. No additional analysis is required in the Project EIR.

Western Pond Turtle. As described in the 2020 LRDP SEIR, UC Merced has already compensated for the loss of western pond turtle habitat through the preservation of at least 175 acres of suitable habitat on the Tier 1(a) and Tier 2 Conservation Lands. While the Project area was

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<sup>17</sup> U.S. Fish and Wildlife Service. 2002. *Final Biological Opinion on the Proposed University of California Merced Campus, Phase 1 and Campus Buildout (amended in 2009)*. August 19. (1-1-02-I-2926.) Sacramento, CA.

previously graded and developed as part of the 2020 Project, Western pond turtle is known from an existing campus storm water basin north of the Project area and this species could potentially occur within the existing storm water basins within the Project site. Additional potential suitable habitat for this species along the Fairfield Canal is located outside of the Project area.

With respect to the potential for Project construction activities to result in injury or mortality of the species, UC Merced's 2009 Construction Mitigation Plan (CMP)<sup>18</sup>, which is a requirement of the BO, requires that a biologist conduct preconstruction surveys for western pond turtle prior to initial ground-disturbing activities in all suitable aquatic habitats within 100 feet of the work area. If pond turtles are not observed, no additional mitigation is required. If pond turtles are observed, they would be allowed to move out of the way on their own. If active nests are found, they would be fenced with an appropriate buffer and avoided until the young have hatched and are able to move out of the work area on their own. With the implementation of this CMP measure, potential Project impacts to western pond turtle would be **less than significant**. No additional analysis is required in the Project EIR.

**Special-Status Birds and Nesting Birds.** Several special-status bird species (as listed in **Table 2**) and common birds could nest on the ground, within burrows, and in tree and shrub vegetation on the Project site or vicinity (e.g., within riparian vegetation along the Fairfield Canal). Active nests of all native bird species are protected under the federal Migratory Bird Treaty Act (MBTA) and Section 3503 of the California Fish and Game Code (CFGC), which prohibits the take, possession, or needless destruction of the nest or eggs of any bird.

As described in the 2020 LRDP SEIR, special-status birds known to nest on or near the campus include burrowing owl, Swainson's hawk, and tricolored blackbird. In April 2018, a Swainson's hawk nest was identified in a tree east of Fairfield Canal, within approximately 0.25 mile of the Project site. Other special-status birds for which there is suitable nesting habitat on and adjacent to the Project site include California horned lark, white-tailed kite, short-eared owl, and loggerhead shrike. The campus and adjacent lands also contain suitable nesting habitat for numerous non-special-status migratory birds, including red-tailed hawk (*Buteo jamaicensis*), red-winged blackbird (*Agelaius phoeniceus*), killdeer (*Charadrius vociferous*), mourning dove (*Zenaida macroura*), northern mockingbird (*Mimus polyglottos*), and cliff swallow (*Petrochelidon pyrrhonota*), whose nests are protected under the MBTA and CFGC Sections 3503 and 3503.5.

While no trees would be removed as part of the Project, additional grading and vegetation removal would occur on the site during Project construction. Project implementation has the potential to disturb active special-status and non-special-status migratory bird nests if ground-disturbing activities and/or construction occurs during the nesting season (generally February 15 through August 15). The destruction or disturbance of active nests resulting in nest failure or loss of individuals would be a potentially significant impact. However, **2020 LRDP Mitigation Measure BIO-9a**, which is set forth below in **Section 5.6.3**, as well as the conditions in UC Merced's ITP for Swainson's hawk (e.g., preconstruction nesting surveys, no disturbance buffers,

<sup>18</sup> ICF Jones & Stokes 2009. *Final Construction Mitigation Plan for Biological Resources the University of California, Merced Project*. Prepared for University of California, Merced.

etc.), would be implemented to reduce potential impacts to special-status and non-special-status migratory bird nests to **less than significant**. No additional analysis is required in the Project EIR.

As described in the 2020 LRDP SEIR, UC Merced's location along the Pacific Flyway migratory route and its setting within a diverse environment that provides habitat for many resident bird species increases the potential for bird collisions with tall buildings on the campus. The proposed HBS-ME Building would be a four-story building and could include design features (e.g., reflective surfaces or breezeways) that could result in resident or migratory bird collisions resulting in bird injuries or mortality. **2020 LRDP Mitigation Measure BIO-9b**, which specifies bird safe design considerations, would be implemented to reduce potential impacts associated with bird collisions to **less than significant**. No additional analysis is required in the Project EIR.

Based on the areas identified in the 2020 LRDP for campus development (including the Project site), the loss of foraging habitat for Swainson's hawk and other special-status bird species from the development of the campus under the 2020 LRDP was estimated and reported in the 2020 LRDP SEIR. The SEIR also noted that UC Merced has preserved more than 20,000 acres of foraging habitat for Swainson's hawk and other bird species within the Tier 1 and Tier 2 Conservation Lands. As the Project site is included within the development area described and analyzed in the 2020 LRDP SEIR, the Project would result in **no impact** to foraging habitat for Swainson's hawk and other special-status bird species beyond what was previously identified. No additional analysis is required in the Project EIR.

**Special-Status Invertebrates.** As described in Section 4.2 of the 2020 LRDP SEIR, suitable habitat for vernal pool fairy shrimp (*Branchinecta lynchi*; federally-listed as threatened) and vernal pool tadpole shrimp (*Lepidurus packardii*; federally-listed as endangered) remains within the 1,026-acre campus site. Crotch bumble bee (*Bombus crotchii*) became a candidate endangered species under the California Endangered Species Act (CESA) in 2019. Remaining annual grassland areas within the campus, in particular those areas with fossorial (burrowing) mammal activity, provide potential nest sites for Crotch bumble bee.

**Vernal Pool Crustaceans.** Vernal pool fairy shrimp and vernal pool tadpole shrimp are associated with vernal pools that form in depressions, usually in grassland habitats. These species may also occur in other wetlands that provide habitat similar to vernal pools, such as alkaline rain pools, ephemeral drainages, rock outcrop pools, ditches, stream oxbows, stock ponds, vernal swales, and some seasonal wetlands. While vernal pool tadpole shrimp are not known from the 1,026-acre campus site based on previous surveys that were conducted prior to the development of the campus, vernal pool fairy shrimp were identified in the southern portion of the Project site near Bellevue Road. However, as described in the 2020 LRDP SEIR, previously extant vernal pools and swales that occurred within the Project site were graded and filled as a result of UC Merced's Phase 6 Project and, more recently, the 2020 Project. While the cysts (i.e., drought tolerant eggs) of these species may potentially remain in the soil where vernal pools occurred prior to grading for campus development, UC Merced has already fully compensated for the loss of habitat for these species. As reflected in the 2020 LRDP SEIR, the University has acquired nearly 24,000 acres of Conservation Lands that would protect 1,006 acres of occupied habitat for vernal pool fairy shrimp. Mitigation ratios achieved for direct and indirect impacts are 8:1 for

Tier 1(a) Conservation lands and 16:1 with the addition of the Tier 2 Conservation Lands, substantially above the 3:1 minimum target specified in the 2002 BO. Similarly, 14 acres of occupied habitat for vernal pool tadpole shrimp are being protected, reflecting a mitigation ratio of 3.5:1, which is above the 3:1 minimum target specified in the Conservation Measures in the 2002 BO. Therefore, the Project impact on vernal pool fairy shrimp and vernal pool tadpole shrimp is accounted for under the impacts of the 2020 LRDP and fully compensated by the mitigation that has been already implemented. The Project's impact would be **less than significant**. No additional analysis is required in the Project EIR.

**Crotch Bumble Bee.** As reflected in Section 4.2 of the 2020 LRDP SEIR, the California Fish and Game Commission (Commission) made a decision at its June 12, 2019 meeting to accept for consideration the petition to list four species of bumble bees, including Crotch bumble bee, under CESA. As such, Crotch bumble bee became a candidate endangered species under CESA, temporarily affording it the same protection as state-listed species.<sup>19</sup> While there have been no documented observations of Crotch bumble bee within the 1,026-acre campus or the Tier 1(a) Conservation lands to the east of the Project site, the campus is within the historical range for this species, and any crevices or openings within the annual grassland areas on the Project site could provide potentially suitable underground nesting habitat for this species. Should Crotch bumble bee colonies or overwintering queens be present in underground nests on the Project site, construction activities could adversely affect this species and its habitat. With the implementation of **2020 LRDP Mitigation Measure BIO-4**, which is set forth below in **Section 5.6.3**, any potential impacts on Crotch bumble bee would be reduced to **less than significant**. No additional analysis is required in the Project EIR.

**San Joaquin Kit Fox.** As described in the 2020 LRDP SEIR, there is low potential for San Joaquin kit foxes (*Vulpes macrotis mutica*) to occur on the Project site because the species has not been observed on or near the campus since its establishment, including on the adjacent approximately 6,500-acre Tier 1(a) Conservation Lands where camera monitoring has been conducted annually since 2015. The most recent documented occurrence in the Project vicinity is from 1999, approximately 2.5 miles southeast of the Project site. Regardless, there is some potential for kit foxes to disperse through the Project site, and a potential for physical harm to a kit fox, should one be present within a construction site. Both the 2002 BO and the 2009 BO issued to UC Merced by the USFWS and the ITP issued by CDFW contain extensive requirements, including pre-construction surveys and compliance measures, that UC Merced must implement during construction of projects, including the proposed Project, to avoid harm to kit fox. Compliance with the BO and ITP requirements would adequately avoid and minimize harm to kit fox. Furthermore, as reflected in Section 4.2 of the 2020 LRDP SEIR, UC Merced has already compensated for the loss of residence and dispersal habitat for kit fox through the preservation of more than 25,918 acres of suitable habitat. Thus, potential impacts on kit fox related to injury

<sup>19</sup> On November 13, 2020, the Sacramento County Superior Court issued a ruling in *Almond Alliance v. California Fish and Game Commission*, deeming the State of California lacks authority to list four threatened bumble bee species as endangered under CESA, including the Crotch bumble bee. In February 2021, the Commission filed a Notice of Appeal through the California Attorney General's Office and, as of the date of this Initial Study, the Commission has not yet rescinded the June 2019 decision to accept the petition to list the four species of bumble bees.

or mortality due to construction activities and loss of residence and dispersal habitat would be **less than significant**. No additional analysis is required in the Project EIR.

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

The Project area does not contain riparian habitat or other sensitive natural communities as a result of previous grading and development activities associated with the 2020 Project. The Project site consists of California annual grassland and developed and landscaped areas. Existing riparian vegetation along the Fairfield Canal is located outside of the Project area and would be avoided. Therefore, the Project would have **no impact** on riparian habitat or other sensitive natural communities, and no additional analysis is required in the Project EIR.

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

There are no State or federally protected wetlands or other waters of the State or U.S. located within the Project site. The Project area was previously graded as part of previous campus development activities. As described in Section 4.2 of the 2020 LRDP SEIR, the impacts of campus development on State and federally protected wetlands were fully evaluated in the 2009 LRDP EIS/EIR, and all previously graded wetlands have been fully mitigated consistent with UC Merced's existing permit requirements. Therefore, the Project would have **no impact** on State or federally protected wetlands, and no additional analysis is required in the Project EIR.

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

The Project is located within the portion of the campus designated for future development as part of the 2020 LRDP, and impacts on wildlife movement resulting from campus buildout were fully evaluated in the 2009 LRDP EIS/EIR and incorporated into the 2020 LRDP SEIR by reference. The Project area is located adjacent to existing campus development to the north, west, and south. Cottonwood Loop Road and the Fairfield Canal are located immediately east of the site and limit wildlife movement into the Project area from adjacent undeveloped areas. The proposed Project would not result in a new or more severe impact on wildlife movement than previously analyzed and disclosed in the 2009 LRDP EIS/EIR and 2020 LRDP SEIR, and any local wildlife movement adapted to human disturbance will resume once Project construction is complete. There are no wildlife nursery sites within or adjacent to the Project area. Therefore, the Project would have **no impact** related to wildlife movement or nursery sites, and no further evaluation in the Project EIR is required.



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

The proposed Project would not conflict with any local policies or ordinances protecting biological resources, as the Project site is State-owned and therefore not subject to local regulations. Therefore, the Project would have **no impact** related to this criterion, and no further evaluation in the Project EIR is required.

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

No adopted habitat conservation plan or natural community conservation plan applies to the Project site or its vicinity. There would be **no impact** with respect to this criterion and no further evaluation in the Project EIR is required.

### 5.6.2 Cumulative Impacts

As discussed above, the Project would not impact riparian habitat, other sensitive communities, or State or federally protected wetlands; conflict with any local policies or ordinances protecting biological resources or with an adopted habitat conservation plan or natural community conservation plan; nor would it result in impacts on wildlife movement. As a result, the proposed Project would not contribute to cumulative impacts related to these impact topics.

As discussed in the 2020 LRDP SEIR, development of the campus under the 2020 LRDP, in conjunction with other past, present, and reasonably foreseeable future development in the project area, would not result in the loss or adverse modification of important special-status plant and wildlife habitat, including adverse effects to special-status plant and wildlife species that occupy or could potentially occupy these habitats. UC Merced has proceeded with the conservation of substantial acreages of habitat (nearly 24,000 acres) for special-status species. UC Merced also implements and would continue to implement the avoidance measures and requirements set forth in the BO and the ITP to avoid and minimize impacts on listed species. UC Merced has been and would continue to implement **2020 LRDP Mitigation Measure BIO-9a** to minimize impacts on nesting birds and would implement **2020 LRDP Mitigation Measure BIO-9b** to minimize bird mortality and injury.

As discussed above, the impacts of the proposed Project on special-status species are adequately analyzed in the 2009 LRDP EIS/EIR and 2020 LRDP SEIR, and the Project would not result in new or more severe impacts on biological resources. Therefore, the cumulative impacts of the Project are also fully analyzed in the 2009 LRDP EIS/EIR and 2020 LRDP SEIR. There are no changes in circumstances since the 2009 and the 2020 analyses that would change the less-than-significant impact conclusion of the prior cumulative analysis. Further evaluation of cumulative biological resources impacts in the Project EIR is not required.



### 5.6.3 2020 LRDP SEIR Mitigation Measures Applicable to the Proposed Project

The following mitigation measures that were adopted at the time of the approval of the 2009 LRDP and/or the 2020 LRDP would apply to the proposed Project:

**2020 LRDP MM BIO-4:** Prior to any new development on previously undisturbed land, and as long as the species is considered a candidate endangered species or in the event that it becomes listed under the California Endangered Species Act, a qualified wildlife biologist shall conduct visual surveys of the development area during the flight season for the Crotch bumble bee (late February through late October). The following methodology shall apply unless the California Department of Fish and Wildlife (CDFW) releases species-specific survey protocol; in this case, CDFW's survey protocol shall apply.

Between two and four evenly spaced presence/absence surveys shall be conducted for the highest detection probability, which, at present time, is the greatest between early spring (late March/early April) and early summer (late June/July). Surveys shall take place when temperatures are above 60°F, preferably on sunny days with low wind speeds (e.g., less than 8 miles per hour) and at least 2 hours after sunrise and 3 hours before sunset. On warm days (e.g., over 85°F), bumble bees will be more active in the mornings and evenings. Surveyors shall conduct transect surveys focusing on detection of foraging bumble bees and underground nests using visual aids such as butterfly binoculars. Even if no Crotch bumble bees are observed, a pre-construction survey shall be conducted within 30 days prior to start of construction. If no Crotch bumble bees or potential Crotch bumble bees are detected during the presence/absence surveys and the pre-construction survey, no further mitigation is required.

If Crotch bumble bees or potential Crotch bumble bees are observed within the development area, a plan to protect Crotch bumble bee nests and individuals shall be developed and implemented in consultation with CDFW. The plan shall include, but not be limited to, the following measures:

- Specifications for construction timing and sequencing requirements (e.g., avoidance of raking, mowing, tilling, or other ground disturbance until late March to protect overwintering queens);
- Preconstruction surveys conducted within 30 days and consistent with any current available CDFW standards prior to the state of ground disturbing activities to identify active nests;
- Establishment of appropriate no-disturbance buffers for nest sites and construction monitoring by a qualified biologist to ensure compliance;
- Restrictions associated with construction practices, equipment, or materials that may harm bumble bees (e.g., avoidance of pesticides/herbicides, BMPs to minimize the spread of invasive plant species);

- Provisions to avoid Crotch bumble bees or potential Crotch bumble bees if observed away from a nest during project activity (e.g., ceasing of project activities until the animal has left the work area on its own volition); and
- Prescription of an appropriate restoration seed mix targeted for the Crotch bumble bee, including native plant species known to be visited by native bumble bee species and containing a mix of flowering plant species with continual floral availability through the entire active season of the Crotch bumble bee (March to October).

**2020 LRDP MM BIO-9a:** Avoid and minimize impacts on native birds protected under the MBTA, including listed species, fully protected species, special-status species of concern, and raptors and passerines.

- Limit ground disturbance activities to the non-breeding season and remove potential unoccupied breeding habitat during the non-breeding season if possible. If breeding season work is required, conduct take avoidance (tree, shrub, and ground) test surveys to identify and avoid active nests.
  - If feasible, UC Merced shall conduct all project-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 (typically between September 16 and February 14).
  - If activities are scheduled to occur during the breeding season (typically between February 15 through September 15), applicable CDFW and/or USFWS permit conditions in the permits issued to the University related to bird surveys must be followed. In addition, a UC Merced approved qualified avian biologist, with knowledge of the species to be surveyed, shall conduct focused nesting surveys within 15 days prior to the start of project or ground-disturbing activities and within the appropriate habitat. The qualified avian biologist shall determine the exact survey duration and location (typically 500 feet around the work area) based on the work conditions and shall take into account existing applicable CDFW or USFWS permit conditions.
  - If an unoccupied nest (without birds or eggs) of a non-listed of fully protected species (as determined by the qualified avian biologist) is found, the nest shall be removed under the direction of the qualified avian biologist.
  - If an active nest is located, a qualified avian biologist shall establish an appropriate no-disturbance buffer around the nest making sure that any buffer width required by the University's permit obligations is followed. A 500-foot buffer is recommended for listed or fully protected nesting birds (or another buffer determined in consultation with CDFW and/or USFWS), a 250-foot buffer around raptors, and a 75-foot buffer around passerines. If

work activities cause or contribute to a bird being flushed from a nest, the buffer width shall be adjusted to avoid and minimize impacts to nesting birds.

- A qualified avian biologist shall monitor the nest site regularly during work activities to ensure that the nest site is not disturbed, the buffer is maintained and the success or failure of the nest is documented.
- If UC Merced elects to remove a nest tree, nest trees may only be removed after the qualified avian biologist has determined that the nests are unoccupied.
- If an active nest is causing a safety hazard, CDFW shall be contacted to determine if the nest can be removed.
- Minimize impacts to burrowing owl and compensate for habitat loss. CDFW (2012) recommends that take avoidance (preconstruction) surveys be conducted to locate active burrowing owl burrows in the construction work area and within an approximately 500-foot buffer zone around the construction area. A qualified avian biologist shall conduct take avoidance surveys for active burrows according to the CDFW's Staff Report on Burrowing Owl Mitigation (2012 Staff Report). Surveys shall be conducted no less than 14 days prior to initiating ground disturbance activities and surveillance surveys should be conducted as frequently as recommended in the 2012 Staff Report. If ground-disturbing activities are delayed or suspended for than 30 days after the take avoidance survey, the area shall be resurveyed. If no burrowing owls are detected, no further mitigation is required. If the active burrowing owls are detected, the following additional measures are required:
  - Project implementation shall seasonally and spatially avoid negative impacts and disturbances that could result in the take of burrowing owls, nest or eggs.
  - If burrowing owls and their habitat can be protected in place or adjacent to a construction site, buffer zones, visual screens or other measures shall be used to minimize disturbance impacts while project activities are occurring. To use these minimization measures, a qualified avian biologist shall determine the exact measures following the guidance described in the 2012 Staff Report.
  - 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 CDFW guidelines. At least 1 week will be necessary to complete passive relocation and allow owls to acclimate to alternate burrows.

- 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 CDFW. Newly created burrows shall follow guidelines established by the CDFW.

**2020 LRDP MM BIO-9b:** Structures proposed under the 2020 LRDP shall incorporate bird-safe design practices (e.g., American Bird Conservancy’s Bird-Friendly Building Design [2015] or San Francisco Planning Department’s Standards for Bird-Safe Buildings [2011]) to minimize the potential for bird-window collisions. Design elements, including but not limited to the following, shall be considered:

- Create building facades with “visual noise” via cladding or other design features that make it easier for birds to identify buildings and not mistake windows for open sky or trees.
- Incorporate windows that are not clear or reflective into the building or structure designs.
- Use windows that incorporate glass types such as UV-A or fritted glass and windows that incorporate UV-absorbing and UV-reflecting stripe.
- Use grid patterns on windows in locations with the highest potential for bird-window collisions (e.g., windows at the anticipated height of adjacent vegetation at maturity).
- Reduce the proportion of glass to other building materials in new construction.
- Avoid placement of bird-friendly attractants (i.e., vegetated roofs, water features, tall trees) near glass whenever possible.
- Install motion-sensitive lighting in any area visible from the exterior that automatically turn lights off during after-work hours.

Prior to all individual project approvals, the UC Merced Physical and Environmental Planning Department shall review the final designs of the buildings and structures to ensure that appropriate bird safety designs have been effectively incorporated to reduce potential impacts to birds.

#### **5.6.4 Project-Specific Mitigation Measures Not Included in the 2020 LRDP SEIR**

As the proposed Project would not result in any new or more severe impacts to biological resources than the impacts that were previously analyzed and disclosed in the 2020 LRDP SEIR, no Project-specific mitigation measures are required.

## 5.7 CULTURAL RESOURCES

	Impacts to be Analyzed in the EIR	No Additional Analysis in the EIR Required
Would the project:		
a. Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 5.7.1 Impact Analysis

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

The previous cultural resources investigations conducted for the 2009 LRDP EIS/EIR, as referenced in the 2020 LRDP SEIR, identified nine historic resources within the boundary of the UC Merced campus and the University Community North. These resources were formally evaluated and recommended as not eligible for listing in either the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR), and the State Historic Preservation Officer concurred with the finding. The proposed Project site within the UC Merced campus has been disturbed by previous grading and other construction activities (e.g., between 2016 and 2020 as part of the 2020 Project, which coincided with the proposed Project area), and no historical resources have been discovered on the site to date. However, given the time that has passed since a cultural resources study was conducted within the Project area, cultural resources staff retained by UC Merced conducted a field survey of the Project area on March 13, 2021 to identify the presence or absence of surficial historical resources. A records search (IC File No. 116481) for the Project area and a 0.5-mile radius was also conducted on February 3, 2021 at the Central California Information Center (CCalC) to identify previously recorded cultural resources and cultural resources studies that have been submitted to the CCalC since the 2009 LRDP records search was conducted. Based on the results of the field survey and records search,<sup>20</sup> no historical resources were located on the Project site pursuant to CEQA Guidelines Section 15064.5. In the event that historical resources are discovered during Project construction activities, the proposed Project would be required to implement **2020 LRDP Mitigation Measure CUL-2** identified below in **Section 5.7.3**.

With the implementation of **2020 LRDP Mitigation Measure CUL-2**, the proposed Project would not cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5. Impacts would be **less than significant**, and no additional analysis is required in the Project EIR.

<sup>20</sup> LSA. 2021. Cultural Resources Study for the UC Merced HBS-ME Building Development Project. Prepared for the University of California, Merced.

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

Impacts on archaeological resources from the development of the UC Merced campus were evaluated in the 2009 LRDP EIS/EIR, as referenced in the 2020 LRDP SEIR. Some areas of the campus evaluated were determined to have prehistoric sites that were previously recorded. The analysis concluded that the impacts on archaeological resources from campus development would be reduced to a less-than-significant level with the implementation of **2020 LRDP Mitigation Measure CUL-2** identified below.

The Project site and location of proposed improvements are not in an area of the campus where prehistoric sites were previously recorded. As described above, the proposed Project site within the UC Merced campus has been disturbed by previous construction activities, and no archaeological resources have been discovered on the site to date. On March 13, 2021, a field survey was conducted by an archaeologist to identify the potential presence or absence of surficial archaeological resources. To prepare for the field survey, the archaeologist reviewed historic-period maps to assess sensitivity for historical archaeological resources. The map review revealed a building had been constructed by 1914 within the Project area. During the field survey, no structural remains, artifacts, or soil inconsistencies were observed at the mapped location of this building that would indicate the presence of a historical resource.

The field survey and records search (referenced in **Section 5.7.1.a** above) yielded no evidence of archaeological resources in the Project site pursuant to CEQA Guidelines Section 15064.5. The historic-period map review did reveal a single building located in the Project area by 1914; however, no surficial evidence of the building was noted during the field survey. It is unknown if buried archaeological resources associated with the building are present in the Project area. In the event that archaeological resources are discovered during Project construction activities, the proposed Project would be required to implement **2020 LRDP Mitigation Measure CUL-2** identified below.

With implementation of **2020 LRDP Mitigation Measure CUL-2**, the proposed Project would not cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5. Impacts would be **less than significant**, and no additional analysis is required in the Project EIR.

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

Impacts on human remains from the development of the UC Merced campus were evaluated in the 2009 LRDP EIS/EIR, as referenced in the 2020 LRDP SEIR. None of the areas of the campus (including the location of the proposed Project) evaluated under the 2020 LRDP SEIR were determined to have previously discovered human remains. The analysis concluded that the impacts from campus development on human remains (if discovered) would be reduced to a less-than-significant level with the implementation of **2020 LRDP Mitigation Measure CUL-3** identified below.

The proposed Project site within the UC Merced campus has been disturbed by previous construction activities, and no evidence of human remains have been discovered on the site,

including during the survey conducted on March 13, 2021. In the event that human remains are discovered during Project construction activities, the proposed Project would be required to implement **2020 LRDP Mitigation Measure CUL-3** identified below.

With the implementation of **2020 LRDP Mitigation Measure CUL-3**, the proposed Project would incorporate procedures to appropriately collect and preserve human remains if encountered during construction activities. Impacts would be **less than significant**, and no additional analysis is required in the Project EIR.

### 5.7.2 Cumulative Impacts

Based on the analysis in the 2009 LRDP EIS/EIR, the 2020 LRDP SEIR found that past and future losses of cultural resources due to land development in eastern Merced County would result in a significant cumulative impact on cultural resources. However, the contribution of the campus development under the LRDP to the loss of cultural resources in eastern Merced County would not be cumulatively considerable due to the implementation of adequate mitigation (see **2020 LRDP Mitigation Measure CUL-2** and **2020 LRDP Mitigation Measure CUL-3** below). There have been no changes in circumstances or new information since the certification of the 2020 SEIR that would alter the conclusions of the previous analysis. The proposed Project is within the area and scope of the previous analysis and would also implement these mitigation measures to avoid significant impacts on cultural resources. The cumulative cultural resources impacts associated with the proposed Project are adequately addressed in the 2020 LRDP SEIR. Further analysis in the Project EIR is not required.

### 5.7.3 2020 LRDP SEIR Mitigation Measures Applicable to the Proposed Project

The following mitigation measures that were adopted in conjunction with the approval of the 2009 LRDP and/or the 2020 LRDP would apply to the proposed Project:

**2020 LRDP MM 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.

**2020 LRDP MM CUL-3:** If human remains of Native American origin are discovered during ground disturbing activities, the Campus 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 American 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 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.

**2020 LRDP MM 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.

#### **5.7.4 Project-Specific Mitigation Measures Not Included in the 2020 LRDP SEIR**

As the Project would not result in any new or more severe impacts to cultural resources than the impacts that were previously analyzed and disclosed in the 2020 LRDP SEIR, no Project-specific mitigation measures are required.

## 5.8 ENERGY

	Impacts to be Analyzed in the EIR	No Additional Analysis in the EIR Required
Would the project:		
a. Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 5.8.1 Impact Analysis

- a. *Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?*
- b. *Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?*

The 2020 LRDP SEIR concluded that campus development occurring under the 2020 LRDP would result in a less-than-significant impact related to the potential wasteful, inefficient or unnecessary consumption of energy resources during campus construction and operation, and that campus development would not conflict with a State or local plan for renewable energy or energy efficiency.

**Construction.** As described in Section 4.11 of the 2020 LRDP SEIR, campus development under the 2020 LRDP would require site preparation, grading, pavement and asphalt installation, building construction, architectural coating, and landscaping and hardscaping. No demolition would be required. All construction would be typical for the region and building type. The total consumption of gasoline and diesel fuel during construction activities under the 2020 LRDP was estimated using CalEEMod based on UC Merced constructing an additional 1.83 million gsf of building space between 2020 and 2030 within a 103-acre portion of the campus that includes the proposed Project site. As reflected in the 2020 LRDP SEIR, off-road construction equipment, vendor trips, and hauling trips would consume approximately 0.63 million gallons of diesel over the entire 2020 LRDP construction period. Worker trips would consume about 1.9 million gallons of gasoline over the 2020 LRDP construction period. These amounts would be consumed over a period of 10 years and would represent a small percentage of the total energy used in the State.

As described in **Section 2.4** of this Initial Study, the proposed Project would account for an additional approximately 182,698 gsf of building space on the campus, which is well within the 1.83 million gsf increase evaluated in the 2020 LRDP SEIR. Furthermore, the construction of the proposed building would comply with CALGreen, which would also result in the use of sustainable materials and recycled content during construction and the sourcing of products from nearby sources to the extent feasible. The Project would also be required to comply with the California Air Resources Board's (CARB) adopted Airborne Toxic Control Measure (ATCM) to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other TACs. Finally, the proposed Project would be designed to comply with the University of California Sustainable

Practices Policy (Sustainability Policy), which contains policies for green building design, clean energy, climate protection, and zero waste. As such, Project construction would not increase the consumption of energy resources beyond what was evaluated in the 2020 LRDP SEIR. This impact would be **less than significant**, and no further evaluation in the Project EIR is required.

**Operation.** As described in the 2020 LRDP SEIR, campus operation under the 2020 LRDP would result in a net new demand of approximately 211 therms of natural gas per year and a net new electricity demand of 7.8 megawatts per year (MW/yr). Title 24 represents the State policy on building energy efficiency. The goals of the Title 24 standards are to improve energy efficiency of residential and non-residential buildings, minimize impacts during peak energy-usage periods, and reduce impacts on State energy needs. The Sustainability Policy requires buildings to exceed Title 24 by 20 percent or meet energy performance targets. At UC Merced, a more ambitious goal of outperforming Title 24 energy efficiency standards by 30 percent has been set. Current campus buildings, which employ an array of design and technological strategies to minimize and manage campus energy consumption, are using approximately 50 percent less energy than Title 24 standards. The proposed Project would comply with the Sustainability Policy and the Campus's sustainable practice design guidelines. Project sustainability targets and goals include LEED minimum building certification level of Gold under the LEED Green Building Rating System, with incentives for Platinum. The proposed Project would outperform the California Energy Code by 20 percent or better as required by UC's Sustainability Policy or would meet UC's Whole Building Energy Performance Targets.

Additional automobile use under the 2020 LRDP, which accounts for the increase in vehicle use associated with the proposed Project, would result in the consumption of approximately 785,340 gallons of gasoline and 447,340 gallons of diesel related to vehicular travel. As described in **Section 5.10**, Greenhouse Gas (GHG) Emissions of this Initial Study, the 2020 LRDP found that the per capita emissions of GHGs under the 2020 LRDP from all energy use, including the proposed Project, including petroleum-based fuel use, would not exceed the per capita GHG threshold. Although the total emissions from all energy use would exceed the total GHG emissions threshold, GHG emissions would be reduced to a less-than-significant level with the mitigation specified in **Section 5.10.3**. The estimated campus population increase and total building space associated with the proposed Project are within the program-level assumptions for the 2020 LRDP SEIR analyses. Therefore, the Project emissions would remain below the established thresholds and the use of energy by the campus under the 2020 LRDP would not be wasteful or inefficient. Thus, with compliance with Title 24 and consistency with UC's Sustainability Policy, electricity and natural gas (if installed) use associated with the Project would not be inefficient, wasteful, and unnecessary, nor would the increased energy use associated with the Project conflict with a State or local plan for renewable energy or energy efficiency. The impact would be **less than significant**, and no further evaluation in the Project EIR is required.

### 5.8.2 Cumulative Impacts

The 2020 LRDP SEIR concluded that the implementation of the 2020 LRDP would not contribute substantially to a cumulative impact on energy resources. As described above, the impacts of the proposed Project are adequately analyzed in the 2020 LRDP SEIR, and the Project would not result in new or more severe impacts on energy resources. The proposed Project would account for an

additional approximately 182,698 gsf of building space on the campus, which is well within the 1.83 million gsf increase evaluated in the 2020 LRDP SEIR. The anticipated population increase associated with the proposed HBS-ME Building Project (i.e., 2,999 students, faculty, and staff) is also within the projected campus population increase between 2020 and 2030 that was analyzed in the 2020 LRDP SEIR (i.e., 6,431 students, faculty, and staff). Therefore, the cumulative impacts of the Project are also fully analyzed in the 2020 LRDP SEIR. There are no changes in circumstances since the 2020 analysis that would change the conclusions of the prior cumulative analysis, and further evaluation of cumulative energy impacts in the Project EIR is not required.

#### **5.8.3 2020 LRDP SEIR Mitigation Measures Applicable to the Proposed Project**

The 2020 LRDP SEIR did not require mitigation measures under this resource topic as no potentially significant impacts associated with energy resources were identified.

#### **5.8.4 Project-Specific Mitigation Measures Not Included in the 2020 LRDP SEIR**

As the Project would not result in any new or more severe impacts related to energy resources or efficiency than the impacts that were previously analyzed and disclosed in the 2020 LRDP SEIR, no Project-specific mitigation measures are required.

## 5.9 GEOLOGY AND SOILS

	Impacts to be Analyzed in the EIR	No Additional Analysis in the EIR Required
Would the project:		
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:		
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii. Strong seismic ground shaking?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii. Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv. Landslides?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 5.9.1 Impact Analysis

- a. *Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:*
- i. *Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.*

The UC Merced campus, which includes the Project site, is not located on, adjacent to, or near an Alquist-Priolo Earthquake Fault Zone.<sup>21</sup> According to the 2020 LRDP SEIR, there are no active faults on or adjacent to UC Merced or the Project site that could result in a significant seismic hazard. The nearest active fault is in the western portion of Merced County, at a distance from the Project site such that seismic activity along that fault would not be expected to cause rupture or other adverse impacts at the Project site. The Foothills fault system is approximately 15 miles northeast of the Project site, but this system is not considered to be active.

As there are no active fault systems that could affect the UC Merced campus, the 2020 LRDP SEIR concluded that construction of campus facilities, such as the proposed Project, would not expose

<sup>21</sup> United States Geological Survey, Earthquake Hazards Program, Alquist-Priolo Faults, <https://earthquake.usgs.gov/education/geologicmaps/apfaults.php>. Accessed January 18, 2021.

people or structures to a significant level of risk from fault rupture. In addition, the proposed HBS-ME Building would be constructed to comply with the California Building Code. Impacts would be **less than significant** and no additional analysis is required in the Project EIR.

*ii. Strong seismic ground shaking?*

The region of the State where the Project site is located is characterized by a low level of seismic activity and, as such, the ground-shaking hazard in the area is considered to be low. However, the 2020 LRDP SEIR concluded that the construction of buildings on the campus, such as the proposed HBS-ME Building, could still result in the exposure of people or structures to excessive risk from ground shaking. As such, **2020 LRDP Mitigation Measure GEO-2** (identified below in **Section 5.9.3**) would be implemented as part of the proposed Project. Project impacts would be **less than significant**, and no additional analysis is required in the Project EIR.

*iii. Seismic-related ground failure, including liquefaction?*

Although liquefaction can occur in the Central Valley, there are no areas on or adjacent to the UC Merced campus or the Project site that are at a significant risk of such seismically induced events. In addition, the UC Merced campus and the Project site are underlain by a hardpan layer of soil within 3 feet of the surface, serving to significantly reduce liquefaction hazards. The 2020 LRDP SEIR concluded that construction of buildings on the campus (such as the proposed Project) could still pose a risk to public safety and property by exposing people, property, and infrastructure to potentially adverse effects including seismic-related ground failure and liquefaction. The proposed Project would implement **2020 LRDP Mitigation Measure GEO-2**, which would reduce potential impacts from liquefaction and seismic-related ground failure. Project impacts would be **less than significant**, and no additional analysis is required in the Project EIR.

*iv. Landslides?*

The UC Merced campus, which includes the Project site, is located on and surrounded by relatively flat topography. Foothills of the Sierra Nevada Mountain Range are located 9.5 miles to the east of the Project site. The 2020 LRDP SEIR concluded that construction of on-campus buildings, such as the proposed Project, could still be subject to hazards related to seismically-induced landslides or landslide runout. The proposed Project would implement **2020 LRDP Mitigation Measure GEO-2**, which would reduce potential impacts from seismic related landslides. Project impacts would be **less than significant**, and no additional analysis is required in the Project EIR.

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

The 2020 LRDP SEIR concluded that construction of new buildings on campus, such as the proposed Project, would not result in substantial erosion or the loss of topsoil from grading activities. As the proposed Project would occur on an area greater than 1 acre in size, the proposed Project would be subject to National Pollutant Discharge Elimination System (NPDES) storm water regulations, which include BMPs to reduce soil erosion and loss of topsoil during construction activities. As construction of the proposed Project would be subject to NPDES storm water regulations, implementation of the proposed Project would reduce soil erosion and loss of topsoil from occurring during construction

activities. Impacts would be **less than significant**, and no additional analysis is required in the Project EIR on this resource topic.

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

Issues related to seismically induced and non-seismic related landslide hazards are discussed above in **Section 5.9.1.a (iv)**. Issues related to liquefaction and related hazards are discussed above in **Section 5.9.1.a (iii)**. Issues related to soil properties are discussed below in **Section 5.9.1.d. 2020 LRDP Mitigation Measure GEO-2** would be implemented to reduce such geologic impacts from occurring during Project development. Project impacts would be **less than significant**, and no additional analysis is required in the Project EIR on this resource topic.

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

According to the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Websoil survey, the Project site is underlain by *Montpellier coarse sandy loam, 3 to 8 percent slopes* (MrB) and *Corning gravelly loam, 0 to 8 percent slopes* (CgB) soil types.<sup>22</sup> The soils present on the Project site have a moderate to high shrink-swell potential (i.e., soil expansiveness). This shrinking (when dry) and swelling (when wet) of these soils can result in differential ground movement. If structures, such as the proposed building, are constructed in areas with expansive and/or weak soils, structural damage could occur. As a result, the 2020 LRDP SEIR concluded that expansive soils could cause a risk for post-construction heave and cracking of concrete slabs, as well as lightly loaded foundations and pavements. The proposed Project would implement **2020 LRDP Mitigation Measure GEO-2** to ensure design features are included in construction of the proposed Project to reduce damage associated with potential expansive soils. Project impacts would be **less than significant**, and no additional analysis is required in the Project EIR.

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

The proposed Project would not include the use of septic tanks or alternative wastewater disposal systems. The proposed Project would connect to the campus wastewater collection system that has been developed as part of the recent UC Merced 2020 Project, which will serve the entire UC Merced campus. **No impact** would occur, and no additional analysis is required in the Project EIR.

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<sup>22</sup> United States Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS) Websoil Survey. Website: <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm> (accessed January 18, 2021).



*f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*

Impacts on paleontological resources from the development of the UC Merced campus, including the area where the proposed Project would be developed, were evaluated in the 2009 LRDP EIS/EIR, as referenced in the 2020 LRDP SEIR, and were found to be potentially significant. The analysis concluded that the impacts from campus development could be reduced to a less-than-significant level with the implementation of **2020 LRDP Mitigation Measures CUL-4a** and **CUL-4b** in **Section 5.7.3**. The proposed Project site has already been disturbed by extensive grading activities and paleontological resources have not been uncovered. However, during the course of Project construction activities, if paleontological resources are uncovered, the proposed Project would be required to implement **2020 LRDP Mitigation Measures CUL-4a** and **CUL-4b**. These measures would ensure that if any previously undiscovered paleontological resources are found during Project construction, the resources would be collected and properly curated as warranted. It should be noted that the Project site is not occupied by any unique geologic formations.

With implementation of **2020 LRDP Mitigation Measures CUL-4a** and **CUL-4b**, the proposed Project would not directly or indirectly destroy a unique paleontological resource. Impacts would be **less than significant**, and additional analysis in the Project EIR is not required.

### 5.9.2 Cumulative Impacts

The 2020 LRDP SEIR determined that development on the UC Merced campus would not result in any cumulative impacts related to geology and soils. Impacts to geologic resources are site-specific and are typically not considered as a cumulative impact. As discussed above, the impacts of the proposed Project are adequately analyzed in the 2020 LRDP SEIR, and the Project would not result in new or more severe impacts related to geology and soils. Therefore, the cumulative impacts of the Project are also fully analyzed in the 2020 LRDP SEIR. There are no changes in circumstances since the 2020 analysis that would change the conclusions of the prior cumulative analysis. Further evaluation of cumulative geology and soils impacts in the Project EIR is not required.

The 2020 LRDP SEIR found that past and future loss of paleontological resources due to land development in eastern Merced County would result in a significant cumulative impact. However, the contribution of the campus development under the LRDP to the loss of paleontological resources in eastern Merced County would not be cumulatively considerable due to the implementation of adequate mitigation (see **2020 LRDP Mitigation Measure CUL-4a** and **2020 LRDP Mitigation Measure CUL-4b** in **Section 5.7.3**). As discussed above, the impacts of the proposed Project are adequately analyzed in the 2009 LRDP EIS/EIR and 2020 LRDP SEIR, and the Project would not result in new or more severe impacts on paleontological resources. There are no changes in circumstances or new information that would change the conclusions of the 2009 LRDP EIS/EIR and the 2020 LRDP SEIR regarding cumulative impacts. Further analysis of cumulative paleontological resources impacts in the Project EIR is not required.

### 5.9.3 2020 LRDP SEIR Mitigation Measures Applicable to the Proposed Project

The following mitigation measures that were adopted in conjunction with the approval of the 2009 LRDP and/or the 2020 LRDP would apply to the proposed Project:

**2020 LRDP MM 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.

#### **5.9.4 Project-Specific Mitigation Measures Not Included in the 2020 LRDP SEIR**

As the Project would not result in any new or more severe impacts to geology and soils than the impacts that were previously analyzed and disclosed in the 2020 LRDP SEIR, no Project-specific mitigation measures are required.

## 5.10 GREENHOUSE GAS EMISSIONS

	Impacts to be Analyzed in the EIR	No Additional Analysis in the EIR Required
Would the project:		
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 5.10.1 Impact Analysis

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

The 2020 LRDP SEIR evaluated the potential impact of GHG emissions associated with implementation of the 2020 LRDP in Section 4.3, Greenhouse Gas Emissions.

GHGs are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced global climate change are:

- Carbon dioxide (CO<sub>2</sub>);
- Methane (CH<sub>4</sub>);
- Nitrous oxide (N<sub>2</sub>O);
- Hydrofluorocarbons (HFCs);
- Perfluorocarbons (PFCs); and
- Sulfur Hexafluoride (SF<sub>6</sub>).

Over the last 200 years, humans have caused substantial quantities of GHGs to be released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere and enhancing the natural greenhouse effect, believed to be causing global warming. While some of the manmade GHGs such as CO<sub>2</sub>, methane, and N<sub>2</sub>O also occur naturally, some gases, like HFCs, PFCs, and SF<sub>6</sub> are completely new to the atmosphere.

Certain gases, such as water vapor, are short-lived in the atmosphere. Others remain in the atmosphere for significant periods of time, contributing to climate change in the long term. Water vapor is excluded from the list of GHGs above because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

These gases vary considerably in terms of Global Warming Potential (GWP), a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation

and length of time that the gas remains in the atmosphere (“atmospheric lifetime”). The GWP of each gas is measured relative to CO<sub>2</sub>, the most abundant GHG. The definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO<sub>2</sub> over a specified time period. GHG emissions are typically measured in terms of pounds or tons of “CO<sub>2</sub> equivalents” (CO<sub>2</sub>e).

The proposed Project’s impacts related to the release of GHG emissions for both the construction and operation periods are discussed below.

### Construction GHG Emissions

As discussed in the 2020 LRDP SEIR, GHG emissions associated with construction activities would occur throughout the timeframe of the 2020 LRDP from January 2021 to December 2030. Construction activities would include site preparation, grading, building construction, pavement and asphalt installation, landscaping and hardscaping, and architectural coatings. The 2020 LRDP SEIR found that approximately 6,118 metric tons of CO<sub>2</sub>e would be emitted during the approximately 10-year construction period, which is about 612 metric tons of CO<sub>2</sub>e per year. The 2020 LRDP SEIR found that construction GHG emissions would result in a less-than-significant impact.

The proposed Project would include the development of the 182,698 square foot HBS-ME Building and would result in an increase of 2,811 students and 188 faculty/staff members. The estimated increase in campus population and total building space associated with the proposed Project are within the growth assumptions used in the 2020 LRDP SEIR analyses. As such, construction-phase GHG emissions associated with the proposed Project are accounted for in the estimated annual construction emissions reported above. As with the 2020 LRDP, the proposed Project would not result in a significant construction-related GHG impact. The impact would be **less than significant**.

### Operational GHG Emissions

As discussed in the 2020 LRDP SEIR, implementation of the 2020 LRDP would contribute to long-term cumulative increases in GHG emissions as a result of additional buildings and people on the campus. Sources of new emissions would include building heating, cooling and lighting systems, water use, wastewater generation, and solid waste generation, as well as increases in traffic to the campus. The campus does not, and would not as part of the implementation of the 2020 LRDP, emit industrial or agricultural gases. Thus, the campus would generate little in the way of GHGs other than carbon dioxide. While certain research activities on the campus may involve the emission of other GHGs, these activities typically result in minimal GHG emissions.

The 2020 LRDP SEIR evaluated GHG impacts based on emissions reduction goals set forth in Assembly Bill (AB) 32 and Senate Bill (SB) 32. According to AB 32 and SB 32, the State’s 2020 emissions must be reduced to 1990 emissions levels, and by 2030 to be 40 percent below 1990 emissions, respectively. Using UC Merced’s 2005 GHG emissions as baseline, and reduction targets from the State laws, two campus-specific thresholds were developed: the first one involving a total emissions threshold, and the second one involving an efficiency threshold based on per capita emissions. The 2020 LRDP SEIR used a total emissions threshold of 3,300 metric tons of CO<sub>2</sub>e per

year and a per capita threshold of 2.44 metric tons of CO<sub>2</sub>e per capita per year in 2030, which, if exceeded, would represent a significant impact.

The 2020 LRDP SEIR found that the campus' per capita emissions of 0.63 metric tons of CO<sub>2</sub>e per capita per year in 2030 would be well below the UC Merced 2030 per capita target of 2.44 metric tons of CO<sub>2</sub>e per capita per year. However, the 2020 LRDP SEIR found that the campus' total emissions of 10,137 metric tons of CO<sub>2</sub>e in 2030 would exceed the threshold of 3,300 metric tons of CO<sub>2</sub>e per year. As such, the 2020 LRDP SEIR found that implementation of the 2020 LRDP would result in a potentially significant impact. The 2020 LRDP SEIR identified **2020 LRDP Mitigation Measures GHG-1a, GHG-1b, and GHG-1c** to reduce this impact to a less-than-significant level.

The proposed Project would include the development of the approximately 182,698-square-foot HBS-ME Building and would result in an increase of 2,811 students and 188 faculty/staff members. The estimated increase in campus population and total building space associated with the proposed Project are within the growth assumptions used in the 2020 LRDP SEIR analyses; therefore, the operational emissions that would result due to the proposed Project are included in the estimated emissions reported and used in the SEIR to determine the LRDP's GHG impact. Finally, UC Merced would continue to implement **2020 LRDP Mitigation Measures GHG-1a, GHG-1b, and GHG-1c** to ensure operational emissions from campus development under the 2020 LRDP remain below the thresholds and the impact remains less than significant. Therefore, operational GHG impact of the proposed Project would be **less than significant** and further evaluation in the Project EIR is not required.

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

As discussed in the 2020 LRDP SEIR, AB 32 (the Global Warming Solutions Act of 2006) established the goal for the reduction of California's GHG emissions to 1990 levels by 2020. In 2015 and 2016, SB 350 (Clean Energy and Pollution Reduction Act) and SB 32 (California Global Warming Solutions Act of 2006) were signed into law, establishing the State's mid-term target for 2030 emissions to be 40 percent below the 1990 emissions. As discussed in **Section 5.10.1.a** above, with the implementation of the 2020 LRDP, on a per capita basis, the campus would emit 0.63 metric tons per capita in 2030, which is below the campus-specific threshold of 2.44 metric tons per capita per year derived for the campus for compliance with SB 32. Furthermore, UC Merced would implement **2020 LRDP Mitigation Measures GHG-1a, GHG-1b, and GHG-1c** to reduce its total emissions such that they remain below 3,300 metric tons of CO<sub>2</sub>e per year, a target emissions level that is 40 percent less than the campus' 2020 emissions target. Therefore, with mitigation, campus development under the 2020 LRDP would not conflict with the State laws and regulations related to GHG emissions.

In addition, as discussed in the 2020 LRDP SEIR, the 2020 LRDP is a projected development program for the Merced campus for the years 2020 through 2030. Under the plan, the campus is anticipated to add about 1.83 million square feet of building space by 2030. The campus population is projected to increase by 5,300 persons to a total of about 17,400 persons by 2030. The addition of building space would increase the use of energy on the campus and the additional population would result in more persons commuting to the campus. Increased on-campus population would also increase water use, wastewater generation and solid waste generation. All of these changes would have the

potential to increase the campus' GHG emissions. However, as under existing conditions, campus development under the 2020 LRDP would continue to be completed in a manner that it is compliant with the UC Sustainability Policy, UC Merced Sustainability Strategic Plan, and the UC Merced CAP. Campus projects under the 2020 LRDP, such as the proposed Project, would achieve a minimum of a Silver rating under the LEED Green Building Rating System. UC Merced would continue to develop on-site renewable energy sources, procure clean energy, and obtain offsets as necessary, in compliance with **2020 LRDP Mitigation Measure GHG-1a**. The Campus would also continue to implement and expand transportation demand management (TDM) programs to minimize the increase in commuting and other emissions in compliance with **2020 LRDP Mitigation Measures AQ-2a and -2b in Section 5.5.3**, and evaluate and implement new technologies that reduce emissions, pursuant to **2020 LRDP Mitigation Measure GHG-1c**. Therefore, with mitigation, implementation of the 2020 LRDP would not conflict with the UC Sustainability Policy or the UC Merced plans adopted to reduce GHG emissions.

The proposed Project would include the development of the 182,698 square foot HBS-ME Building and would result in an increase of 2,811 students and 188 faculty/staff members. The estimated increase in campus population and total building space associated with the proposed Project are within the growth assumptions used in the 2020 LRDP SEIR analyses. Further, UC Merced would continue to implement **2020 LRDP Mitigation Measures GHG-1a, GHG-1b, and GHG-1c** to ensure operational emissions from campus development under the 2020 LRDP remain less than significant. Therefore, the proposed Project would not conflict with applicable plan, policy, or regulations pertaining to GHGs. The proposed Project would result in a **less-than-significant** impact and further evaluation in the Project EIR is not required.

### 5.10.2 Cumulative Impacts

As discussed in the 2020 LRDP SEIR, the impact from a project's GHG emissions is essentially a cumulative impact, and the methodologies and standards applied in the SEIR analysis are designed to assess the cumulative significance of GHG emissions under the 2020 LRDP. Based on the analysis summarized above, the operational GHG emissions from campus development under the 2020 LRDP would result in a potentially significant cumulative impact. However, with implementation of **2020 LRDP Mitigation Measures GHG-1a, GHG-1b, and GHG-1c**, the significant cumulative impact would be reduced to a less-than-significant level. There are no changes in circumstances or new information that would alter the conclusions of the 2020 LRDP EIR analysis. The proposed Project is within the scope of the prior analysis, and therefore the Project's cumulative impact is adequately analyzed in the 2020 LRDP SEIR. As with the 2020 LRDP, the cumulative impact of the proposed Project would also be **less than significant** with mitigation. Further evaluation of cumulative GHG emissions impacts in the Project EIR is not required.

### 5.10.3 2020 LRDP SEIR Mitigation Measures Applicable to the Proposed Project

The following mitigation measures that were adopted in conjunction with the approval of the 2020 LRDP would apply to the proposed Project:

**2020 LRDP MM GHG-1a:** UC Merced shall set a goal to reduce or control the increase in its GHG emissions such that the total emissions do not exceed 3,300 MT CO<sub>2e</sub>/year by the end of the year 2030. UC Merced shall monitor GHG emissions each year, monitor upcoming

projects for their potential to increase the campus' GHG emissions, and implement project-specific and campus-wide GHG reduction measures to reduce the campus' GHG emissions in accordance with the 3,300 MT CO<sub>2e</sub>/year goal for 2030. In the event that adequate reduction is not achieved by these measures, UC Merced shall purchase renewable energy credits, or other verifiable GHG offsets to keep the net emissions at or below 3,300 MT CO<sub>2e</sub>/year.

**2020 LRDP MM GHG-1b:** UC Merced shall implement LRDP Mitigation Measures AQ-2a and -2b.

**2020 LRDP MM GHG-1c:** UC Merced shall periodically review new technologies that can be implemented to further reduce the campus' GHG emissions.

**Cumulative MM C-GHG-1:** Implement 2020 LRDP Mitigation Measures GHG-1a, 1b, and 1c.

#### **5.10.4 Project-Specific Mitigation Measures Not Included in the 2020 LRDP SEIR**

There would be no impacts or a less-than-significant impact pertaining to GHG emissions with implementation of the proposed Project. As such, no Project specific mitigation measures are required to reduce impacts to pertaining to GHG emissions.



## 5.11 HAZARDS AND HAZARDOUS MATERIALS

	Impacts to be Analyzed in the EIR	No Additional Analysis in the EIR Required
Would the project:		
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 5.11.1 Impact Analysis

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

Routine transport, use, and disposal of hazardous materials would be associated with the construction and operation of the proposed academic building, similar to other existing academic buildings and new facilities developed on the UC Merced campus under the 2020 LRDP. Similar to existing conditions, hazardous materials in the form of fuels, paints, etc., would be used during Project construction; once the proposed HBS-ME Building is constructed, some hazardous materials use would be associated with the operation of the building.

The 2020 LRDP provides for the development of uses on the UC Merced campus such as research and instructional laboratories, central plant, vehicle maintenance facilities, and other facilities that would involve the transport, use, or dispose of hazardous materials. The operation of the proposed Project could include the use of various chemicals, biohazards, radioactive materials, and animal testing procedures and waste that may pose different levels of hazards with their uses, as described below.

#### Biohazards

As a scientific research facility, UC Merced cannot predict every possible biological agent or research application it might conceivably use in the future within the proposed HBS-ME Building. However, it is expected that small quantities of various biologically hazardous substances would be used for research in the proposed building. UC Merced currently adheres to and would continue to adhere to

the US Department of Health and Human Services guidelines, *Biosafety in Microbiological and Biomedical Laboratories*, put forth by the National Institutes of Health and the Centers of Disease Control, which specifies best practices for the safe conduct of work in biomedical and clinical laboratories. Thus, as discussed in the Initial Study prepared as part of the 2020 LRDP SEIR, the 2020 LRDP's compliance with the guidelines would reduce this impact to a less-than-significant level. As development of the proposed Project would use similar amounts of biologically hazardous substance and adhere to the same guidelines as other development under the 2020 LRDP, it would not result in a new or more severe impact related to biohazardous materials. The impact would be **less than significant** and no further analysis is required in the Project EIR.

### Radioactive Waste

Some radioactive substances may be used on the UC Merced campus, including in the proposed HBS-ME Building, for research purposes. The potential human health effects from radiation exposure range from no known health effects to minor skin irritations or headaches to cancerous tumors. Radiation could pose a health risk to those who are exposed, but exposure can be prevented with proper protective equipment and procedures. The Radiological Safety Division of the Department of Environmental Health and Safety (EH&S) at UC Merced is responsible for the development and oversight of a comprehensive radiation safety program. The radiation safety program ensures 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. Furthermore, radioactive materials would be monitored closely by the EH&S. For example, before obtaining radioactive materials, each principal investigator would require a Radiation Use Authorization from the Radiation Safety Officer, which would specify the particular radioisotopes to be used and maximum quantities to be possessed. According to the 2020 LRDP SEIR, the Campus's compliance with regulations for radiation safety would reduce this impact to a less-than-significant level. As development of the proposed Project would use similar amounts of radioactive substances and adhere to the same regulations, it would not result in a new or more severe impact related to use of radioactive substances. The impact would be **less than significant** and no further analysis is required in the Project EIR.

### Animal Research

The use of animals in UC Merced research laboratories could pose potential hazards to workers, students, and the neighboring community if contact between humans and animals is not properly managed. An infected animal can spread disease and present a physical safety hazard through bites and scratches. Exposure to infectious agents can occur through animal bites or by infectious agents being spread to the neighboring community, which can occur if animals escape or if infectious agents are transmitted by vectors. Vectors are organisms that carry diseases from infected animals to others in the community (for example, a mosquito could carry malaria from an infected person to an uninfected person). The possible health effects would depend on the species housed in campus facilities and the types of research pursued.

Before any research involving live vertebrate animals can be initiated on a UC campus (or in the proposed HBS-ME Building), 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. Research

involving hazardous agents also goes through a safety committee approval process that addresses safety and waste management practices. Approved protocols must comply with federal and State requirements as well as the Institutional Animal Care and Use Committee (IACUC). Vertebrate animals cannot be obtained for research until experimental protocols are approved. Animal housing facilities must also conform to the National Institutes of Health guidelines and the Animal Welfare Act. Rats and mice are not currently regulated under the Act, but they are covered by the IACUC. According to the 2020 LRDP SEIR, the Campus' compliance with animal care and use guidelines would reduce this impact to a less-than-significant level. As development of the proposed Project would also involve similar research and adhere to the same requirements currently in place, it would not result in a new or more severe impact related to hazards associated with the use of animals in campus research. Impacts would be **less than significant** and no further analysis is required in the Project EIR.

### Hazardous Materials Handling

UC Merced policies and procedures would address the procurement, handling, and disposal of carcinogenic, controlled, volatile, flammable, and explosive substances within the proposed HBS-ME Building. The Campus EH&S department provides compliance support to research principal investigators and assists in implementing measures designed to ensure compliance with applicable environmental, health and safety laws and regulations. Students, researchers, and staff within the proposed HBS-ME Building would be required to follow hazard control hierarchy including following standard engineering and administrative controls (e.g., working with potential inhalation hazards under fume hoods) to minimize the risk of potential exposure to human health and the environment.

The use of engineering controls would help to minimize indoor laboratory air toxic concentrations in order to meet compliance obligations for exposure limits to personnel pursuant to the California Division of Occupational Safety and Health (Cal/OSHA). To prevent exposure through skin contact, Campus policies and procedures require that research personnel minimize the potential for dermal contact and wear personal protective equipment (e.g., laboratory coats, gloves, and safety glasses or goggles) while handling hazardous materials and wastes within all campus facilities, including the proposed HBS-ME Building. Personal hygiene practices, including washing after handling chemicals, would also be required in all laboratories within the proposed building. In addition, eating, drinking, applying cosmetics, and chewing gum or tobacco would not be permitted in HBS-ME Building laboratories using hazardous, radioactive, carcinogenic, or biohazardous chemicals or materials in accordance with the UC Merced Laboratory Safety Plan.

The use of hazardous chemicals in varying amounts during construction of the proposed building is also subject to hazard control. Construction and maintenance activities would use hazardous chemicals, such as solvents and cleaners, fuels (gasoline and diesel) for portable generators, oils and lubricants, paints and paint thinners, adhesives, cleaning and coating agents (e.g., solvents and corrosives) in addition to soaps and detergents, and potentially the application of pesticides and herbicides. Building construction activities are required to comply with all applicable environmental, health and safety compliance regulations including, but not limited to, Titles 8 and 22 of the California Code of Regulations, Uniform Fire Code, and Division 20 of the California Health and Safety Code.

The transport and unloading of hazardous materials to and from the proposed Project site during construction activities would comply with United States Department of Transportation (DOT) and California Department of Transportation (Caltrans) regulations. According to the 2020 LRDP SEIR, the Campus' compliance with all state, federal, and local hazardous materials regulations would reduce any construction, operational, and maintenance-related hazardous materials impacts to a less-than-significant level. Impacts would be **less than significant** and no further analysis on hazardous materials handling during Project construction and operation is required in the Project EIR.

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

As discussed above under Section 5.11.1.a, the transport of hazardous materials during project construction and operation would be conducted in accordance with all applicable State and federal laws. The transport of any hazardous materials to the campus would be conducted in accordance with the Hazardous Materials Transportation Act (49 U.S. Code 5101 et seq.) and other State and federal requirements. Nonradioactive chemicals, biohazardous materials, and other packages for offices and laboratories may be delivered by outside carriers directly to receiving entrances at the proposed HBS-ME Building. Alternatively, incoming packages may be delivered at the campus main receiving facility for UC Merced personnel to deliver to campus locations, such as the proposed HBS-ME Building. However, transportation of hazardous materials around the campus would increase the possibility of accidents capable of exposing people on and off campus to hazardous materials. To minimize the potential for accidental spills of hazardous materials during transit, suppliers and transporters are and would continue to be required to follow stringent U.S. DOT regulations for packaging and handling.

Hazardous waste leaving the campus or the proposed HBS-ME Building would be packaged in drums and containers that meet U.S. DOT packaging requirements. As a result of U.S. DOT performance packaging specifications, containers are less likely to be damaged and release their contents in the event of an accident. Although transportation of hazardous materials has associated risks of spills or releases, management of transported wastes in compliance with applicable hazardous materials transportation regulations (e.g., California Code of Regulations, Title 4, *Business Regulations*) would help to minimize the risk.

Due to the relatively small amounts of hazardous materials involved and compliance with applicable transport regulations, the impact of the proposed Project with respect to creating a significant hazard to the public or environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment would be **less than significant**. No further analysis is required in the Project EIR.

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

There are no existing K-12 schools within one-quarter mile of the UC Merced campus or the proposed Project site. Implementation of the proposed Project would not emit hazardous emissions

or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. **No impact** would occur, and no further analysis is required in the Project EIR.

- d. Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?*

Impacts related to hazardous materials sites were evaluated in the 2020 LRDP SEIR and were found to be potentially significant. The analysis concluded that the impacts from unknown hazardous materials sites would be reduced to a less-than-significant level with adherence to Campus policies and implementation of **2020 LRDP Mitigation Measure HAZ-4**. The proposed Project site has been disturbed by previous grading activities; however, no hazardous materials sites have been found within the footprint of the proposed Project area. According to the California Department of Toxic Substance Control EnviroStor website there are no known hazardous waste sites located within 1,000 feet of the Project site.<sup>23</sup> The proposed Project would also implement **2020 LRDP Mitigation Measure HAZ-4** in the event hazardous materials sites are revealed during construction activities associated with the proposed Project. Impacts would be **less than significant**, and no further analysis is required in the Project EIR.

- e. Would the project be located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?*

The UC Merced campus and the proposed Project site is not located within an airport land use plan or within 2 miles of a public use airport. Therefore, **no impact** would occur, and no further analysis is required in the Project EIR.

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

UC Merced has adopted both an Emergency Operations Plan and a Crisis Communications Plan that the proposed Project would abide by. The Campus emergency response team is trained and equipped to respond to hazardous materials emergencies. In the event of such an emergency at the Project site, UC Merced would provide sufficient resources to respond to a Level A hazardous materials incident (the most hazardous level), in coordination with the County of Merced, if necessary. In addition, UC Merced would prepare (or update) safety planning documents in accordance with California Health and Safety Code Section 25517.5, as well as applicable laws, regulations, and Campus policies in association with the proposed Project. The Campus would implement safety training programs upon occupying the proposed HBS-ME Building to ensure efficient implementation of any emergency response plan. In addition, each department occupying the proposed HBS-ME Building would be responsible for preparing and implementing its own emergency action plan. These plans would contain detailed procedures for proposed HBS-ME

<sup>23</sup> California Department of Toxic Substances, EnviroStor Website, <https://www.envirostor.dtsc.ca.gov/public/> (Accessed January 29, 2021).

Building occupants to follow in the event of various emergencies and evacuations. The proposed HBS-ME Building would be assigned a building safety coordinator who would address emergency planning and safety training for the occupants, employees, staff, and students occupying the proposed Project. In addition, the UC Merced Police Department would make the necessary contact with EH&S in the event of a minor spill or release at the proposed HBS-ME Building. For these reasons, development of the proposed Project would not impair implementation of physically interfere with any emergency response plan or emergency evacuation plan and the impact is considered **less than significant**. No further analysis is required in the Project EIR.

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

Because high-fire-risk grazing pastures surround the UC Merced campus on all sides, the growth in population due to the 2020 LRDP and the proposed Project would translate into a greater potential for wildland and urban fires along with a greater number of people exposed to fires on and off campus. Adequate wildland fire defenses and responses to wildland fires are a priority for the State. In recognition of the severity of wildland fire hazards in certain areas of California, the State has enacted legislation (i.e., California PRC Section 4291) requiring local jurisdictions to adopt minimum recommended road standards for fire equipment access; standards for identifying streets, roads, and buildings minimum private water supply reserves for emergency fire use; and standards for fuel breaks and greenbelts to achieve fuel reductions. The UC Merced campus has been designed to minimize human intrusion into the adjacent Campus Natural Reserve (CNR) lands by way of landscaping and fencing.

The UC Merced campus would use the Management Plan for Conservation Lands as a guide to balance fire prevention and suppression methods with protection of natural resources and biodiversity. The Management Plan for Conservation Lands has four distinct goals regarding fire protection and management that would be applicable to the proposed Project: (1) develop fire protection that emphasizes public safety and protection of university properties, especially in the interface areas; (2) prevent a substantial increase in fire frequency from “pre-university” (i.e., before development of the campus) conditions to maintain the natural habitat; (3) minimize ground-disturbing fire prevention and suppression methods (e.g., fuel breaks); and (4) use prescribed fire as a management tool to control invasive weeds that threaten biodiversity. Therefore, with the implementation of fire prevention measures noted above and adherence to the guidelines of the Management Plan for Conservation Lands, the proposed Project’s impact with respect to wildland fires would be reduced to **less than significant**. No further analysis is required in the Project EIR.

### 5.11.2 Cumulative Impacts

The 2020 LRDP SEIR found that exposure to toxic air contaminants from research and development (R&D) uses in the area, including future R&D uses on the campus such as the proposed Project, could result in a potentially significant cumulative impact. However, the contribution of the 2020 LRDP to the cumulative impacts would not be cumulatively considerable based on data from other UC campuses. As discussed above, implementation of the proposed Project would comply with federal, state, and local regulations, adhere to UC policies, and implement adopted mitigation measures and thus would not change this conclusion. As a result, cumulative impacts pertaining to

proposed Project implementation were adequately addressed in the 2020 LRDP SEIR. There are no changes in circumstances or new information that would change the conclusions of the SEIR regarding cumulative impacts. No further analysis of cumulative hazards and hazardous materials impacts is required in the Project EIR.

#### **5.11.3 2020 LRDP SEIR Mitigation Measures Applicable to the Proposed Project**

The following mitigation measure that was adopted at the time of the approval of the 2009 LRDP and/or the 2020 LRDP would apply to the proposed Project:

**2020 LRDP MM 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.

#### **5.11.4 Project-Specific Mitigation Measures Not Included in the 2020 LRDP SEIR**

As the Project would not result in any new or more severe impacts to hazards and hazardous materials than the impacts that were previously analyzed and disclosed in the 2020 LRDP SEIR, no Project-specific mitigation measures are required.



## 5.12 HYDROLOGY AND WATER QUALITY

	Impacts to be Analyzed in the EIR	No Additional Analysis in the EIR Required
Would the project:		
a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
i. Result in substantial erosion or siltation on- or off-site;	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii. Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff; or	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv. Impede or redirect flood flows?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 5.12.1 Impact Analysis

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

As described in the 2020 LRDP SEIR, impacts on water quality from the development of the UC Merced campus and University Community North were evaluated in the 2009 LRDP EIS/EIR and were found to be less than significant. Construction activities under the 2020 LRDP, which account for the proposed HBS-ME Building Project, could result in soil erosion and release of sediment into receiving waters. Spills or leaks from heavy equipment and machinery (petroleum products and other heavy metals) in staging areas and building sites could also adversely affect receiving water quality.

However, according to federal law, all construction projects that involve disturbance of more than 1 acre of land (or disturb less than 1 acre but are part of a larger project that in total disturbs more than 1 acre) are subject to NPDES regulations for storm water. All such projects are required by law to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit Order 2009-009-DWQ) and prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) during construction. The SWPPP must be kept on site during construction activity and made available upon request to representatives of the Regional Water Quality Control Board (RWQCB). The SWPPP is required to include a description of potential pollutants and the manner in which sediments and hazardous materials present on site during construction (including vehicle and equipment fuels) would be managed. The SWPPP must also include details of how the sediment and erosion control best management practices (BMPs)

would be implemented. Adherence to NPDES regulations would help to ensure that adverse impacts on water quality are minimized and avoided.

The 2020 LRDP SEIR concluded that wastewater generated on the campus under the 2020 LRDP would be similar to wastewater discharged from other parts of the City and would not contain constituents in concentrations that could cause the City's wastewater treatment plant (WWTP) to exceed the waste discharge requirements that apply to the discharge of treated effluent. The use of hazardous chemicals or biohazardous materials may occur in the teaching and research laboratories within the proposed HBS-ME Building. As such, the proposed building would be subject to the discharge constraints of the City of Merced Code of Ordinances, Title 15, *Public Service*, Division I, *Sewer System*, Chapter 15.24.050, *Prohibition on Discharge*. In addition, the Campus EH&S provides compliance support to researchers for the handling of these wastes on the campus. EH&S also provides compliance support to research personnel in order to meet sanitary sewer disposal guidelines for all campus laboratories. The City's ordinance prohibits the discharge of hazardous chemicals into sanitary drains in laboratories on the campus. As the proposed Project would adhere to local regulatory compliance requirements and also comply with State law, the risk of the City's WWTP exceeding waste discharge requirements related to the discharge of treated effluent would be minimal.

As all campus development under the 2020 LRDP, including the proposed HBS-ME Building Project, would adhere to these requirements, the proposed Project would not result in a new or more severe impact on water quality than what was previously analyzed and disclosed in the 2020 LRDP SEIR. Therefore, the proposed Project's potential to violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality would represent a **less-than-significant** impact. No additional analysis is required in the Project EIR.

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

Impacts on groundwater supplies from the development of the 1,026-acre campus were evaluated in the 2020 LRDP SEIR and determined to be less than significant. As described in Section 4.4 of the 2020 LRDP SEIR, the development of additional impervious surfaces on the campus such as new buildings, roads, paths and parking lots, would normally have the potential to reduce recharge of the underlying aquifer. However, campus development under the 2020 LRDP, which includes the proposed HBS-ME Building Project, would not substantially reduce recharge compared to existing conditions for a number of reasons. The campus is located in an area that is known to have soil types with low to moderate recharge potential. There are substantial amounts of clay in the campus site soils, which restrict the ability of surface water to percolate into the groundwater aquifer. Also, a clay hard pan exists near the ground surface that further inhibits the potential of surface water to infiltrate down to the groundwater aquifer. Therefore, groundwater recharge under pre-development conditions is generally low on the campus site. Further, the Campus's Water Action Plan sets forth a number of near- and long-term actions that would be reflected in the proposed HBS-ME Building Project design, including: (1) incorporation of green infrastructure and low-impact development strategies into site design in order to manage 30 to 50 percent of total volume runoff on-site, and (2) incorporation of retention basins into site design and development to capture 100

percent of campus storm water under normal precipitation conditions. Therefore, consistent with the analysis in the 2020 LRDP SEIR, implementation of the proposed Project would not substantially interfere with recharge such that aquifer volume would be affected, and the impact related to groundwater recharge would be **less than significant**. No additional analysis is required in the Project EIR.

The proposed Project would increase demand for potable water, which would be drawn from the Merced Subbasin by the City and supplied to the campus. The subbasin is currently in a condition of overdraft. The 2020 LRDP SEIR evaluated the impact of campus development under the 2020 LRDP for its potential to decrease groundwater supplies. As described in the 2020 LRDP SEIR, based on a water use factor of 31.4 gallons per capita per day (gpcd) and the 2030 population projections for the campus, projected water demand for the campus was conservatively estimated to be approximately 612 acre-feet per year (AFY) by 2030. This estimate is considered conservative because it does not take into account further reductions in campus water use due to UC Merced's implementation of its Water Action Plan in compliance with the UC Sustainable Practices Policy. Furthermore, the estimated campus water demand is approximately 56 percent lower than the City of Merced's 2015 Urban Water Management Plan (UWMP) 2030 estimate for the campus of 1,406 AFY. The 2015 UWMP also concluded that the City has an adequate groundwater supply to meet water demands during normal, single-dry, and multi-dry years. Therefore, although the implementation of the 2020 LRDP would increase the amount of groundwater that would be withdrawn from the Merced Subbasin compared to existing conditions, the amount is substantially less than the amount accounted for UC Merced in the City's UWMP.

The anticipated population increase associated with the proposed HBS-ME Building Project (i.e., 2,999 students, faculty, and staff) is within the projected 2020 to 2030 campus population increase that was analyzed in the 2020 LRDP SEIR (i.e., 6,431 students, faculty, and staff). Therefore, the proposed Project would not increase the demand for potable water or require extraction of groundwater in excess of what was previously analyzed in the 2020 LRDP SEIR, and would result in a **less-than-significant** impact related to the substantial decrease of groundwater supplies. No additional analysis is required in the Project EIR.

- c. *Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:*
- i. *Result in substantial erosion or siltation on- or off-site;*
  - ii. *Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;*
  - iii. *Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff; or*
  - iv. *Impede or redirect flood flows?*

The 2020 LRDP SEIR analyzed the changes in drainage patterns as a result of campus development under the 2020 LRDP. The analysis concluded that the impacts from 2020 LRDP campus development would be less than significant. With the development of the Phase 1 campus and the 2020 Project, storm water from developed surfaces is collected by the campus storm drain system

and discharged into a number of detention facilities that are designed to hold flows from a 100-year, 24-hour storm. As part of the 2020 Project, additional detention facilities were added within Cottonwood Meadow, as shown in **Figure 2**. The detention facilities were sized to accommodate both the peak flows and the total volume of storm water runoff associated with the 2020 Project before discharge into Cottonwood Creek or other receiving waters and avoid potential flooding and erosion/siltation impacts in downstream areas.

The proposed Project, which is located within the Cottonwood Meadow storm water management area, would both increase the impervious surface area in the southeastern portion of the campus and decrease the existing storm water holding capacity of the existing facilities in Cottonwood Meadow. Therefore, the proposed Project would have the potential to increase the rate and amount of runoff, and if the runoff were not controlled, the increased runoff could result in (or exacerbate) flooding as well as potential hydromodification (i.e., erosion and scour) in downstream drainages, including Cottonwood Creek. Thus, the proposed Project's potential to substantially alter drainage patterns on the campus will be evaluated in the Project EIR.

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

As described in the 2020 LRDP SEIR, the campus, including the Project site, is not within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map. In addition, Lake Yosemite, which is located approximately 0.5 mile northeast of the Project site, has not historically produced seiches in association with tectonic activity. As a result, the campus is not at risk of seiche or tsunami inundation. Therefore, there would be **no impact** with regard to these criteria. No additional analysis is required in the Project EIR.

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

As discussed above in **Section 5.12.1.a**, the Project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality; therefore, the proposed Project would not conflict with or obstruct the implementation of the RWQCB's 2018 basin plan for the Central Valley Region,<sup>24</sup> which encompasses both the Sacramento River and San Joaquin River Basins.

As described in Section 4.4 of the 2020 LRDP SEIR, a Groundwater Sustainability Plan (GSP) was developed for the Merced Subbasin and was adopted in November 2019. Per the GSP, current agricultural and urban groundwater demand in the Merced Subbasin would need to be reduced by approximately 10 percent in order to balance out the change in groundwater storage over a long-term average condition, based on modeling of current and projected subbasin conditions and absent implementation of any new supply-side or recharge projects. As discussed above in **Section 5.12.1.b**, on both a per capita basis and total demand basis, UC Merced has reduced its demand

<sup>24</sup> Regional Water Quality Control Board, Central Valley Region (CVRWQCB). 2018. The Water Quality Control Plan (Basin Plan) for the Sacramento River Basin and the San Joaquin River Basin. Fifth Edition. May.

substantially from previous levels and the reductions are significantly more than the required 10 percent water demand reduction identified in the GSP to bring the groundwater subbasin into balance. The Campus will continue to implement actions to reduce use of potable water, as reflected in the 2020 LRDP SEIR. The Campus will also continue to work with the City and the Merced Irrigation District (MID) to identify other sources of water, including the use of canal water for irrigation and other non-potable uses.

Therefore, the Project would have a **less-than-significant** impact with respect to these criteria. No additional analysis is required in the Project EIR.

### 5.12.2 Cumulative Impacts

As discussed above, the Project would not violate any water quality standards or waste discharge requirements nor would it substantially degrade water quality. In addition, the Project would not be constructed within a 100-year flood hazard area or be located within a seiche or tsunami inundation area. For these reasons, the Project would not contribute to a cumulative impact with respect to these topics. No additional analysis of cumulative impacts related to these topics is required in the Project EIR.

The 2020 LRDP SEIR determined that the 2020 LRDP would have a significant and unavoidable cumulative impact related to the depletion of groundwater supplies and, in conjunction with other past, present, and reasonably foreseeable future development, would contribute to the overdraft of the Merced Subbasin. The implementation of **2020 LRDP Cumulative Mitigation Measure C-HYD-2** would reduce the impact; however, the impact would remain significant and unavoidable. The proposed Project includes a population increase that is within the projected campus population increase between 2020 and 2030 that was analyzed in the 2020 LRDP SEIR. Therefore, the Project's contribution to this cumulative impact is already accounted for. As with campus development under the 2020 LRDP, the proposed Project would make a cumulatively considerable contribution to the cumulative impact on groundwater supplies. No additional analysis cumulative groundwater supply impacts is required in the Project EIR.

Potential cumulative impacts with respect to the alteration of existing drainage patterns will be addressed in the Project EIR.

### 5.12.3 2020 LRDP SEIR Mitigation Measures Applicable to the Proposed Project

The following mitigation measure that was adopted at the time of the approval of the 2020 LRDP would apply to the proposed Project:

**2020 LRDP Cumulative MM C-HYD-2:** UC Merced shall work with the regional water agencies, including the City of Merced and MID, to develop programs to expand conjunctive use capabilities, increase recharge, and reduce groundwater demand.

### 5.12.4 Project-Specific Mitigation Measures Not Included in the 2020 LRDP SEIR

If Project-level mitigation measures are required related to potential impacts on storm water discharges, they will be disclosed in the Project EIR.

### 5.13 LAND USE AND PLANNING

	Impacts to be Analyzed in the EIR	No Additional Analysis in the EIR Required
Would the project:		
a. Physically divide an established community?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### 5.13.1 Impact Analysis

##### *a. Would the project physically divide an established community?*

The Project site is located within the existing UC Merced campus and within the boundary of the 2020 LRDP. The proposed Project is intended to address the need for additional academic and research uses on the campus and would be integrated into the overall campus development plan specified in the 2020 LRDP. There is no existing community within the UC Merced campus or adjacent to the UC Merced campus or Project site. As such, implementation of the proposed Project would not physically divide an established community. **No impact** would occur and no additional analysis in the Project EIR is required.

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

UC Merced is a State entity and not subject to regional or local land use controls. As the proposed Project is located on the UC Merced campus, it would not be subject to land use plans, policies or regulations adopted by the City of Merced or Merced County to avoid or minimize an environmental effect. The land use plan that is applicable to the Project is the 2020 LRDP. The 2020 LRDP was designed to guide the future development of the campus in a manner that would avoid and minimize any adverse effects of campus growth and development. The proposed Project would not conflict with the 2020 LRDP. It would be located in an area that is designated CMU, which allows for the siting of academic buildings and would be designed in compliance with development standards in the 2020 LRDP and the Physical Design Framework of the UC Merced campus. Further, the increase in building space and campus population attributable to the proposed Project is within the growth projections of the 2020 LRDP. As such, implementation of the proposed Project would not cause a significant environmental impact due to a conflict with the 2020 LRDP. Impacts would be **less than significant** and no additional analysis in the Project EIR is required.

#### 5.13.2 Cumulative Impacts

The 2020 LRD SEIR found that the 2020 LRDP would not result in any cumulative impacts related to land use. The increase in building space and campus population attributable to the proposed Project are within the growth projections of the 2020 LRDP. Therefore, the cumulative impact of the proposed Project is captured in the cumulative impact of the 2020 LRDP. Further, there are no changes in circumstances that would change the conclusions of the prior analysis. The cumulative

impacts of the proposed Project are adequately addressed in the 2020 LRDP SEIR. Further analysis of cumulative land use impacts in the Project EIR is not required.

#### **5.13.3 2020 LRDP SEIR Mitigation Measures Applicable to the Proposed Project**

The 2020 LRDP SEIR did not require mitigation measures under this resource topic as no potentially significant impacts associated with land use and planning were identified.

#### **5.13.4 Project-Specific Mitigation Measures Not Included in the 2020 LRDP SEIR**

As the Project would not result in any new or more severe impacts to land use and planning than the impacts that were previously analyzed and disclosed in the 2020 LRDP SEIR, no Project-specific mitigation measures are required.



## 5.14 MINERAL RESOURCES

	Impacts to be Analyzed in the EIR	No Additional Analysis in the EIR Required
Would the project:		
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 5.14.1 Impact Analysis

- a. *Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?*
- b. *Would the project result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?*

As discussed in Appendix A of the 2020 LRDP SEIR, the campus, including the Project site, is not located on land designated as a mineral resource zone (MRZ). The Merced County General Plan Environmental Impact Report indicates the County's primary mineral resources are sand and gravel mining operations, with significant aggregate deposits concentrated along the San Joaquin River and its tributaries, including the Merced River.<sup>25</sup> These areas are not near the Project site. Implementation of the proposed Project would not result in the loss of availability of a known mineral resource that would be valuable to the region and residents of the state. **No impact** would occur. Further analysis in the Project EIR is not required.

### 5.14.2 Cumulative Impacts

No mineral resource zones or mineral resource recovery sites exist on the campus or in the nearby surrounding region. Development of the proposed Project would not contribute to a cumulative impact on mineral resources. Further analysis of cumulative mineral resources impacts in the Project EIR is not required.

### 5.14.3 2020 LRDP SEIR Mitigation Measures Applicable to the Proposed Project

The 2020 LRDP SEIR did not include mitigation measures under this resource topic as no potentially significant impacts associated with mineral resources were identified.

### 5.14.4 Project-Specific Mitigation Measures Not Included in the 2020 LRDP SEIR

As the Project would not result in any new or more severe impacts to mineral resources than the impacts that were previously analyzed and disclosed in the 2020 LRDP SEIR, no Project-specific mitigation measures are required.

<sup>25</sup> Merced County, 2030 Merced County General Plan, Draft Program Environmental Impact Report, Geology, Soils, and Mineral Resources, pg. 10-5 and Figure 10-3, November 2012.

## 5.15 NOISE

	Impacts to be Analyzed in the EIR	No Additional Analysis in the EIR Required
Would the project result in:		
a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

The proposed Project site is located within the UC Merced campus, which is located in eastern Merced County, east of Lake Yosemite and Lake Road, and approximately 2 miles northeast of the jurisdictional limits of the City of Merced. Other than existing storm water detention facilities and staging areas associated with other campus development activities, the Project site is largely undeveloped and no major fixed noise sources exist on the site. Noise sources in the vicinity of the Project site include existing campus activity immediately to the west, as well as traffic on local and campus roadways and noise from off-campus agricultural operations to the south and southeast. Single-family residential units located on East Bellevue Road and Lake Road (southwest of the site) are the nearest off-campus sensitive receptors from the proposed Project. The Glacier Point student housing is located approximately 90 feet from the Project site and the Arts and Computational Sciences Building is located approximately 70 feet from the Project site. The Arts and Computational Sciences Building is the closest noise sensitive receptor to the proposed Project since academic activities occur within the building.

No heavily traveled roads or freeways are within the vicinity of the proposed Project site on the UC Merced campus. SR 99, SR 59, and SR 140 are all located about 2.5 miles or further from the Project site and do not affect noise levels in the Project area. Nearby roadways tend to be light to moderately traveled, at moderate vehicle speeds, and do not handle large volumes of heavy-duty trucks or buses. As such, while motor vehicle traffic causes noise within the proposed Project site and tends to be the primary noise source in locations adjacent to traveled roadways, the resulting noise levels are not excessive. The 2020 LRDP SEIR estimated that ambient roadway noise level on Lake Road is about 59.7 dB(A) CNEL at 75 feet while the modeled roadway noise level on Bellevue Road is about 60.5 dB(a) CNEL at 75 feet. It is noted that noise levels along these roadways are likely slightly higher than these modeled levels due to the contribution of noise from other non-roadway noise sources.

Off-site stationary and area noise sources include common building or home mechanical equipment, such as air conditioners, ventilation systems, or 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 on or near the Project site or UC Merced campus; however, some agricultural-related operations and land maintenance activities cause occasional, daytime noise within the area of the proposed Project.

Construction activities associated with the 2020 Project occurred between 2016 and 2020. All of the buildings and other facilities under the 2020 Project have been developed and are operational. These facilities contribute to the existing ambient noise levels on campus near the Project site. Typical campus generated noise includes people talking, landscaping and maintenance activities, truck deliveries, and on-campus vehicle circulation. The proposed Project would be developed adjacent to the 2020 Project facilities on land that has been previously graded and disturbed.

Overall, traffic and campus activity are the dominant noise sources in the Project area.

### 5.15.1 Impact Analysis

- a. *Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

#### Operational Noise

The 2020 LRDP SEIR analyzed the potential for campus development through 2030 under the 2020 LRDP to result in noise impacts. The proposed Project (development of the proposed HBS-ME Building) is part of the UC Merced campus development occurring under the 2020 LRDP because both the increase in campus population and the new building space that would be added to the campus by the Project are accounted for in the growth assumptions of the 2020 LRDP; as such, the operational noise impacts of the proposed Project are adequately analyzed as part of the 2020 LRDP SEIR noise impact analysis.

The campus development under the 2020 LRDP, including that of the proposed Project, would increase traffic volumes on the local roadway network compared to existing conditions. Such an increase in traffic volumes would have the potential to result in increased traffic noise levels at noise-sensitive receptors located along Bellevue and Lake Roads. There are some existing residential receptors along Bellevue and Lake Roads that would be exposed to noise from traffic on the two roadways. Most homes on Lake and Bellevue Roads are set back about 100 feet from the center of the road. However, a small number of homes along Bellevue Road are located about 80 feet from the roadway.

Noise increases due to 2020 LRDP-related traffic on Bellevue and Lake Roads were calculated in the 2020 LRDP SEIR by comparing the 2020 LRDP traffic noise levels to no 2020 LRDP (Background) traffic noise levels within the same time frame. Background plus 2020 LRDP traffic on Bellevue Road would cause the ambient noise levels to increase from 58.5 dBA  $L_{dn}$  (East of SR 59) and 59.6 dBA  $L_{dn}$  (East of G Street) at the present time to about 61.1 dBA  $L_{dn}$  (East of SR 59) and 62.6 dBA  $L_{dn}$  (East of G Street) under 2030 conditions. Noise levels at residences at a distance of up to 80 feet from this roadway would experience a slightly higher noise level increase. Along Lake Road, noise levels would increase from about 60.9 dBA  $L_{dn}$  (South of Bellevue) and 61.0 dBA  $L_{dn}$  (South of Cardella) at the present time to about 61.6 dBA  $L_{dn}$  (South of Bellevue) and 62.6 dBA  $L_{dn}$  (South of Cardella) in 2030. The resulting noise levels in 2030 along both roadways would not exceed the exterior noise standard of 65 dBA  $L_{dn}$  that is applicable to residential land uses in Merced County. Furthermore, although the 2020 LRDP would cause noise increases along both roadways, the increase would be less than 3

decibels. The proposed Project would add approximately 182,698 gsf of building space on the campus, which is well within and a small fraction of the 1.83 million gsf building space increase evaluated in the 2020 LRDP SEIR. The anticipated population increase associated with the proposed HBS-ME Building Project (i.e., 2,999 students, faculty, and staff) is also within the projected 2020 to 2030 campus population increase that was analyzed in the 2020 LRDP SEIR (i.e., 6,431 students, faculty, and staff). The proposed Project's contribution to traffic-related increases in ambient noise levels is adequately analyzed in the 2020 LRDP noise analysis and determined to be a less-than-significant impact. Furthermore, if the traffic noise increase due to the proposed Project were to be separately calculated, it would be well below the significance criteria for a significant traffic noise impact (Under the 2020 LRDP SEIR criteria, a noise impact would be considered significant if the proposed Project causes an increase of 5 dBA or more, where the noise levels without the proposed Project are 50 to 65 dBA  $L_{dn}$  for residential uses and the increase in noise from the proposed Project does not cause the significance thresholds to be exceeded). The traffic added by the proposed Project would not generate noise that would exceed this threshold.

Daily noise-generating activities associated with the proposed Project would include student gatherings and conversations, landscaping and maintenance activities, on-site traffic, and mechanical equipment noise. The closest off-campus noise-sensitive receptors to the proposed Project include residences along Lake and Bellevue Roads to the west (approximately 0.60 miles from the Project site). As a result of the intervening distance and the fact that noise levels generated by the activities associated with the proposed Project would generally be low at the source, noise generated by daily activities at the proposed HMS-BE Building is not expected to exceed the noise standard of 65 dBA  $L_{dn}$  exterior and 45 dBA  $L_{dn}$  interior at off-site residential locations. Off-site receptors are not expected to be exposed to noise levels in excess of the standards for noise-sensitive uses with implementation of the proposed Project.

On-site noise-sensitive receptors, including student housing and academic buildings on the campus, could be exposed to excessive noise associated with proposed Project operation. For instance, noise levels could be elevated from the operation of commercial-grade heating, ventilation, and air conditioning (HVAC) systems associated with the proposed HBS-ME Building. However, noise levels associated with typical commercial grade HVAC systems can be reduced to below the noise standard for residences and academic buildings at a distance of less than 50 feet from the source with the use of standard attenuation barriers. As a result, on-site receptors are not expected to be exposed to noise levels in excess of the standards for noise-sensitive uses with implementation of the proposed Project.

### **Construction Noise**

The proposed Project would also generate temporary construction noise as construction activities occur. Construction activities occurring at the proposed building site, within Cottonwood Meadow, or in the construction staging area would occur at a distance of more than 0.50 miles from nearest sensitive receptors located along East Bellevue and Lake Roads.

As described in the 2020 LRDP SEIR, noise generated by construction activities is anticipated to be greatest during site grading activities and excavation for underground utilities. Noise generated during foundation and building construction would be lower. Maximum noise levels at a distance of

50 feet from the source would typically range from 70 to 90 dBA during excavation and grading activities and from 65 to 85 dBA during building construction. Hourly average construction noise levels measured at a distance of 50 feet from the Project site are typically 75 dBA to 85 dBA during busy construction periods. Hourly average construction noise levels would typically range from 74 to 85 dBA at a distance of 50 feet from the center of construction activities and 56 to 71 dBA at a distance of 400 feet, not taking into account shielding from buildings or terrain. Maximum noise levels would typically range from 70 to 90 dBA at a distance of 50 feet and 52 to 72 dBA at a distance of 400 feet. Construction noise levels decrease at a rate of about 6 dBA per doubling of distance between the source and receptor. Shielding by buildings or terrain often results in much lower construction noise levels at distant receptors. Daytime construction noise would be exempt from the County's Ordinance and would result in a less-than-significant impact. A significant noise impact would occur if construction activity is predicted to result in: (1) maximum noise levels exceeding 75 dBA  $L_{max}$  at any residential property or 80 dBA  $L_{max}$  at any non-residential property between the hours of 6:00 p.m. and 7:00 a.m.; (2) an hourly average sound level that is more than 10 dBA  $L_{eq}$  above the ambient sound level between the hours of 6:00 p.m. and 10:00 p.m.; or (3) an hourly sound level more than 5 dBA  $L_{eq}$  above the ambient sound level between the hours of 10:00 p.m. and 7:00 a.m.

Due to the distance between the sensitive receptors along East Bellevue and Lake Roads and the construction area of the proposed HBS-ME Building, Cottonwood Meadow basins, and the staging area (greater than 0.50 mile), construction noise would not exceed the standards listed above. Furthermore, the proposed Project would implement **2020 LRDP Mitigation Measure NOI-3** (described below in **Section 5.13.3**), which would further minimize the less-than-significant construction noise impact.

Construction activities at the Project site could occur as close as 70 feet to the Arts and Computational Sciences Building and about 90 feet from the nearest on-campus student housing (Glacier Point student housing). Maximum construction noise levels at a distance of 70 feet from the source would typically range from 67.1 to 87.1 dBA during excavation and 62.1 to 82.1 dBA during building construction. Hourly average construction noise levels at a distance of 70 feet from the Project site would typically range from 62.1 dBA to 87.1 dBA during busy construction periods. Project construction would generate a predicted noise increase at the nearby academic building and on-campus residences that would exceed 5 dBA over ambient noise levels. However, implementation of **2020 LRDP Mitigation Measure NOI-3** would reduce the construction noise levels at the on-campus sensitive receptors to a less-than-significant level.

Overall, the proposed Project would not result in a substantial temporary or permanent increase in ambient noise levels in the vicinity of the proposed Project in excess of established standards. Impacts would be **less than significant**, and no additional analysis is required in the Project EIR.

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

The 2020 LRDP SEIR evaluated the potential impacts to on- and off-site sensitive uses from vibration generated by construction activities (specifically pile driver usage). Portions of the proposed Project site are located within 70 feet of on-campus buildings (i.e., the footprint where the proposed HBS-ME Building would be developed). At this time, it is not known if pile driving activities would be

needed for construction of the proposed building; however, as a conservative approach, the following analysis describes potential impacts associated with such construction activities.

Impact pile drivers are estimated to generate an upper range of 0.537 inch/second, peak particle velocity (ppv), at a distance of 25 feet and vibratory pile drivers are estimated to generate an upper range of 0.260 inches/second, ppv. At a distance of 70 feet, impact pile drivers are estimated to generate an upper range of 0.173 inches/second, ppv, and vibratory pile drivers are estimated to generate an upper range of 0.084 inch/second, ppv. Groundborne vibration levels at distances of approximately 70 feet or more would not result in vibration levels exceeding 0.20 inch/second, ppv and therefore would not be anticipated to result in substantial effects. Impact pile driving within 25 feet of structures could cause structural damage to typical building structures and could cause annoyance to campus occupants. Furthermore, at existing campus facilities, such as laboratories and on-campus residences, vibrations could have the potential to disrupt experiments. This is a potentially significant impact, and **LRDP Mitigation Measures NOI-4a** and **4b** are set forth below to mitigate this impact if pile driving activities are used during Project construction.

Overall, the proposed Project is not anticipated to result in generation of excessive groundborne vibration or groundborne noise levels. Impacts would be **less than significant**, and no additional analysis is required in the Project EIR.

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

The Merced Municipal Airport is approximately 7 miles southwest of the Project site and the campus, and Castle Airport (the former Castle Air Force Base) is approximately 6 miles to the west. While noise from aircraft overflights is occasionally perceptible at the Project site, 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 associated with the airports in the region do not encompass or include any portion of the Project site or the UC Merced campus. A private airstrip is located approximately 1.8 miles southeast of the Project site and UC Merced campus. The airstrip is used by planes involved in agriculture operations (e.g., fertilizing, seeding, and baiting). As the airstrip does not support commercial flights and is used for a limited number of agricultural flights, it is not anticipated that airstrip operations would expose the Project occupants to excessive noise levels.

Implementation of the proposed Project on the UC Merced campus would not expose people residing or working in the area to excessive noise levels from public and private airport/airstrip operations. **No impact** would occur, and no additional analysis is required in the Project EIR.

### 5.15.2 Cumulative Impacts

Cumulative noise impacts associated with the proposed Project were evaluated in the 2020 LRDP SEIR. The 2020 LRDP SEIR calculated  $L_{dn}$  noise levels at a distance of 100 feet from roadway links on the surrounding road network under Existing, 2035 No 2020 LRDP, and 2035 with 2035 UC Merced Campus Scenario traffic conditions. Background plus 2035 Campus Scenario traffic on Bellevue Road would cause the ambient noise levels to increase from less than 60.5 dBA  $L_{dn}$  at the present time to



slightly more than 63 dBA  $L_{dn}$  under 2035 conditions. Along Lake Road, ambient noise levels would increase from about 59.7 dBA  $L_{dn}$  at the present time to about 63 dBA  $L_{dn}$  in 2035. The noise levels in 2035 along both roadways would not exceed the exterior noise standard of 65 dBA  $L_{dn}$  that is applicable to residential land uses in Merced County. Furthermore, the 2020 LRDP related traffic would cause noise increases that would be less than 4 decibels. The SEIR thus concluded that the cumulative traffic noise impact of campus development under the 2020 LRDP would be less than significant. There are no changes in circumstances and no new information that would change the conclusions of the previous analysis.

As the Project's population and building space increases are within the population and space increases analyzed for the 2020 LRDP, the traffic increase due to the Project is also within the traffic increase that was evaluated in the 2020 LRDP SEIR for its cumulative impact on roadway noise. The proposed Project would generate a nominal percentage of the noise increase associated with the 2020 LRDP and, as with the 2020 LRDP, the proposed Project's cumulative impact on traffic noise would be **less than significant**. Further evaluation of cumulative traffic noise impacts in the Project EIR is not required.

With respect to cumulative construction noise and vibration impacts, those would occur only if the projects proposed by others or other campus projects were to be under construction the same time as the proposed Project and if these concurrent projects would be in close proximity of the same sensitive receptor. At this time, there are no other projects proposed in proximity to the campus that would be under construction at the same time as the proposed Project, and there are no other on-campus projects that are proposed for construction the same time as the proposed Project. Similarly, in order for the on-site stationary noise (HVAC, generators, pumps, etc.) associated with the proposed Project to accumulate with noise from other stationary noise sources, the noise sources would need to be in close proximity of the same sensitive receptor. At this time, there are no other projects proposed that would be in the vicinity of the same sensitive receptors as the proposed Project. For this reason, there would not be a cumulative noise impact with respect to construction noise or noise from stationary sources with implementation of the proposed Project. No additional analysis of cumulative construction noise impacts is required in the Project EIR.

### 5.15.3 2020 LRDP SEIR Mitigation Measures Applicable to the Proposed Project

The following mitigation measures that were adopted at the time of the approval of the 2009 LRDP and/or the 2020 LRDP would apply to the proposed Project:

**2020 LRDP MM NOI-3:** Prior to initiation of construction on a project that is within 500 feet of off-site residential receptors, UC Merced shall develop and implement a construction noise mitigation program for that project that includes but is not limited to the following:

- Construction activities within 500 feet of any residences shall be restricted to the hours of 7:00 AM and 6:00 PM on weekday 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.
- 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.
- 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.

**2020 LRDP MM NOI-4a:** UC Merced 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, UC Merced shall describe and commit to a mitigation plan to minimize construction vibration damage using all feasible means available.

**2020 LRDP MM NOI-4b:** For construction adjacent to highly sensitive uses such as laboratories, UC Merced shall 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.

#### **5.15.4 Project-Specific Mitigation Measures Not Included in the 2020 LRDP SEIR**

As the Project would not result in any new or more severe impacts pertaining to noise than the impacts that were previously analyzed and disclosed in the 2020 LRDP SEIR, no Project-specific mitigation measures are required.

## 5.16 POPULATION AND HOUSING

	Impacts to be Analyzed in the EIR	No Additional Analysis in the EIR Required
Would the project:		
a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 5.16.1 Impact Analysis

- a. *Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?*

The UC Merced campus and the proposed Project are located in the County of Merced, which has a current (2020) population of 283,521. There are 95,627 residents that live in unincorporated areas of the County, while the remaining balance live in incorporated cities within Merced County. The City of Merced (the nearest incorporated City to the proposed Project) has a current (2020) population of 88,120 residents.<sup>26</sup> By 2035, the estimated population for Merced County will be 357,496 residents, while the estimated population for the City of Merced will be 109,986 residents.<sup>27</sup>

The 2020 LRDP SEIR estimated that between 2020 and 2030, enrollment would increase from 9,700 FTE students to 15,000 students, an increase of about 5,300 students. Over the same period, faculty and staff would increase from 1,280 to 2,411, an increase of 1,131 persons. Overall, the campus population would increase by 6,431 persons (5,300 FTE students and 1,131 staff/faculty personnel) (Table 3). As such, by 2030 the UC Merced campus is projected to have a total population of 17,411 students, faculty, and staff. The 2020 LRDP SEIR determined that the UC Merced campus would be developed with additional housing to accommodate 50 percent of the 2030 student population. The remaining balance of students would be accommodated by housing within the City of Merced or in communities within a 40-mile radius of the campus. The SEIR also noted that all of the new employees would live off campus. The 2020 LRDP SEIR determined that enough housing is available and planned in the City of Merced and in communities within the 40-mile radius of the campus to house the new students and employees who would live off campus.

<sup>26</sup> California Department of Finance, E-5 Population and Housing Estimates for Cities, Counties, and the State, 2011-2020 with a 2010 Census Benchmark, <https://www.dof.ca.gov/forecasting/demographics/Estimates/e-5/> (Accessed February, 2 2021).

<sup>27</sup> Merced County Association of Governments (MCAG), 2018 Regional Transportation Plan/Sustainable Communities Strategy for Merced County.

**Table 3: Campus Student Population and Employees Under the 2020 LRDP**

	<b>2020 (projected)</b>	<b>2030</b>	<b>Projected Increase 2020-2030</b>
Commuting Students	4,900	7,800	2,900
Resident Students	4,800	7,200	2,400
Subtotal	9,700	15,000	5,300
Faculty	440	786	346
Staff (on-campus)	840	1,625	785
Subtotal	1,280	2,411	1,131
<b>Total Population (excluding dependents)</b>	<b>10,980</b>	<b>17,411</b>	<b>6,431</b>

Source: University of California, Merced. 2020. UC Merced 2020 Long-Range Development Plan Subsequent Environmental Impact Report.

As discussed in **Section 2.4.5**, it is anticipated that the maximum number of persons accommodated by the proposed building would be 2,811 students and 188 faculty and staff, for a total of 2,999 persons. Of the 2,811 students, 1,542 are existing under-grad and post-grad students enrolled in the Psychological Sciences and Public Health departments and about 1,269 would be new students. Of the 188 faculty and staff, 139 are existing faculty and staff in the Psychological Sciences and Public Health departments, and about 49 would be new hires. Thus, 1,681 of the 2,999 persons that would occupy the proposed HBS-ME Building are already enrolled as students or employed by the Campus as of 2020, and therefore the net new population due to this Project would be on the order of about 1,318 persons.

As of 2020, the campus enrollment was about 9,000 FTE students and there were 3,667 student beds on the campus. Although due to COVID-19, the on-campus housing was not occupied in 2020, but if the number of beds is compared to the 2020 enrollment level, at this time, the campus can house about 41 percent of the 2020 student population. As reflected in **Table 4**, if the new students associated with the HBS-ME Building Project are added to the current enrollment, the total enrollment would be about 10,269 students. With no increase in on-campus housing, about 36 percent of the students would be housed on campus (i.e., 3,667 students) and the rest would seek off-campus housing (i.e., 6,602 students). Based on the existing 2020 UC Merced enrollment and on-campus housing inventory, the 1,269 new students generated by the proposed building would not be accommodated by existing on-campus housing. Assuming conservatively that two students generated by the proposed building would share a housing unit, 635 off-campus housing units would be needed, as shown in **Table 4**. If three students share a unit, fewer (about 423) housing units would be needed. As there is no on-campus housing for faculty and staff, the 49 new faculty and staff generated by the proposed building would not be housed on campus; as such, it is assumed they would live off campus, and 49 off-campus housing units would be required. Thus, an estimated 684 total off-site housing units would be needed by the new Project-related students and faculty/staff. If the backfill of the SSM Building is also taken into account, the proposed Project could generate a demand for about 1,125 to 1,594 off-campus housing units, assuming two to three students per housing unit.

**Table 4: 2020 Enrollment and 2020 Enrollment with HBS-ME Building Student Scenarios and Housing Demands**

	Number of Students (FTE)	Students in On-Campus Housing	Students in Off-Campus Housing	Estimated Number of Dwelling Units Needed Off Campus	Additional Housing Demand Compared to 2020 Baseline
2020 Enrollment	9,000	3,667	5,333	2,666	--
2020 Enrollment with HBS-ME Students	10,269	3,667	6,602	3,301	635

Source: University of California, Merced. 2021.

As stated above, the 2020 LRDP SEIR determined that enough housing is available and planned in the City of Merced and in communities within the 40-mile radius of the campus to house the new students and employees who would live off campus (see Table 4.6-9 in the SEIR for the estimated LRDP population housing demand and available supply). One of the off-site housing projects included in the City of Merced's list of projected housing—Merced Station, located near the intersection of East Yosemite Avenue and Lake Road—will add an estimated 270 student housing units with 885 beds in fall 2021. In addition, a mixed-use development project with commercial and residential uses, including student housing, is proposed on approximately 630 acres of land immediately south of the campus, owned by the Virginia Smith Trust (VST). The project is currently in the planning stages and will further increase housing inventory within a 40-mile radius of the UC Merced campus beyond what was projected in the 2020 LRDP SEIR.

It is acknowledged that the proposed Project would facilitate campus enrollment growth without a concurrent increase in on-campus student housing. However, the increase in campus enrollment due to the expanded and new programs in the HBS-ME Building would not occur immediately upon the completion of construction but would occur over a period of time following building completion. Similarly, the backfilling of vacated space in the SSM Building would occur incrementally over time. Further, the enrollment growth associated with the proposed Project is an element of the annual enrollment increase that is projected for UC Merced under the 2020 LRDP, and the HBS-ME Building occupancy would occur gradually within the 2020 LRDP planning horizon (i.e., by 2030). Thus, the students and employees associated with the proposed Project are a part of the population growth projected under the 2020 LRDP and are accounted for in the analysis of population and housing impacts of campus growth by 2030 as presented in the 2020 LRDP SEIR.

In summary, as enough housing is available and planned in the City of Merced and in communities within the 40-mile radius study area to house additional students, employees, and dependents that would relocate into the study area, the impact on population growth and housing would be **less than significant**. Further additional analysis in the Project EIR is not required.

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

The proposed Project would be developed on a portion of the UC Merced campus that is currently vacant. No residential units or student housing is located on the proposed Project site. As such, implementation of the proposed Project would not displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere. **No impact** would occur, and no additional analysis is required in the Project EIR.

#### **5.16.2 Cumulative Impacts**

The 2020 LRDP SEIR analyzed cumulative effects on population and housing through the year 2035 even though the 2020 LRDP's horizon year is 2030. As described above, the staff/faculty/student population generated by the proposed Project is included in the population projections associated with the 2020 LRDP. The 2020 LRDP SEIR concluded that enough housing would be available in Merced and communities within a 40-mile radius of the campus through the year 2035. Therefore, the cumulative impacts of the proposed Project are adequately analyzed and accounted for in the 2020 LRDP SEIR; as such, cumulative impacts associated with the proposed Project would be **less than significant**. Further evaluation of cumulative population and housing impacts in the Project EIR is not required.

#### **5.16.3 2020 LRDP SEIR Mitigation Measures Applicable to the Proposed Project**

The 2020 LRDP SEIR did not require mitigation measures under this resource topic as no potentially significant impacts associated with population and housing were identified.

#### **5.16.4 Project-Specific Mitigation Measures Not Included in the 2020 LRDP SEIR**

As the Project would not result in any new or more severe impacts to population and housing than the impacts that were previously analyzed and disclosed in the 2020 LRDP SEIR, no Project-specific mitigation measures are required.

## 5.17 PUBLIC SERVICES

	Impacts to be Analyzed in the EIR	No Additional Analysis in the EIR Required
Would the project:		
a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:		
i. Fire protection?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii. Police protection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii. Schools?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv. Parks?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
v. Other public facilities?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 5.17.1 Impact Analysis

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

As described in the 2020 LRDP SEIR, the UC Merced campus is jointly served by the County of Merced Fire Department and Cal Fire. The County Fire Department responds to incidents at UC Merced with its engine company out of Fire Station 85, supplemented by a ladder truck from the Atwater fire station (as needed) and paid call firefighters (PCFs). UC Merced and the County have reached an agreement to increase staffing at Fire Station 85 to a minimum of two paid fire fighters 24 hours per day, seven days a week, thereby increasing the station's capacity to serve the campus in the near term.

Development under the 2020 LRDP would accommodate about 15,000 students by 2030. As described in Section 2.3.1 of the 2020 LRDP SEIR, based on an enrollment of 9,700 students in 2020, the campus population is projected to increase by about 5,300 students by 2030, and employment at the campus is projected to increase by 1,131 faculty and staff. The SEIR analysis found that because the growth on the UC Merced campus would occur incrementally over the planning horizon of the 2020 LRDP, there was not an immediate need for an increased fire service or additional resources from the fire department. However, if the demand for staff and equipment to serve new campus development resulted in the need for new or modified fire station facilities to house the additional staff and/or equipment, the environmental impacts from fire station construction would need to be evaluated and disclosed. The SEIR noted that the environmental impacts from an expansion of the existing County Fire Station No. 85 are expected be less than significant or less than significant with mitigation. It also noted that if the existing County fire station is expanded or a new



one is constructed by the County and significant environmental impacts requiring mitigation are identified by the County, the University will pay for its fair share of the cost of mitigation.

The proposed HBS-ME Building would increase the amount of building space on the campus compared to existing conditions, but the increase would be a small portion of the projected increase in building space under the 2020 LRDP (182,698 square feet of 1,830,000 square feet under the 2020 LRDP [about 10 percent of the additional building space projected to be developed under the 2020 LRDP]). Implementation of the proposed Project would also generate an increase in the number of students (an additional 2,811 students) and staff/faculty (an additional 188 staff/faculty) on the UC Merced campus.

The proposed HBS-ME Building would be developed to existing California Fire Building Code standards as well as UC Merced building code fire standards. The new building would be designed with a sprinkler system, fire extinguishers in various locations, and a fire alarm system to alert occupants in the event of a fire. The proposed building would be a maximum of four stories in height, similar to adjacent UC Merced campus buildings, allowing fire apparatus to adequately reach the top of the building in the event of a fire. Research that would be conducted in the proposed HBS-ME Building would involve a variety of research materials, including non-hazardous organic and inorganic materials, hazardous chemicals, and biological materials. The proposed HBS-ME Building would be built to safety standards that exceed the minimum requirements for the handling and storage of hazardous materials, including biohazardous materials. The storage, handling, use, and disposal of all hazardous materials, hazardous wastes and other scientific materials within the proposed HBS-ME Building would be subject to UC Merced EH&S program requirements. Additionally, UC Merced would coordinate with the Merced County Fire Department in providing fire department staff with locations of hazardous materials, the types of hazardous materials, and building evacuation plans in the event of a fire or release of hazardous materials that may occur within the proposed HBS-ME Building.

Implementation of the proposed Project could generate an incremental increase in the need for additional fire personnel and/or fire department equipment to provide adequate service to the proposed HBS-ME Building and UC Merced campus. Although the hiring of additional fire fighters and/or purchase of additional equipment to serve the proposed Project would not result in environmental impacts, environmental impacts could result if any modifications to the existing fire station or a new fire station are needed to accommodate the additional personnel and/or equipment. The proposed Project's potential to trigger the need for a new or modified fire station will be evaluated in the Project EIR. Should the Project trigger the need for a new or modified fire station, the EIR will evaluate whether the construction and operation of a new or modified fire station would result in significant environmental impacts.

## *ii. Police protection?*

The UC Merced campus, including the Project site, is served by the UC Merced Police Department. To maintain the right staffing level, about 30 sworn officers would be required at full campus development under the 2020 LRDP. The 2020 LRDP land use diagram includes adequate land for the expansion of the campus public safety (police) building as needed. The environmental consequences of developing campus facilities, including additional police facilities, on land designated CMU in the

2020 LRDP were evaluated in the 2020 LRDP SEIR and were mitigated to a less-than-significant level by the mitigation measures included in the 2020 LRDP SEIR. The 2020 LRDP SEIR determined that environmental impacts associated with future campus police station expansion would be reduced to less-than-significant levels.

The proposed HBS-ME Building Project would increase the amount of building space on the campus compared to existing conditions, but the increase would be a small portion of the projected increase in building space under the 2020 LRDP (182,698 square feet of 1.83 million square feet under the 2020 LRDP [about 10 percent of the additional building space developed under the 2020 LRDP]). Implementation of the proposed Project would also generate an increase of students (an additional 2,811 students) and staff/faculty (an additional 188 staff/faculty) on the UC Merced campus. As described above in **Section 5.17.1.a (i)**, the size and nature of the proposed Project would not cause the campus population to increase over what was analyzed in the 2020 LRDP SEIR. In addition, the proposed HBS-ME Building would include exterior lighting and additional security features that would ensure that safety in the area is maintained and that the need for UC Merced Police Department services would not be substantially increased due to a substantial increase in calls for service.

The existing campus public safety building is currently at capacity, and a new or expanded building is in the early planning stages. Based on input from the UC Merced Chief of Police, the development of the proposed HBS-ME Building would require the hiring of additional policing staff.<sup>28</sup> UC Merced anticipates that the new or expanded public safety building would accommodate the additional police staff needed for the proposed Project. In the event that the expanded public safety building is not operational prior to the completion of the proposed Project, any additional police staff would be accommodated in other existing spaces on campus. Therefore, while additional police staff will be required, the Project itself would not generate the need for an expansion of the campus public safety building that would result in significant environmental impacts.

In summary, for reasons discussed above, implementation of the proposed Project would not increase the need for police services such that expanded facilities or new facilities would be required, the development of which could result in an environmental impact. As such, impacts would be **less than significant** and no additional analysis is required in the Project EIR.

### *iii. Schools?*

As described in the 2020 LRDP SEIR, the campus, as well as the Project site, is located within the boundaries of the Merced City School District (MCSD), the Weaver Union School District (WUSD), and the Merced Union High School District (MUSHD). There are 14 elementary schools and 4 middle schools in the MCSD. Development of the UC Merced campus, and the proposed Project, under the 2020 LRDP would generate a demand for primary and secondary education facilities. The 2020 LRDP SEIR concluded that development of the campus under the 2020 LRDP would generate a total of 900 K-12 students. The approximately 900 K-12 students generated by development under the 2020

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<sup>28</sup> Her, Chou, 2021. University of California, Merced Executive Director of Public Safety and Chief of Police. Personal Communication (email) with UC Merced Office of Planning, Design and Construction Management, March 17.

LRDP would be dispersed throughout the City of Merced as well as in other Merced County communities and in Mariposa and Stanislaus Counties. Using the same methodology of student generation that was presented in the 2020 LRDP SEIR, the proposed Project is anticipated to generate approximately 333 K-12 students,<sup>29</sup> all of which have been accounted for in the K-12 students projected to be generated under the 2020 LRDP. The K-12 students generated by the proposed Project represent 37 percent of the K-12 students estimated to be generated under the 2020 LRDP through 2030. As enrollment of the UC Merced campus grows and employees are hired within the parameters of the 2020 LRDP, homes will concurrently be developed throughout the surrounding area. Pursuant to SB 50, developers will be required to pay school impact fees as single-family homes or multi-family units are constructed. School impact fees are considered full and complete mitigation for school impacts. Students, faculty and staff associated with the proposed Project that are homeowners would also pay property taxes, a portion of which would go towards the funding of local K-12 public schools. Based on the above, the Project's impacts related to schools would be **less than significant**. No additional analysis is required in the Project EIR.

#### *iv. Parks?*

Lake Yosemite Regional Park is the closest facility to the UC Merced campus, including the proposed Project site. The Merced Irrigation District owns the 486-acre lake and the surrounding shoreline, and the County operates the park for recreational uses under a 50-year lease (1976 to 2026). The City of Merced Parks and Community Services Department maintains city parks and recreational facilities. Nearby community and neighborhood parks include Elmer Murchie Park, Fahrens Park, Bob Carpenter Neighborhood Park, Merino Park, Ranhilly Park, and Burbank Park.

As described in the 2020 LRDP SEIR, development of the campus under the 2020 LRDP would result in a residential population on the campus of about 7,200 students by 2030. As described above in **Section 5.17.1.a (i)**, the population increase associated with the proposed Project is accounted for as part of the anticipated campus growth between 2020 and 2030; thus, the on-campus residential population associated with the proposed Project is accounted for in the 7,200 students analyzed in the 2020 LRDP SEIR. As described in the 2020 LRDP SEIR, recreational facilities and open space that would be developed on the campus under the 2020 LRDP would adequately serve the needs of the on-campus residential population (including those of the proposed Project), as well as the daytime population of the UC Merced campus. Consequently, the population increase associated with the proposed Project would not result in demand for the construction of off-site recreational facilities. Implementation of the proposed Project would not trigger construction of new parks or require expansion of existing parks in areas outside of the UC Merced campus.

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<sup>29</sup> For the purposes of this analysis, it was conservatively determined that all new faculty/staff under the proposed Project would relocate from outside the area; as such, approximately 188 employees would relocate from outside the area. It is assumed that 10 percent of UC Merced students generated by the proposed Project (281 UC Merced students with families) and all faculty/staff relocating from outside the area would also be accompanied by dependents. As such, the proposed Project would generate 233 K-8 students  $([188 \times 0.496] + [281 \times 0.496])$  and 100 9-12 students  $([188 \times 0.213] + [281 \times 0.213])$ , for a total generation of 333 K-12 students.

Due to the proximity of Lake Yosemite Regional Park to the campus, as well as proposed Project site, and the range of unique water-related recreational amenities offered at the regional park that would not be available on campus, it is anticipated that new on-campus student residents as well as faculty and staff would use the regional park. As the proposed Project is part of the growth anticipated under the 2020 LRDP, it is assumed the students/staff/faculty generated by the Project would use the amenities at Lake Yosemite Regional Park. Because the Lake Yosemite Regional Park is currently at capacity during summer months, the 2020 LRDP SEIR conservatively assumed that the use of the park by the students could contribute to the acceleration of physical deterioration of the park facilities and contribute to the need for new park facilities. While the 2020 LRDP SEIR concluded that most of the increase in park facility use associated with the campus (i.e., between fall and late spring when school is in session) would not coincide with the current peak park use which occurs during summer, it nonetheless determined that the deterioration of existing park facilities could be accelerated and this was considered a potentially significant impact associated with implementation of development, including the proposed Project, under the 2020 LRDP.

The 2020 LRDP SEIR identified **2020 LRDP Mitigation Measures PUB-6a** through **PUB-6c** to reduce the impact on Lake Yosemite Regional Park from campus development, including the proposed Project, to a **less-than-significant** level. No additional analysis is required in the Project EIR.

#### *v. Other public facilities?*

UC Merced provides extensive library resources through its Leo & Dottie Kolligian Library, located on the campus at 5200 North Lake Road. The increased population associated with the proposed Project under the 2020 LRDP would result in increased demand for public library services compared to existing conditions. However, the library system of the campus would continue to meet the needs of a modern research and teaching institution, and thus provide a large array of library services, would continue to be available to students, staff, and faculty of the campus, as well as the general public on a limited basis. Therefore, consistent with the analysis in the 2020 LRDP SEIR, the impact on the City library system associated with implementation of the proposed Project would be **less than significant**. No additional analysis is required in the Project EIR.

### **5.17.2 Cumulative Impacts**

The 2020 LRDP SEIR analyzed cumulative impacts to public services and determined that the 2020 LRDP, in conjunction with other past, present, and reasonably foreseeable future developments in the Project area, would generate increased demand for public services, the provision of which would not result in significant cumulative impacts related to law enforcement services, fire protection services, elementary and secondary school facilities, and library services. As discussed above, the proposed Project is within the area and scope of the previous analysis, and the Project would not result in new or more severe impacts on public services. Therefore, the cumulative impacts of the Project are also fully analyzed in the 2020 LRDP SEIR. There are no changes in circumstances since the 2020 analysis that would change the conclusions of the prior cumulative analysis. Further evaluation of these public services impacts in the Project EIR is not required.

The 2020 LRDP SEIR concluded that implementation of the 2020 LRDP would not result in a cumulative impact related to neighborhood and community parks, but would result in a cumulative

impact associated with the deterioration of the Lake Yosemite Regional Park facilities from increased use. However, the contribution of the campus development under the LRDP to the deterioration of the Lake Yosemite Regional Park would not be cumulatively considerable due to the implementation of adequate mitigation (see **2020 LRDP Mitigation Measures PUB-6a** through **PUB-6c** below). There have been no changes in circumstances or new information since the certification of the 2020 LRDP SEIR that would alter the conclusions of the previous analysis. The proposed Project is within the area and scope of the previous analysis and would also implement these mitigation measures to avoid significant impacts on Lake Yosemite Regional Park. Thus, the cumulative impacts related to park facilities associated with the proposed Project are adequately addressed in the 2020 LRDP SEIR. Further analysis in the Project EIR of cumulative impacts on neighborhood and community parks is not required.

### 5.17.3 2020 LRDP SEIR Mitigation Measures Applicable to the Proposed Project

The following mitigation measures that were adopted at the time of the approval of the 2009 LRDP and/or the 2020 LRDP would apply to the proposed Project:

**2020 LRDP MM PUB-6a:** UC Merced 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.

**2020 LRDP MM PUB-6b:** UC Merced will pay its fair share of the cost of necessary improvements to the regional park. UC Merced'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.

**2020 LRDP MM PUB-6c:** 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 LRDP Mitigation Measures PUB-6a and PUB-6b above, will implement mitigation measures to avoid and minimize indirect effects on biological resources.

### 5.17.4 Project-Specific Mitigation Measures Not Included in the 2020 LRDP SEIR

As the Project would not result in any new or more severe impacts to public services resources than the impacts that were previously analyzed and disclosed in the 2020 LRDP SEIR, no Project-specific mitigation measures are required.

## 5.18 RECREATION

	Impacts to be Analyzed in the EIR	No Additional Analysis in the EIR Required
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 5.18.1 Impact Analysis

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

Impacts on recreation facilities located at Lake Yosemite Regional Park from the development of the proposed Project under the 2020 LRDP was evaluated in the 2020 LRDP SEIR and **Section 5.17.1.a (iv)** of this Initial Study. The 2020 LRDP SEIR concluded that the population growth of the campus and the proposed Project through 2030 could contribute to the degradation of facilities at Lake Yosemite Regional Park. As such, **2020 LRDP Mitigation Measures PUB-6a** through **PUB-6b** would be applicable to the proposed Project thus reducing impacts to the Lake Yosemite Regional Park. Additionally, recreational facilities and open space that would be developed on the campus under the 2020 LRDP would adequately serve the needs of the residential population (including those of the proposed Project), as well as the daytime population of the UC Merced campus. Consequently, the population increase associated with the proposed Project would not result in demand for the construction of off-site recreational facilities. Implementation of the proposed Project would not trigger construction of new parks or require expansion of existing parks in areas outside of the UC Merced campus. Impacts would be **less than significant**, and no additional analysis is required in the Project EIR.

- b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?*

The land use diagram in the 2020 LRDP assigns nine acres for Active Open Space (athletic facilities and fields) and 289 acres for Passive Open Space (large landscaped spaces). Of the 1,026 acres on the campus, approximately 29 percent are planned as active and passive open space. Many of these areas on the campus, including trails and bicycle paths, would also be available to the general population of the surrounding area. The proposed Project would provide outdoor gathering spaces protected from wind, oriented towards the sun, and shaded for users. The proposed Project would also incorporate pedestrian and bicycle connectivity through the development of paths that would connect to the rest of the UC Merced campus. The 2020 LRDP SEIR analyzed and disclosed the physical impacts on the environment from the development of the 2020 LRDP, including the recreational facilities that may be developed on the campus under the plan. The proposed Project would not include recreational facilities or require the construction or expansion of recreational

facilities that may have an impact on the environment. Impacts would be **less than significant**, and no additional analysis is required in the Project EIR.

### 5.18.2 Cumulative Impacts

The 2020 LRDP SEIR found that past, present, and reasonably foreseeable development in eastern Merced County, including the UC Merced campus under the 2020 LRDP, would result in a cumulative impact associated with the deterioration of facilities at Lake Yosemite Regional Park. However, the contribution of the campus development under the 2020 LRDP to the degradation of Lake Yosemite Regional Park would not be cumulatively considerable due to the implementation of adequate mitigation, which would be applicable to all campus development (see **2020 LRDP Mitigation Measures PUB-6a** through **PUB-6c** below). There have been no changes in circumstances or new information since the certification of the 2020 LRDP SEIR that would alter the conclusions of the previous analysis. The proposed Project is within the area and scope of the previous analysis and would also implement these mitigation measures to avoid significant impacts on Lake Yosemite Regional Park. The cumulative impacts associated with the proposed Project are adequately addressed in the 2020 LRDP SEIR. Further analysis in the Project EIR is not required. No additional analysis of cumulative recreation impacts is required in the Project EIR.

### 5.18.3 Project-Specific Mitigation Measures Not Included in the 2020 LRDP SEIR

Section 5.17.3 of this Initial Study discloses that **2020 LRDP Mitigation Measures PUB-6a** through **PUB-6c** would be applicable to the proposed Project.

### 5.18.4 Project Specific Mitigation Measures Not included in the 2020 LRDP SEIR

As the Project would not result in any new or more severe impacts to recreation resources than the impacts that were previously analyzed and disclosed in the 2020 LRDP SEIR, no Project-specific mitigation measures are required.



## 5.19 TRANSPORTATION

	Impacts to be Analyzed in the EIR	No Additional Analysis in the EIR Required
Would the project:		
a. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Conflict or be inconsistent with CEQA Guidelines §15064.3, subdivision (b)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Result in inadequate emergency access?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 5.19.1 Impact Analysis

- a. *Would the project conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?*
- b. *Would the project conflict or be inconsistent with CEQA Guidelines §15064.3, subdivision (b)?*

The 2020 LRDP SEIR analyzed potential impacts of traffic generated by campus growth on roadway facilities based on an analysis of level of service (LOS) impacts at 19 intersections under Year 2030 No 2020 LRDP Conditions and Year 2030 with 2020 LRDP Conditions. The 2020 LRDP SEIR concluded that nine intersections would be significantly affected by the traffic added under the 2020 LRDP, and **2020 LRDP Mitigation Measure TRANS-1** was adopted to reduce impacts at these intersections to a less-than-significant level. However, since the certification of the 2020 LRDP SEIR in March 2020, CEQA documents (as of July 1, 2020) must evaluate transportation impacts based on vehicle miles traveled (VMT), consistent with Senate Bill 743. As specified by SB 743 and the associated updates to the CEQA Guidelines, automobile delay, as measured by “level of service” and other similar metrics, generally no longer constitutes a significant environmental effect under CEQA (Public Resources Code, Section 21099, subd. (b)(3)). Therefore, the EIR will include an updated supplemental program-level transportation impact analysis of campus growth through 2030 under the 2020 LRDP based on a VMT metric consistent with CEQA Guidelines Section 15064.3, subdivision (b). The program-level VMT analysis will account for the transportation impacts of the proposed Project.

With respect to impacts on transit service, similar to the 2020 LRDP, the proposed Project does not include any changes to transit service or infrastructure provided by non-University operators. UC Merced will continue to make improvements to CatTracks to serve the enrolled students, faculty and staff (including those of the proposed Project) and will continue to work with transit providers to coordinate service with the campus-provided service. Consistent with the analysis in the 2020 LRDP SEIR, the proposed Project’s impact on transit facilities would be **less than significant**.

With respect to pedestrian and bicycle facilities, the 2020 LRDP and the proposed Project do not include any infrastructure changes outside the campus and, thus, would not disrupt existing facilities, interfere with existing or planned pedestrian and bicycle facilities, nor conflict with adopted plans. The proposed Project would include connectivity to the existing pedestrian and

bicycle facilities of the UC Merced campus. Consistent with the analysis in the 2020 LRDP SEIR, the proposed Project's impact on pedestrian and bicycle facilities would be **less than significant**.

Overall, the proposed Project would not conflict with a program, plan, ordinance, or policy related to transit or bicycle and pedestrian facilities. Therefore, **no impact** would occur with respect to these topics and no additional analysis is required in the Project EIR. As described above, the potential for the Project to conflict with a program, plan, ordinance, or policy related to roadway facilities or conflict with or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b) will be evaluated in the Project EIR.

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

The proposed Project would include development of the proposed HBS-ME Building and improvements to the existing storm water detention basins within Cottonwood Meadow. Implementation of the proposed Project would not include changes to off-campus roadways; as such, the proposed Project would not increase hazards due to a geometric design feature of roadways or intersections. The proposed HBS-ME Building would be developed on the campus in an area designated as CMU and therefore would be consistent with other types of structures and uses that exist in the same area of the campus or that would be developed in the future under the 2020 LRDP. Bellevue Road and Cottonwood Loop Road would provide access to the proposed Project once it is completed and operational. Overall, the proposed would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). **No impact** would occur, and no additional analysis is required in the Project EIR.

*d. Would the project result in inadequate emergency access?*

As described in the 2020 LRDP SEIR, all transportation facilities, including connections to off-campus facilities and the proposed Project site, would be constructed according to State of California design standards for roadway and intersection design and operations. Bellevue Road and Cottonwood Loop Road would provide access to the proposed Project once it is completed and operational. Both Bellevue Road and Cottonwood Meadow Loop Road have been designed to accommodate emergency vehicles travel; as such, adequate emergency access to the Project site would be provided. For these reasons, implementation of the proposed Project would not result in inadequate emergency access. Impacts would be **less than significant**, and no additional analysis is required in the Project EIR.

### 5.19.2 Cumulative Impacts

As the proposed Project would not include improvements to off-campus transit, pedestrian or bicycle facilities, or contribute to a cumulative increase in the use of these facilities such that they would exceed service capacity or conflict with applicable service policies, the proposed Project would not cumulatively contribute to impacts to such facilities. Further evaluation of cumulative impacts to these facilities in the Project EIR is not required.

As the program-level VMT analysis in the EIR will account for campus growth through 2030, including the proposed HBS-ME Building, any cumulative impacts associated with the proposed Project will be addressed as part of the program-level analysis. Thus, the potential for cumulative VMT impacts from the proposed Project under the 2020 LRDP will be addressed in the Project EIR.

#### **5.19.3 2020 LRDP SEIR Mitigation Measures Applicable to the Proposed Project**

Transportation-related mitigation measures from the 2020 LRDP SEIR are no longer applicable to new development on the campus, including the proposed Project. This is because those mitigation measures were adopted to address level of service impacts of traffic associated with campus growth. As stated above, CEQA now requires that consistent with SB 743, transportation impacts be evaluated based on VMT. The Project EIR will include an updated supplemental program-level VMT analysis of campus growth through 2030 under the 2020 LRDP, and if a significant transportation impact is identified, mitigation measures will be set forth in the Project EIR.

#### **5.19.4 Project-Specific Mitigation Measures Not Included in the 2020 LRDP SEIR**

A VMT analysis will be conducted in the Project EIR and mitigation measures may be required to reduce identified impacts. Such mitigation, if required, will be identified in the Project EIR.

## 5.20 TRIBAL CULTURAL RESOURCES

	Impacts to be Analyzed in the EIR	No Additional Analysis in the EIR Required
Would the project:		
a. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:		
i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)? Or	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### 5.20.1 Impact Analysis

- a. *Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:*
- i. *Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)? Or*
  - ii. *A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.*

Assembly Bill (AB) 52, which came into effect on July 1, 2015, requires that lead agencies consider the effects of projects on tribal cultural resources and conduct notification and consultation with federally and non-federally recognized Native American tribes early in the environmental review process. The geographic area of the Project site (and UC Merced campus) is not known to contain tribal cultural resources. Nevertheless, UC Merced will offer local tribes an opportunity to consult with the campus regarding this project pursuant to AB 52. Consultation letters were sent on April 2, 2021 to Native American tribes with traditional lands or cultural places located within the region of the campus to determine if they wish to consult regarding the proposed Project. The results of this consultation will be included in the Project EIR.

### 5.20.2 Cumulative Impacts

Potential cumulative impacts to tribal cultural resources will be addressed in the Project EIR.

### **5.20.3 2020 LRDP SEIR Mitigation Measures Applicable to the Proposed Project**

The applicability of the **2020 LRDP Mitigation Measures CUL-2** and **CUL-3** to the proposed Project will be addressed in the Project EIR.

### **5.20.4 Project-Specific Mitigation Measures Not Included in the 2020 LRDP SEIR**

If Project level mitigation measures are required, those will be identified in the Project EIR.

## 5.21 UTILITIES AND SERVICE SYSTEMS

	Impacts to be Analyzed in the EIR	No Additional Analysis in the EIR Required
Would the project:		
a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 5.21.1 Impact Analysis

- a. *Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?*

The proposed HBS-ME Building would connect to existing utilities and infrastructure that currently serve the UC Merced campus. Discussions pertaining to water and wastewater are described below in **Sections 5.21.1.b** and **c**, respectively.

Storm water generated by the proposed Project would be conveyed into the storm water basins within Cottonwood Meadow. Runoff that accumulates in these basins is detained and then discharged into Cottonwood Creek. If excess water accumulates, it is discharged into storm water basins south of the Bellevue Road parking lot via a storm drain. Implementation of the proposed Project may increase storm water flows that would cause the system's capacity to be exceeded; as such, the proposed Project would include modifications to the storm water detention basins located within Cottonwood Meadow. These improvements have the potential to result in significant environmental effects; as such, this topic will be further discussed/analyzed in the Project EIR.

The 2020 LRDP SEIR discussed the use of electricity and natural gas and the need to update infrastructure to adequately serve the anticipated population of UC Merced up to 2030. Campus operation under the 2020 LRDP is anticipated to result in a net new demand of approximately 211 therms of natural gas and a net new electricity demand of 7.8 megawatts annually. All UC projects on the campus (including the proposed Project) are required to achieve a Silver rating under the United States Green Building Council's (USGBC) LEED Building Design and Construction (BD+C) v4.0 Green Building Rating System (the LEED Rating System). The UC Merced campus also has a 1.0 MW ground-mounted solar array and has installed roof-top solar panels on some of the residence halls

on the campus to provide 4.2 MW of power. In compliance with UC Sustainable Practice Policy, 100 percent of the power that will be needed by the campus at buildout under the 2020 LRDP will be obtained from a number of renewable and alternative technologies, including wind turbines, fuel cells, and photovoltaic systems. The proposed Project would account for an additional approximately 182,698 gsf of building space on the campus, which is well within the 1.83 million gsf increase evaluated in the 2020 LRDP SEIR. The anticipated population increase associated with the proposed HBS-ME Building Project (i.e., 2,999 students, faculty, and staff) is also within the projected 2020 to 2030 campus population increase that was analyzed in the 2020 LRDP SEIR (i.e., 6,431 students, faculty, and staff). As such, implementation of the proposed Project would not require additional electrical infrastructure beyond what is needed for buildout of the UC Merced campus under the 2020 LRDP. It should be noted that the proposed Project would not require natural gas aside from potential limited uses in research laboratories; as such, implementation of the proposed Project would not require additional natural gas conveyance infrastructure beyond what is needed for buildout of the UC Merced campus under the 2020 LRDP. Impacts would be **less than significant**. No additional analysis of this topic is required in the Project EIR.

The proposed Project would connect to the existing telecommunication utilities on the UC Merced campus and would not require additional infrastructure to be adequately supported. Impacts would be **less than significant**. No additional analysis of this topic is required in the Project EIR.

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

As discussed in the 2020 LRDP SEIR, the City of Merced provides potable water to the campus. The City's water supply is drawn from 20 active production wells with a combined capacity of 54,100 gallons per minute (gpm). All of the wells pump directly into the distribution system and have chlorination facilities for disinfection. The City provides potable water to the campus and the Project site 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. The City also produces potable water used to serve the campus from Well Number 17, which is located on the campus. Well Number 17 is a City-owned facility located on Campus land deeded to the City. Approximately 90 percent of the water from this well is supplied to the campus, with the remaining flow contributing to the City's distribution system. This well is capable of pumping 2,500 gpm. An on-campus distribution system delivers potable water to each building within the campus, as would be the case for the proposed HBS-ME Building. Irrigation water for the campus is also obtained from the City of Merced supply. In addition, UC Merced also owns a pump station and a large aboveground 250,000-gallon water storage tank near Well 17 that provides operational and emergency storage for the campus.

The campus receives potable water from the City of Merced pursuant to an extraterritorial urban services agreement. The agreement states that the City will serve a campus population of up to 10,000 FTE students. As reflected in the 2020 LRDP SEIR, the agreement would need to be updated to serve future campus growth under the 2020 LRDP. Implementation of the proposed Project would generate 2,811 students that would be added to the existing (as of 2020) 9,000-student population of the UC Merced campus; as such, the proposed Project would result in the campus population exceeding 10,000 FTE students, and the extraterritorial urban services agreement



between UC Merced and the City of Merced would need to be updated as a result of the proposed Project.

The 2020 LRDP SEIR determined that by 2030, the water demand for the UC Merced campus would be 612 AFY. As described in **Section 5.12** of this Initial Study, the City of Merced, in its 2015 UWMP, estimated and included a demand of 1,406 AFY of water for the campus in 2030. Thus, the total demand of the UC Merced campus under the 2020 LRDP is well below the 1,406 AFY of water per year accounted for in the approved 2015 UWMP. In addition, the 2015 UWMP concluded that the City of Merced has an adequate groundwater supply to meet water demands in its service area through 2035, including the UC Merced water demand under the 2020 LRDP, during normal, single-dry, and multi-dry years. As the proposed Project's additional campus population growth and building space are within the space and population increases projected for the campus under the 2020 LRDP, the proposed Project has been accounted for in the 2020 LRDP water demand. Therefore, there would be sufficient water supplies available to adequately serve the Project during normal, dry and multiple dry periods. Furthermore, potable water would be supplied via Well Number 17, which is located on the campus, and the existing on-campus distribution system would be adequate to accommodate the proposed Project. As described above, UC Merced would negotiate an updated extraterritorial urban services agreement with the City of Merced since the proposed Project would result in the UC Merced campus exceeding a student population of 10,000 FTE students. Therefore, impacts would be **less than significant**. No additional analysis of this topic is required in the Project EIR.

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

The 2020 LRDP SEIR evaluated the amount of wastewater that would be generated due to campus buildout through 2030. The proposed Project would account for an additional approximately 182,698 gsf of building space on the campus, which is well within the 1.83 million gsf building space increase evaluated in the 2020 LRDP SEIR. The anticipated population increase associated with the proposed HBS-ME Building Project (i.e., 2,999 students, faculty, and staff) is also within the projected 2020 to 2030 campus population increase that was analyzed in the 2020 LRDP SEIR (i.e., 6,431 students, faculty, and staff). As such, the building size and population of the proposed Project has been accounted for in the 2020 LRDP and its wastewater treatment.

Similar to for potable water service, wastewater service is provided to the campus (including the Project site) by the City of Merced pursuant to an extraterritorial urban services agreement. The agreement states that the City will serve a campus population of up to 10,000 FTE students. As reflected in the 2020 LRDP SEIR, the agreement would need to be updated to serve future campus growth under the 2020 LRDP. Implementation of the proposed Project would generate 2,811 students that would be added to the existing (as of 2020) 9,000-student population of the UC Merced campus; as such, the proposed Project would result in the campus population exceeding 10,000 FTE students, and the extraterritorial urban services agreement between UC Merced and the City of Merced would need to be updated.

The 2020 LRDP SEIR determined that 0.27 million gallons per day (mgd) of wastewater would be generated (17,700 students/faculty/staff multiplied by 15.1 gallons per day per person) by 2030 under buildout of the 2020 LRDP. Of this total, the proposed Project is anticipated to generate 0.045 mgd (2,999 students/faculty/staff multiplied by 15.1 gallons per day per person) of wastewater, which would equate to 16.7 percent of the total wastewater generated by development of the campus under the 2020 LRDP.

The City's Wastewater Treatment Plant (WWTP) currently treats approximately 8.2 mgd of wastewater. As described in the 2020 LRDP SEIR, if the projected wastewater flows from the campus development (which includes the proposed Project) under the 2020 LRDP are added to the existing flows, the WWTP would be required to treat approximately 8.47 mgd. The City's WWTP currently has the capacity to treat up to 12 mgd and the City has approved the expansion of the capacity to 20 mgd. This WWTP expansion will be implemented to serve regional population growth with and without the campus. If it is assumed that there are no increases in flows to the WWTP from other sources, the existing WWTP would be adequate to serve the wastewater demands of the proposed Project. Even with increases in flows from other sources, there would be adequate capacity to serve the proposed Project and the UC Merced campus under the 2020 LRDP.

The 2020 LRDP SEIR indicated that an existing sewer line on G Street would not be adequate to handle the increased flows through 2030. For this reason, the installation of a new line or an upgrade to the existing line on G Street would be needed. The SEIR also noted that when appropriate and applicable, the improvements to the existing line on G Street would be made by the City, and pursuant to Government Code Section 54999, UC Merced will pay a limited capital facilities fee to the City to cover UC Merced's share of construction/improvement costs for the line on G Street. Implementation of the proposed Project has the potential to result in wastewater flows that could cause the capacity of the existing line on G Street to be exceeded, therefore requiring the line to be upgraded or a new line to be installed.

In summary, development of the proposed Project under the 2020 LRDP would not require construction of new or expanded wastewater treatment facilities; nor would the proposed Project result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the Project's projected demand in addition to existing commitments. However, the proposed Project has the potential to generate wastewater that would exceed the capacity of the existing line along G Street. Implementation of the proposed Project could therefore result in a **potentially significant impact** related to any necessary modifications to the G Street line serving the Project site. This topic will be further analyzed in the Project EIR.

- d. *Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?*
- e. *Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?*

The 2020 LRDP SEIR evaluated the amount of solid waste that would be generated due to campus buildout through 2030 under the 2020 LRDP. As detailed above under previous responses, the estimated campus population increase and total building space associated with the proposed Project are within the growth assumptions used in the 2020 LRDP EIR analyses. As such, the building size and population of the proposed Project has been accounted for in the 2020 LRDP and its solid waste generation/disposal.

Based on data provided by UC Merced, during the 2017 to 2018 school year, with a student population of about 8,500 students, the campus generated about 680 tons of municipal solid waste. This equates to a rate of approximately 160 pounds per student per year. Of this solid waste, approximately 43 percent was recycled or otherwise diverted and about 57 percent was sent to the Merced County Highway 59 Landfill. With the development of the campus under the 2020 LRDP, the campus will accommodate 15,000 students, and assuming 160 pounds per student per year, campus generated solid waste would increase to 1,200 tons per year by 2030. The proposed Project would accommodate 2,811 students and therefore, assuming the same solid waste generation rate, Project generated solid waste would equate to 225 tons per year. This equates to 18.8 percent of the total solid waste estimated to be generated by the UC Merced campus under the 2020 LRDP by 2030.

It is anticipated that capacity at the Highway 59 Landfill will be reached in approximately 2065. While full development of the campus and the proposed Project would generate more solid waste than existing conditions, it is anticipated that eventually very little solid waste would be disposed of in a landfill in the future. However, in the interim, based on the existing diversion rate of approximately 43 percent, the campus (which includes the proposed Project) would dispose of about 516 tons of waste per year in the landfill by 2030. This is about 0.11 percent of the permitted annual amount of waste that can be accepted at Highway 59 Landfill, which can accept up to 459,000 tons per year. As the campus (which includes the proposed Project) anticipates that 90 percent of solid waste would be diverted from the landfill in the future, the amount disposed at the landfill annually would be even lower. As there is adequate capacity available in the landfill, an expansion of the landfill would not be required. Implementation of the proposed Project would not generate solid waste in excessive of state or local standards, or in excess of the capacity of the Highway 59 Landfill. Impacts would be **less than significant**, and no additional analysis of this topic is required in the Project EIR.

### 5.21.2 Cumulative Impacts

Potential cumulative impacts to storm water drainage will be addressed in the Project EIR.

Development of the UC Merced campus under the 2020 LRDP, development of related projects, and development of the proposed Project would cumulatively contribute to demand associated with

utilities and service systems (i.e., wastewater, water, electricity, natural gas, solid waste, and telecommunications). The discussion presented above indicated that the 182,698 gsf HBS-ME Building and the anticipated population increase of the Project (i.e., 2,999 students, faculty, and staff) have been accounted for in the 2020 LRDP building development and population increase on the UC Merced campus up to 2030. Since the 2020 LRDP was determined to not result in significant cumulative impacts on utilities and service systems, it is appropriate to conclude that the proposed Project's contribution to cumulative impacts associated with utilities and service systems would also not be considerable, i.e., would be **less than significant**. Further analysis of cumulative impacts associated with these utilities and service systems in the Project EIR is not required.

#### 5.21.3 2020 LRDP SEIR Mitigation Measures Applicable to the Proposed Project

The 2020 LRDP SEIR did not require mitigation measures under this resource topic as no potentially significant impacts associated with utilities and service systems were identified.

#### 5.21.4 Project-Specific Mitigation Measures Not Included in the 2020 LRDP SEIR

Water and wastewater service analysis will be conducted in the Project EIR and impact conclusions may require mitigation measures to reduce the level of impact. Such mitigation, if required, will be identified in the Project EIR.

## 5.22 WILDFIRE

	Impacts to be Analyzed in the EIR	No Additional Analysis in the EIR Required
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:		
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

According to the California Department of Forest and Fire Protection (CalFire), the campus including the Project site is not located in a State Responsibility Area (SRA) or Local Responsibility Area (LRA) Very High Fire Hazard Severity Zone (VHFHSZ).<sup>30</sup> CalFire has a legal responsibility to provide fire protection on all SRA lands, which are defined based on land ownership, population density and land use. Local cities and jurisdictions are responsible for fire protection on all land designated as LRAs. An SRA Moderate Fire Hazard Severity Zone is designated adjacent to the northeast boundary of the campus within the CNR conservation lands.<sup>31</sup>

### 5.22.1 Impact Analysis

#### a. *Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?*

UC Merced has adopted both an Emergency Operations Plan and a Crisis Communications Plan. The Campus emergency response team is trained and equipped to respond to campus emergencies including fires. UC Merced provides sufficient resources to respond to campus emergencies, in coordination with the County of Merced, if necessary. In addition, UC Merced would prepare (or update) safety planning documents in accordance with California Health and Safety Code Section 25517.5, as well as applicable laws, regulations, and Campus policies. The Campus would implement safety training programs upon occupying a new campus building to ensure efficient implementation of any emergency response plan. In addition, each department in the new building would be responsible for preparing and implementing its own emergency action plan. These plans would contain detailed procedures for building occupants to follow in the event of various emergencies and evacuations. The new building associated with the proposed Project would be assigned a

<sup>30</sup> CalFire, Fire and Resource Assessment Program, California Fire Hazard Severity Zone Viewer, Website: <https://gis.data.ca.gov/datasets/789d5286736248f69c4515c04f58f414>. Accessed January 15, 2021.

<sup>31</sup> CalFire, Fire and Resource Assessment Program, California Fire Hazard Severity Zone Viewer, Website: <https://gis.data.ca.gov/datasets/789d5286736248f69c4515c04f58f414>. Accessed January 15, 2021.

building safety coordinator who would address emergency planning and safety training for the occupants, employees, staff, and students. According to the 2020 LRDP SEIR, development of the campus, including the proposed Project, would not impair implementation of or physically interfere with any emergency response plan or emergency evacuation plan, and this impact is considered **less than significant**. Further analysis in the Project EIR is not required.

- b. Would the project, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?*

As disclosed above, the UC Merced campus is not located in a designated SRA or LRA VHFHSZ. The proposed Project is located on the southeast side of the campus and is located on land that is relatively flat. As the UC Merced campus is located on the floor of the Central Valley, smoke from nearby fires has the potential to accumulate in the valley dependent on the wind pattern and inversion layer associated with local weather events. The proposed Project would be under and would comply with the Emergency Operations Plan and Crisis Communications Plan of UC Merced. The departments occupying the new building associated with the proposed Project would prepare and implement an individual emergency response plan that would provide evacuation procedures in the event of a fire or wildfire in the area. The new building associated with the proposed Project would be assigned a building safety coordinator who would address emergency planning and safety training for the occupants, employees, staff, and students. Finally, the proposed Project would be designed to comply with the most current California Fire Code requirements and would include such features as fire sprinkler systems. Implementation of the proposed Project would not exacerbate wildfire risks and thereby would not expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. Impacts would be **less than significant**. Further analysis in the Project EIR is not required.

- c. Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?*

The proposed Project includes the development of the proposed HBS-ME Building and improvements to the storm water detention basins within Cottonwood Meadow. The proposed Project would not include the development of new roads, fuel breaks, emergency water sources power lines or other utilities that may exacerbate fire risk. The proposed HBS-ME Building would connect to existing utilities that serve the UC Merced campus. The proposed Project would also be designed to incorporate fire protection features such as a sprinkler system, fire extinguisher stations throughout the building, fire alarm system, and fire-rated construction materials. Overall, impacts would be **less than significant**, and no further analysis is required in the Project EIR.

- d. Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?*

The Project site, similar to the majority of the UC Merced campus, is located on relatively flat land. The foothills of the Sierra Nevada Mountain range are located approximately 9.5 miles east of the

Project site (the nearest sloped topography to UC Merced and the Project site); as such, the Project site has a low susceptibility to downslope or downstream flooding or landslides as a result of runoff or post-fire slope instability. The Project site will be located adjacent to and extend into Cottonwood Meadow, a feature on the UC Merced campus that is currently used for storm water detention. The 2020 LRDP SEIR indicates that the campus and Project site is not prone to flooding pursuant to the Federal Emergency Management Administration (FEMA) Flood Insurance Rate Map (FIRM). Overall, implementation of the proposed Project would not expose people or structure to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. Impacts would be **less than significant**. Further analysis in the Project EIR is not required.

#### 5.22.2 Cumulative Impacts

The proposed Project is not located within an SRA or LRA VHFHSZ and components of the proposed Project will incorporate fire suppression design techniques as applicable. The contribution of the proposed Project to wildfire cumulative impacts would not be cumulatively considerable. As a result, cumulative impacts associated with wildlife will not be further analyzed in the Project EIR.

#### 5.22.3 2020 LRDP SEIR Mitigation Measures Applicable to the Proposed Project

The 2020 LRDP SEIR did not require mitigation measures under this resource topic as no potentially significant impacts associated with wildfire were identified.

#### 5.22.4 Project-Specific Mitigation Measures Not Included in the 2020 LRDP SEIR

As the Project would not result in any new or more severe impacts pertaining to wildfires than the impacts that were previously analyzed and disclosed in the 2020 LRDP SEIR, no Project-specific mitigation measures are required.



## 5.23 MANDATORY FINDINGS OF SIGNIFICANCE

	Impacts to be Analyzed in the EIR	No Additional Analysis in the EIR Required
a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### 5.23.1 Impact Analysis

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

The proposed Project would not substantially affect fish or wildlife habitat, populations, communities or ranges (see **Section 5.6.1**) nor would it eliminate important examples of the major period of California history or prehistory (see **Section 5.7.1**). However, Native American consultation that would occur as part of the proposed Project may require project level analysis and mitigation measures to ensure that Tribal Cultural Resources of California are not impacted by the proposed Project. The impacts related to Tribal Cultural Resources will be evaluated in the Project EIR.

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

Cumulative impacts for each environmental factor are addressed throughout this Initial Study (**Sections 5.3 through 5.22**). The majority of cumulative impacts the proposed Project would contribute to would be reduced to a less-than-significant level; however, the Project's contribution to cumulative impacts under Air Quality, Hydrology and Water Quality (drainage patterns), Public Services (fire protection), Transportation (VMT), Tribal Cultural Resources, and Utilities and Service Systems (storm water and wastewater) could be considerable and result in significant cumulative impacts. These cumulative impacts will be evaluated in the Project EIR.

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

As indicated in the discussion above, the proposed Project has the potential to result in significant impacts. The Project EIR will evaluate whether any of those impacts have the potential to result in substantial direct or indirect adverse effects on human beings.

## **6.0 LIST OF PREPARERS**

### **6.1 LEAD AGENCY**

#### **University of California, Merced**

Phillip Woods, Campus Architect and Director of Physical & Environmental Planning  
Ana Becerril, Principal Planner  
Francesca Cannizzo, Campus Biologist

#### **University of California, Office of the President**

Brian Harrington, Associate Director, Physical and Environmental Planning  
Ha Ly, Planning Specialist

#### **University of California, Office of the General Counsel**

Anagha Dandekar Clifford, Senior Counsel

### **6.2 CEQA CONSULTANTS**

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Shabnam Barati, Ph.D., Principal in Charge/Project Manager

#### **LSA**

Theresa Wallace, Principal in Charge  
Kristin Nurmela, Project Manager  
Chris Graham, Senior Environmental Planner  
Cara Carlucci, Senior Environmental Planner  
Greg Gallagher, Geographic Information System (GIS) Specialist

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## UC MERCED HBS-ME BUILDING PROJECT ENVIRONMENTAL IMPACT REPORT SCOPING MEETING SUMMARY

April 21, 2021 / 4:00 p.m. – 6:00 p.m. (virtual via Zoom)

### Presenters

#### *UC Merced*

Phillip Woods  
Ana Becerril  
Eric Perez  
Yasmeen Jewel

#### *Consultants*

Shabnam Barati, Barati Consulting  
Kristin Nurmela, LSA  
Chris Graham, LSA

### Agenda

- Welcome and Purpose of the Meeting
  - Meeting will be Recorded
  - Spanish Translator Available
- HBS-ME Building Project Overview
- CEQA Process Overview
- Draft EIR Overview
- Public Comment
- Adjourn Meeting

The Scoping Meeting presentation is available on UC Merced's website:  
<https://planning.ucmerced.edu/ceqa-environmental-documents>

### Public Comment

Corey Van Rys: no questions or comments.

Scott McBride: no questions or comments.

Paul Cook:

- 1) Have there been any tribal cultural concerns so far for any of the projects at UC Merced?
- 2) Regarding drainage and sewer, was the capacity for future buildings on campus considered as part of previous projects or studies? Another report is required?
- 3) Are there talks of a medical school on campus?
- 4) Following the environmental process, when will the building be constructed?

**Meeting was adjourned at 6:00 p.m.**



## **APPENDIX 2.0**

### **AIR QUALITY EMISSIONS DATA**

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## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****Health and Behavioral Sciences-Medical Education (HBS-ME)****Merced County, Annual****1.0 Project Characteristics****1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
University/College (4yr)	1,269.00	Student	8.00	190,000.00	0
Other Non-Asphalt Surfaces	28.50	Acre	28.50	1,241,460.00	0
Parking Lot	60.00	Space	0.50	24,000.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	49
<b>Climate Zone</b>	3			<b>Operational Year</b>	2026
<b>Utility Company</b>	Pacific Gas and Electric Company				
<b>CO2 Intensity (lb/MWhr)</b>	203.98	<b>CH4 Intensity (lb/MWhr)</b>	0.033	<b>N2O Intensity (lb/MWhr)</b>	0.004

**1.3 User Entered Comments & Non-Default Data**

Project Characteristics -

Land Use - Project site is 37 acres and includes: 8.5 acres for the building area; 13.5 acres of potential storm water management system modifications; and 18.0 acres for construction staging and potential storm water management.

Construction Phase - Project construction is anticipated to occur over a 36-month period between fall 2023 and fall 2026.

Grading - Default grading assumptions.

Vehicle Trips - Trip rates based on a total of 4,868 net new average daily trips. Trip length based on 11.2 miles for students and 22.8 miles for faculty/staff.

Construction Off-road Equipment Mitigation - Assuming compliance with SJVAPCD Regulation VIII and use of Tier 4 construction equipment as required by 2020 LRDP MM AQ-1a and AQ-1b.

Mobile Land Use Mitigation - Assuming implementation of measures consistent with 2020 LRDP MMAQ-2a.

Area Mitigation - Assuming implementation of measures consistent with 2020 LRDP MMAQ-2b.

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

[illegible]

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

tblConstructionPhase	NumDays	55.00	45.00
tblConstructionPhase	NumDays	740.00	615.00
tblConstructionPhase	NumDays	75.00	60.00
tblConstructionPhase	NumDays	55.00	45.00
tblConstructionPhase	NumDays	30.00	25.00
tblLandUse	LandUseSquareFeet	233,238.99	190,000.00
tblLandUse	LotAcreage	5.35	8.00
tblLandUse	LotAcreage	0.54	0.50
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	1,500.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.14
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	50.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblVehicleTrips	CC_TL	7.30	11.20
tblVehicleTrips	CC_TTP	88.60	94.00
tblVehicleTrips	CNW_TL	7.30	0.00
tblVehicleTrips	CNW_TTP	5.00	0.00
tblVehicleTrips	CW_TL	9.50	22.80
tblVehicleTrips	CW_TTP	6.40	6.00
tblVehicleTrips	WD_TR	1.56	3.84

**2.0 Emissions Summary**

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****2.1 Overall Construction****Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.1359	1.3817	1.0939	2.4000e-003	0.5284	0.0586	0.5870	0.2376	0.0539	0.2916	0.0000	210.9361	210.9361	0.0666	1.8000e-004	212.6550
2024	0.4970	3.3542	4.7230	0.0154	0.8456	0.0932	0.9388	0.2296	0.0878	0.3174	0.0000	1,428.3350	1,428.3350	0.0912	0.1051	1,461.9481
2025	0.4585	3.1865	4.5002	0.0150	0.8424	0.0815	0.9238	0.2287	0.0767	0.3054	0.0000	1,399.5040	1,399.5040	0.0885	0.1018	1,432.0476
2026	1.7736	1.3383	1.9769	5.9900e-003	0.3215	0.0394	0.3609	0.0872	0.0369	0.1241	0.0000	555.8630	555.8630	0.0461	0.0354	567.5727
Maximum	1.7736	3.3542	4.7230	0.0154	0.8456	0.0932	0.9388	0.2376	0.0878	0.3174	0.0000	1,428.3350	1,428.3350	0.0912	0.1051	1,461.9481

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****2.1 Overall Construction****Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0317	0.1264	1.2752	2.4000e-003	0.2414	3.8600e-003	0.2453	0.1079	3.8600e-003	0.1118	0.0000	210.9358	210.9358	0.0666	1.8000e-004	212.6547
2024	0.3471	1.8858	4.8924	0.0154	0.8456	0.0182	0.8638	0.2296	0.0175	0.2471	0.0000	1,428.3346	1,428.3346	0.0912	0.1051	1,461.9478
2025	0.3228	1.8508	4.6797	0.0150	0.8424	0.0179	0.8603	0.2287	0.0173	0.2460	0.0000	1,399.5037	1,399.5037	0.0885	0.1018	1,432.0473
2026	1.7084	0.6789	2.1019	5.9900e-003	0.3215	7.3200e-003	0.3288	0.0872	7.0700e-003	0.0942	0.0000	555.8628	555.8628	0.0461	0.0354	567.5725
Maximum	1.7084	1.8858	4.8924	0.0154	0.8456	0.0182	0.8638	0.2296	0.0175	0.2471	0.0000	1,428.3346	1,428.3346	0.0912	0.1051	1,461.9478

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	15.88	50.96	-5.33	0.00	11.31	82.64	18.23	16.57	82.09	32.67	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	9-4-2023	12-3-2023	1.1166	0.1146
2	12-4-2023	3-3-2024	1.0245	0.4329
3	3-4-2024	6-3-2024	0.9656	0.5597
4	6-4-2024	9-3-2024	0.9588	0.5529
5	9-4-2024	12-3-2024	0.9640	0.5625
6	12-4-2024	3-3-2025	0.9269	0.5537
7	3-4-2025	6-3-2025	0.9169	0.5464
8	6-4-2025	9-3-2025	0.9101	0.5397



## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

9	9-4-2025	12-3-2025	0.9156	0.5492
10	12-4-2025	3-3-2026	0.9038	0.5414
11	3-4-2026	6-3-2026	0.7334	0.3990
12	6-4-2026	9-3-2026	1.4966	1.3689
13	9-4-2026	9-30-2026	0.2067	0.2034
		Highest	1.4966	1.3689

**2.2 Overall Operational****Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9835	1.1000e-004	0.0124	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0243	0.0243	6.0000e-005	0.0000	0.0258
Energy	0.0224	0.2039	0.1713	1.2200e-003		0.0155	0.0155		0.0155	0.0155	0.0000	417.8553	417.8553	0.0360	7.9100e-003	421.1114
Mobile	2.0633	5.4851	21.6952	0.0598	5.6471	0.0624	5.7095	1.5144	0.0588	1.5732	0.0000	5,699.0496	5,699.0496	0.2355	0.3552	5,810.8007
Stationary	0.0615	0.2752	0.1569	3.0000e-004		9.0500e-003	9.0500e-003		9.0500e-003	9.0500e-003	0.0000	28.5598	28.5598	4.0000e-003	0.0000	28.6599
Waste						0.0000	0.0000		0.0000	0.0000	47.0107	0.0000	47.0107	2.7783	0.0000	116.4670
Water						0.0000	0.0000		0.0000	0.0000	0.8620	2.7365	3.5985	0.0890	2.1400e-003	6.4619
<b>Total</b>	<b>3.1307</b>	<b>5.9643</b>	<b>22.0358</b>	<b>0.0613</b>	<b>5.6471</b>	<b>0.0870</b>	<b>5.7341</b>	<b>1.5144</b>	<b>0.0834</b>	<b>1.5978</b>	<b>47.8727</b>	<b>6,148.2254</b>	<b>6,196.0981</b>	<b>3.1428</b>	<b>0.3653</b>	<b>6,383.5266</b>

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****2.2 Overall Operational****Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9273	6.0000e-005	7.2100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0137
Energy	0.0182	0.1656	0.1391	9.9000e-004		0.0126	0.0126		0.0126	0.0126	0.0000	288.3886	288.3886	0.0210	5.4300e-003	290.5289
Mobile	2.0413	5.3951	21.3387	0.0586	5.5341	0.0612	5.5953	1.4841	0.0577	1.5418	0.0000	5,588.1802	5,588.1802	0.2322	0.3490	5,698.0007
Stationary	0.0615	0.2752	0.1569	3.0000e-004		9.0500e-003	9.0500e-003		9.0500e-003	9.0500e-003	0.0000	28.5598	28.5598	4.0000e-003	0.0000	28.6599
Waste						0.0000	0.0000		0.0000	0.0000	4.7011	0.0000	4.7011	0.2778	0.0000	11.6467
Water						0.0000	0.0000		0.0000	0.0000	0.6896	2.3805	3.0701	0.0712	1.7200e-003	5.3627
<b>Total</b>	<b>3.0484</b>	<b>5.8360</b>	<b>21.6420</b>	<b>0.0599</b>	<b>5.5341</b>	<b>0.0829</b>	<b>5.6170</b>	<b>1.4841</b>	<b>0.0794</b>	<b>1.5635</b>	<b>5.3907</b>	<b>5,907.5221</b>	<b>5,912.9128</b>	<b>0.6063</b>	<b>0.3562</b>	<b>6,034.2126</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>2.63</b>	<b>2.15</b>	<b>1.79</b>	<b>2.28</b>	<b>2.00</b>	<b>4.74</b>	<b>2.04</b>	<b>2.00</b>	<b>4.86</b>	<b>2.15</b>	<b>88.74</b>	<b>3.92</b>	<b>4.57</b>	<b>80.71</b>	<b>2.49</b>	<b>5.47</b>

**3.0 Construction Detail****Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	9/4/2023	10/6/2023	5	25	
2	Grading	Grading	10/9/2023	12/29/2023	5	60	

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

3	Building Construction	Building Construction	1/1/2024	5/8/2026	5	615
4	Paving	Paving	5/11/2026	7/10/2026	5	45
5	Architectural Coating	Architectural Coating	7/13/2026	9/11/2026	5	45

**Acres of Grading (Site Preparation Phase): 37.5****Acres of Grading (Grading Phase): 180****Acres of Paving: 29****Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 285,000; Non-Residential Outdoor: 95,000; Striped Parking Area: 75,928 (Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****Trips and VMT**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	611.00	239.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	122.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

**3.2 Site Preparation - 2023****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2457	0.0000	0.2457	0.1263	0.0000	0.1263	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0332	0.3441	0.2281	4.8000e-004		0.0158	0.0158		0.0146	0.0146	0.0000	41.8134	41.8134	0.0135	0.0000	42.1515
<b>Total</b>	<b>0.0332</b>	<b>0.3441</b>	<b>0.2281</b>	<b>4.8000e-004</b>	<b>0.2457</b>	<b>0.0158</b>	<b>0.2615</b>	<b>0.1263</b>	<b>0.0146</b>	<b>0.1408</b>	<b>0.0000</b>	<b>41.8134</b>	<b>41.8134</b>	<b>0.0135</b>	<b>0.0000</b>	<b>42.1515</b>

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.2 Site Preparation - 2023****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.2000e-004	5.9000e-004	6.6400e-003	2.0000e-005	1.7900e-003	1.0000e-005	1.8100e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.5047	1.5047	5.0000e-005	5.0000e-005	1.5205
<b>Total</b>	<b>8.2000e-004</b>	<b>5.9000e-004</b>	<b>6.6400e-003</b>	<b>2.0000e-005</b>	<b>1.7900e-003</b>	<b>1.0000e-005</b>	<b>1.8100e-003</b>	<b>4.8000e-004</b>	<b>1.0000e-005</b>	<b>4.9000e-004</b>	<b>0.0000</b>	<b>1.5047</b>	<b>1.5047</b>	<b>5.0000e-005</b>	<b>5.0000e-005</b>	<b>1.5205</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1106	0.0000	0.1106	0.0568	0.0000	0.0568	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.8200e-003	0.0252	0.2609	4.8000e-004		7.8000e-004	7.8000e-004		7.8000e-004	7.8000e-004	0.0000	41.8133	41.8133	0.0135	0.0000	42.1514
<b>Total</b>	<b>5.8200e-003</b>	<b>0.0252</b>	<b>0.2609</b>	<b>4.8000e-004</b>	<b>0.1106</b>	<b>7.8000e-004</b>	<b>0.1114</b>	<b>0.0568</b>	<b>7.8000e-004</b>	<b>0.0576</b>	<b>0.0000</b>	<b>41.8133</b>	<b>41.8133</b>	<b>0.0135</b>	<b>0.0000</b>	<b>42.1514</b>

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.2 Site Preparation - 2023****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.2000e-004	5.9000e-004	6.6400e-003	2.0000e-005	1.7900e-003	1.0000e-005	1.8100e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.5047	1.5047	5.0000e-005	5.0000e-005	1.5205
<b>Total</b>	<b>8.2000e-004</b>	<b>5.9000e-004</b>	<b>6.6400e-003</b>	<b>2.0000e-005</b>	<b>1.7900e-003</b>	<b>1.0000e-005</b>	<b>1.8100e-003</b>	<b>4.8000e-004</b>	<b>1.0000e-005</b>	<b>4.9000e-004</b>	<b>0.0000</b>	<b>1.5047</b>	<b>1.5047</b>	<b>5.0000e-005</b>	<b>5.0000e-005</b>	<b>1.5205</b>

**3.3 Grading - 2023****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2761	0.0000	0.2761	0.1096	0.0000	0.1096	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0997	1.0355	0.8415	1.8600e-003		0.0427	0.0427		0.0393	0.0393	0.0000	163.6056	163.6056	0.0529	0.0000	164.9285
<b>Total</b>	<b>0.0997</b>	<b>1.0355</b>	<b>0.8415</b>	<b>1.8600e-003</b>	<b>0.2761</b>	<b>0.0427</b>	<b>0.3188</b>	<b>0.1096</b>	<b>0.0393</b>	<b>0.1489</b>	<b>0.0000</b>	<b>163.6056</b>	<b>163.6056</b>	<b>0.0529</b>	<b>0.0000</b>	<b>164.9285</b>

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.3 Grading - 2023****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2000e-003	1.5600e-003	0.0177	4.0000e-005	4.7900e-003	3.0000e-005	4.8100e-003	1.2700e-003	3.0000e-005	1.3000e-003	0.0000	4.0124	4.0124	1.4000e-004	1.3000e-004	4.0546
<b>Total</b>	<b>2.2000e-003</b>	<b>1.5600e-003</b>	<b>0.0177</b>	<b>4.0000e-005</b>	<b>4.7900e-003</b>	<b>3.0000e-005</b>	<b>4.8100e-003</b>	<b>1.2700e-003</b>	<b>3.0000e-005</b>	<b>1.3000e-003</b>	<b>0.0000</b>	<b>4.0124</b>	<b>4.0124</b>	<b>1.4000e-004</b>	<b>1.3000e-004</b>	<b>4.0546</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1243	0.0000	0.1243	0.0493	0.0000	0.0493	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0229	0.0990	0.9900	1.8600e-003		3.0500e-003	3.0500e-003		3.0500e-003	3.0500e-003	0.0000	163.6054	163.6054	0.0529	0.0000	164.9283
<b>Total</b>	<b>0.0229</b>	<b>0.0990</b>	<b>0.9900</b>	<b>1.8600e-003</b>	<b>0.1243</b>	<b>3.0500e-003</b>	<b>0.1273</b>	<b>0.0493</b>	<b>3.0500e-003</b>	<b>0.0524</b>	<b>0.0000</b>	<b>163.6054</b>	<b>163.6054</b>	<b>0.0529</b>	<b>0.0000</b>	<b>164.9283</b>



## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.3 Grading - 2023****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2000e-003	1.5600e-003	0.0177	4.0000e-005	4.7900e-003	3.0000e-005	4.8100e-003	1.2700e-003	3.0000e-005	1.3000e-003	0.0000	4.0124	4.0124	1.4000e-004	1.3000e-004	4.0546
<b>Total</b>	<b>2.2000e-003</b>	<b>1.5600e-003</b>	<b>0.0177</b>	<b>4.0000e-005</b>	<b>4.7900e-003</b>	<b>3.0000e-005</b>	<b>4.8100e-003</b>	<b>1.2700e-003</b>	<b>3.0000e-005</b>	<b>1.3000e-003</b>	<b>0.0000</b>	<b>4.0124</b>	<b>4.0124</b>	<b>1.4000e-004</b>	<b>1.3000e-004</b>	<b>4.0546</b>

**3.4 Building Construction - 2024****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7223	303.7223	0.0718	0.0000	305.5179
<b>Total</b>	<b>0.1928</b>	<b>1.7611</b>	<b>2.1179</b>	<b>3.5300e-003</b>		<b>0.0803</b>	<b>0.0803</b>		<b>0.0756</b>	<b>0.0756</b>	<b>0.0000</b>	<b>303.7223</b>	<b>303.7223</b>	<b>0.0718</b>	<b>0.0000</b>	<b>305.5179</b>

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2024****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0354	1.4109	0.4404	6.2800e-003	0.2073	9.2600e-003	0.2165	0.0599	8.8600e-003	0.0688	0.0000	601.6194	601.6194	2.1400e-003	0.0893	628.2953
Worker	0.2688	0.1822	2.1647	5.5900e-003	0.6383	3.6000e-003	0.6419	0.1697	3.3100e-003	0.1730	0.0000	522.9933	522.9933	0.0173	0.0158	528.1350
<b>Total</b>	<b>0.3042</b>	<b>1.5931</b>	<b>2.6051</b>	<b>0.0119</b>	<b>0.8456</b>	<b>0.0129</b>	<b>0.8585</b>	<b>0.2296</b>	<b>0.0122</b>	<b>0.2418</b>	<b>0.0000</b>	<b>1,124.6127</b>	<b>1,124.6127</b>	<b>0.0194</b>	<b>0.1052</b>	<b>1,156.4303</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0429	0.2928	2.2873	3.5300e-003		5.3400e-003	5.3400e-003		5.3400e-003	5.3400e-003	0.0000	303.7220	303.7220	0.0718	0.0000	305.5175
<b>Total</b>	<b>0.0429</b>	<b>0.2928</b>	<b>2.2873</b>	<b>3.5300e-003</b>		<b>5.3400e-003</b>	<b>5.3400e-003</b>		<b>5.3400e-003</b>	<b>5.3400e-003</b>	<b>0.0000</b>	<b>303.7220</b>	<b>303.7220</b>	<b>0.0718</b>	<b>0.0000</b>	<b>305.5175</b>

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2024****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0354	1.4109	0.4404	6.2800e-003	0.2073	9.2600e-003	0.2165	0.0599	8.8600e-003	0.0688	0.0000	601.6194	601.6194	2.1400e-003	0.0893	628.2953
Worker	0.2688	0.1822	2.1647	5.5900e-003	0.6383	3.6000e-003	0.6419	0.1697	3.3100e-003	0.1730	0.0000	522.9933	522.9933	0.0173	0.0158	528.1350
<b>Total</b>	<b>0.3042</b>	<b>1.5931</b>	<b>2.6051</b>	<b>0.0119</b>	<b>0.8456</b>	<b>0.0129</b>	<b>0.8585</b>	<b>0.2296</b>	<b>0.0122</b>	<b>0.2418</b>	<b>0.0000</b>	<b>1,124.6127</b>	<b>1,124.6127</b>	<b>0.0194</b>	<b>0.1052</b>	<b>1,156.4303</b>

**3.4 Building Construction - 2025****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
<b>Total</b>	<b>0.1785</b>	<b>1.6273</b>	<b>2.0991</b>	<b>3.5200e-003</b>		<b>0.0689</b>	<b>0.0689</b>		<b>0.0648</b>	<b>0.0648</b>	<b>0.0000</b>	<b>302.6549</b>	<b>302.6549</b>	<b>0.0711</b>	<b>0.0000</b>	<b>304.4335</b>

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2025****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0341	1.3998	0.4247	6.1500e-003	0.2065	9.2100e-003	0.2157	0.0597	8.8100e-003	0.0685	0.0000	588.6148	588.6148	2.0300e-003	0.0873	614.6778
Worker	0.2460	0.1594	1.9764	5.3800e-003	0.6359	3.4000e-003	0.6393	0.1691	3.1200e-003	0.1722	0.0000	508.2343	508.2343	0.0154	0.0145	512.9364
<b>Total</b>	<b>0.2801</b>	<b>1.5592</b>	<b>2.4012</b>	<b>0.0115</b>	<b>0.8424</b>	<b>0.0126</b>	<b>0.8550</b>	<b>0.2287</b>	<b>0.0119</b>	<b>0.2407</b>	<b>0.0000</b>	<b>1,096.849 1</b>	<b>1,096.849 1</b>	<b>0.0174</b>	<b>0.1018</b>	<b>1,127.614 1</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0428	0.2916	2.2786	3.5200e-003		5.3200e-003	5.3200e-003		5.3200e-003	5.3200e-003	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
<b>Total</b>	<b>0.0428</b>	<b>0.2916</b>	<b>2.2786</b>	<b>3.5200e-003</b>		<b>5.3200e-003</b>	<b>5.3200e-003</b>		<b>5.3200e-003</b>	<b>5.3200e-003</b>	<b>0.0000</b>	<b>302.6545</b>	<b>302.6545</b>	<b>0.0711</b>	<b>0.0000</b>	<b>304.4331</b>

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2025****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0341	1.3998	0.4247	6.1500e-003	0.2065	9.2100e-003	0.2157	0.0597	8.8100e-003	0.0685	0.0000	588.6148	588.6148	2.0300e-003	0.0873	614.6778
Worker	0.2460	0.1594	1.9764	5.3800e-003	0.6359	3.4000e-003	0.6393	0.1691	3.1200e-003	0.1722	0.0000	508.2343	508.2343	0.0154	0.0145	512.9364
<b>Total</b>	<b>0.2801</b>	<b>1.5592</b>	<b>2.4012</b>	<b>0.0115</b>	<b>0.8424</b>	<b>0.0126</b>	<b>0.8550</b>	<b>0.2287</b>	<b>0.0119</b>	<b>0.2407</b>	<b>0.0000</b>	<b>1,096.8491</b>	<b>1,096.8491</b>	<b>0.0174</b>	<b>0.1018</b>	<b>1,127.6141</b>

**3.4 Building Construction - 2026****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0629	0.5736	0.7399	1.2400e-003		0.0243	0.0243		0.0228	0.0228	0.0000	106.6830	106.6830	0.0251	0.0000	107.3099
<b>Total</b>	<b>0.0629</b>	<b>0.5736</b>	<b>0.7399</b>	<b>1.2400e-003</b>		<b>0.0243</b>	<b>0.0243</b>		<b>0.0228</b>	<b>0.0228</b>	<b>0.0000</b>	<b>106.6830</b>	<b>106.6830</b>	<b>0.0251</b>	<b>0.0000</b>	<b>107.3099</b>

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2026****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0117	0.4904	0.1463	2.1300e-003	0.0728	3.2300e-003	0.0760	0.0210	3.0900e-003	0.0241	0.0000	203.6706	203.6706	6.9000e-004	0.0302	212.6746
Worker	0.0802	0.0499	0.6507	1.8400e-003	0.2242	1.1600e-003	0.2253	0.0596	1.0600e-003	0.0607	0.0000	175.4761	175.4761	4.9000e-003	4.7500e-003	177.0141
<b>Total</b>	<b>0.0919</b>	<b>0.5403</b>	<b>0.7969</b>	<b>3.9700e-003</b>	<b>0.2969</b>	<b>4.3900e-003</b>	<b>0.3013</b>	<b>0.0806</b>	<b>4.1500e-003</b>	<b>0.0848</b>	<b>0.0000</b>	<b>379.1467</b>	<b>379.1467</b>	<b>5.5900e-003</b>	<b>0.0349</b>	<b>389.6888</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0151	0.1028	0.8032	1.2400e-003		1.8800e-003	1.8800e-003		1.8800e-003	1.8800e-003	0.0000	106.6828	106.6828	0.0251	0.0000	107.3098
<b>Total</b>	<b>0.0151</b>	<b>0.1028</b>	<b>0.8032</b>	<b>1.2400e-003</b>		<b>1.8800e-003</b>	<b>1.8800e-003</b>		<b>1.8800e-003</b>	<b>1.8800e-003</b>	<b>0.0000</b>	<b>106.6828</b>	<b>106.6828</b>	<b>0.0251</b>	<b>0.0000</b>	<b>107.3098</b>

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Building Construction - 2026****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0117	0.4904	0.1463	2.1300e-003	0.0728	3.2300e-003	0.0760	0.0210	3.0900e-003	0.0241	0.0000	203.6706	203.6706	6.9000e-004	0.0302	212.6746
Worker	0.0802	0.0499	0.6507	1.8400e-003	0.2242	1.1600e-003	0.2253	0.0596	1.0600e-003	0.0607	0.0000	175.4761	175.4761	4.9000e-003	4.7500e-003	177.0141
<b>Total</b>	<b>0.0919</b>	<b>0.5403</b>	<b>0.7969</b>	<b>3.9700e-003</b>	<b>0.2969</b>	<b>4.3900e-003</b>	<b>0.3013</b>	<b>0.0806</b>	<b>4.1500e-003</b>	<b>0.0848</b>	<b>0.0000</b>	<b>379.1467</b>	<b>379.1467</b>	<b>5.5900e-003</b>	<b>0.0349</b>	<b>389.6888</b>

**3.5 Paving - 2026****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0206	0.1931	0.3280	5.1000e-004		9.4200e-003	9.4200e-003		8.6600e-003	8.6600e-003	0.0000	45.0433	45.0433	0.0146	0.0000	45.4075
Paving	6.6000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0213</b>	<b>0.1931</b>	<b>0.3280</b>	<b>5.1000e-004</b>		<b>9.4200e-003</b>	<b>9.4200e-003</b>		<b>8.6600e-003</b>	<b>8.6600e-003</b>	<b>0.0000</b>	<b>45.0433</b>	<b>45.0433</b>	<b>0.0146</b>	<b>0.0000</b>	<b>45.4075</b>



## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.5 Paving - 2026****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.6000e-004	6.0000e-004	7.8100e-003	2.0000e-005	2.6900e-003	1.0000e-005	2.7100e-003	7.2000e-004	1.0000e-005	7.3000e-004	0.0000	2.1071	2.1071	6.0000e-005	6.0000e-005	2.1256
<b>Total</b>	<b>9.6000e-004</b>	<b>6.0000e-004</b>	<b>7.8100e-003</b>	<b>2.0000e-005</b>	<b>2.6900e-003</b>	<b>1.0000e-005</b>	<b>2.7100e-003</b>	<b>7.2000e-004</b>	<b>1.0000e-005</b>	<b>7.3000e-004</b>	<b>0.0000</b>	<b>2.1071</b>	<b>2.1071</b>	<b>6.0000e-005</b>	<b>6.0000e-005</b>	<b>2.1256</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.3100e-003	0.0274	0.3892	5.1000e-004		8.4000e-004	8.4000e-004		8.4000e-004	8.4000e-004	0.0000	45.0433	45.0433	0.0146	0.0000	45.4075
Paving	6.6000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>6.9700e-003</b>	<b>0.0274</b>	<b>0.3892</b>	<b>5.1000e-004</b>		<b>8.4000e-004</b>	<b>8.4000e-004</b>		<b>8.4000e-004</b>	<b>8.4000e-004</b>	<b>0.0000</b>	<b>45.0433</b>	<b>45.0433</b>	<b>0.0146</b>	<b>0.0000</b>	<b>45.4075</b>

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.5 Paving - 2026****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.6000e-004	6.0000e-004	7.8100e-003	2.0000e-005	2.6900e-003	1.0000e-005	2.7100e-003	7.2000e-004	1.0000e-005	7.3000e-004	0.0000	2.1071	2.1071	6.0000e-005	6.0000e-005	2.1256
<b>Total</b>	<b>9.6000e-004</b>	<b>6.0000e-004</b>	<b>7.8100e-003</b>	<b>2.0000e-005</b>	<b>2.6900e-003</b>	<b>1.0000e-005</b>	<b>2.7100e-003</b>	<b>7.2000e-004</b>	<b>1.0000e-005</b>	<b>7.3000e-004</b>	<b>0.0000</b>	<b>2.1071</b>	<b>2.1071</b>	<b>6.0000e-005</b>	<b>6.0000e-005</b>	<b>2.1256</b>

**3.6 Architectural Coating - 2026****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5849					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.8400e-003	0.0258	0.0407	7.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003	0.0000	5.7448	5.7448	3.1000e-004	0.0000	5.7527
<b>Total</b>	<b>1.5888</b>	<b>0.0258</b>	<b>0.0407</b>	<b>7.0000e-005</b>		<b>1.1600e-003</b>	<b>1.1600e-003</b>		<b>1.1600e-003</b>	<b>1.1600e-003</b>	<b>0.0000</b>	<b>5.7448</b>	<b>5.7448</b>	<b>3.1000e-004</b>	<b>0.0000</b>	<b>5.7527</b>

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.6 Architectural Coating - 2026****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8300e-003	4.8800e-003	0.0636	1.8000e-004	0.0219	1.1000e-004	0.0220	5.8200e-003	1.0000e-004	5.9200e-003	0.0000	17.1381	17.1381	4.8000e-004	4.6000e-004	17.2883
<b>Total</b>	<b>7.8300e-003</b>	<b>4.8800e-003</b>	<b>0.0636</b>	<b>1.8000e-004</b>	<b>0.0219</b>	<b>1.1000e-004</b>	<b>0.0220</b>	<b>5.8200e-003</b>	<b>1.0000e-004</b>	<b>5.9200e-003</b>	<b>0.0000</b>	<b>17.1381</b>	<b>17.1381</b>	<b>4.8000e-004</b>	<b>4.6000e-004</b>	<b>17.2883</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5849					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.7000e-004	2.9000e-003	0.0412	7.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	5.7448	5.7448	3.1000e-004	0.0000	5.7527
<b>Total</b>	<b>1.5856</b>	<b>2.9000e-003</b>	<b>0.0412</b>	<b>7.0000e-005</b>		<b>9.0000e-005</b>	<b>9.0000e-005</b>		<b>9.0000e-005</b>	<b>9.0000e-005</b>	<b>0.0000</b>	<b>5.7448</b>	<b>5.7448</b>	<b>3.1000e-004</b>	<b>0.0000</b>	<b>5.7527</b>

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.6 Architectural Coating - 2026****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8300e-003	4.8800e-003	0.0636	1.8000e-004	0.0219	1.1000e-004	0.0220	5.8200e-003	1.0000e-004	5.9200e-003	0.0000	17.1381	17.1381	4.8000e-004	4.6000e-004	17.2883
<b>Total</b>	<b>7.8300e-003</b>	<b>4.8800e-003</b>	<b>0.0636</b>	<b>1.8000e-004</b>	<b>0.0219</b>	<b>1.1000e-004</b>	<b>0.0220</b>	<b>5.8200e-003</b>	<b>1.0000e-004</b>	<b>5.9200e-003</b>	<b>0.0000</b>	<b>17.1381</b>	<b>17.1381</b>	<b>4.8000e-004</b>	<b>4.6000e-004</b>	<b>17.2883</b>

**4.0 Operational Detail - Mobile****4.1 Mitigation Measures Mobile**

Improve Pedestrian Network

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.0413	5.3951	21.3387	0.0586	5.5341	0.0612	5.5953	1.4841	0.0577	1.5418	0.0000	5,588.1802	5,588.1802	0.2322	0.3490	5,698.0007
Unmitigated	2.0633	5.4851	21.6952	0.0598	5.6471	0.0624	5.7095	1.5144	0.0588	1.5732	0.0000	5,699.0496	5,699.0496	0.2355	0.3552	5,810.8007

**4.2 Trip Summary Information**

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
University/College (4yr)	4,872.96	1,649.70	0.00	15,006,127	14,706,005
Total	4,872.96	1,649.70	0.00	15,006,127	14,706,005

**4.3 Trip Type Information**

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
University/College (4yr)	22.80	11.20	0.00	6.00	94.00	0.00	91	9	0

**4.4 Fleet Mix**

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.530302	0.047786	0.155927	0.140874	0.027072	0.006797	0.014220	0.050043	0.000830	0.000457	0.020823	0.002143	0.002726
Parking Lot	0.530302	0.047786	0.155927	0.140874	0.027072	0.006797	0.014220	0.050043	0.000830	0.000457	0.020823	0.002143	0.002726

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

University/College (4yr)	0.530302	0.047786	0.155927	0.140874	0.027072	0.006797	0.014220	0.050043	0.000830	0.000457	0.020823	0.002143	0.002726
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**5.0 Energy Detail**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**

Exceed Title 24

Install High Efficiency Lighting

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	108.1150	108.1150	0.0175	2.1200e-003	109.1840
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	195.9098	195.9098	0.0317	3.8400e-003	197.8470
NaturalGas Mitigated	0.0182	0.1656	0.1391	9.9000e-004		0.0126	0.0126		0.0126	0.0126	0.0000	180.2736	180.2736	3.4600e-003	3.3100e-003	181.3449
NaturalGas Unmitigated	0.0224	0.2039	0.1713	1.2200e-003		0.0155	0.0155		0.0155	0.0155	0.0000	221.9454	221.9454	4.2500e-003	4.0700e-003	223.2643

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****5.2 Energy by Land Use - NaturalGas****Unmitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
University/College (4yr)	4.1591e+006	0.0224	0.2039	0.1713	1.2200e-003		0.0155	0.0155		0.0155	0.0155	0.0000	221.9454	221.9454	4.2500e-003	4.0700e-003	223.2643
<b>Total</b>		<b>0.0224</b>	<b>0.2039</b>	<b>0.1713</b>	<b>1.2200e-003</b>		<b>0.0155</b>	<b>0.0155</b>		<b>0.0155</b>	<b>0.0155</b>	<b>0.0000</b>	<b>221.9454</b>	<b>221.9454</b>	<b>4.2500e-003</b>	<b>4.0700e-003</b>	<b>223.2643</b>



## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****5.2 Energy by Land Use - NaturalGas****Mitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
University/College (4yr)	3.3782e+006	0.0182	0.1656	0.1391	9.9000e-004		0.0126	0.0126		0.0126	0.0126	0.0000	180.2736	180.2736	3.4600e-003	3.3100e-003	181.3449
<b>Total</b>		<b>0.0182</b>	<b>0.1656</b>	<b>0.1391</b>	<b>9.9000e-004</b>		<b>0.0126</b>	<b>0.0126</b>		<b>0.0126</b>	<b>0.0126</b>	<b>0.0000</b>	<b>180.2736</b>	<b>180.2736</b>	<b>3.4600e-003</b>	<b>3.3100e-003</b>	<b>181.3449</b>

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****5.3 Energy by Land Use - Electricity****Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	8400	0.7772	1.3000e-004	2.0000e-005	0.7849
University/College (4yr)	2.109e+006	195.1326	0.0316	3.8300e-003	197.0622
<b>Total</b>		<b>195.9098</b>	<b>0.0317</b>	<b>3.8500e-003</b>	<b>197.8470</b>

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****5.3 Energy by Land Use - Electricity****Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	2100	0.1943	3.0000e-005	0.0000	0.1962
University/College (4yr)	1.16641e+006	107.9207	0.0175	2.1200e-003	108.9878
<b>Total</b>		<b>108.1150</b>	<b>0.0175</b>	<b>2.1200e-003</b>	<b>109.1840</b>

**6.0 Area Detail****6.1 Mitigation Measures Area**

Use Electric Lawnmower

Use Electric Leafblower

Use Electric Chainsaw

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

Use Low VOC Cleaning Supplies

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.9273	6.0000e-005	7.2100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0137
Unmitigated	0.9835	1.1000e-004	0.0124	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0243	0.0243	6.0000e-005	0.0000	0.0258

**6.2 Area by SubCategory****Unmitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1585					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8239					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1500e-003	1.1000e-004	0.0124	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0243	0.0243	6.0000e-005	0.0000	0.0258
<b>Total</b>	<b>0.9835</b>	<b>1.1000e-004</b>	<b>0.0124</b>	<b>0.0000</b>		<b>4.0000e-005</b>	<b>4.0000e-005</b>		<b>4.0000e-005</b>	<b>4.0000e-005</b>	<b>0.0000</b>	<b>0.0243</b>	<b>0.0243</b>	<b>6.0000e-005</b>	<b>0.0000</b>	<b>0.0258</b>

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****6.2 Area by SubCategory****Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1585					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7684					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.9000e-004	6.0000e-005	7.2100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0137
<b>Total</b>	<b>0.9274</b>	<b>6.0000e-005</b>	<b>7.2100e-003</b>	<b>0.0000</b>		<b>2.0000e-005</b>	<b>2.0000e-005</b>		<b>2.0000e-005</b>	<b>2.0000e-005</b>	<b>0.0000</b>	<b>0.0131</b>	<b>0.0131</b>	<b>3.0000e-005</b>	<b>0.0000</b>	<b>0.0137</b>

**7.0 Water Detail****7.1 Mitigation Measures Water**

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	3.0701	0.0712	1.7200e-003	5.3627
Unmitigated	3.5985	0.0890	2.1400e-003	6.4619

**7.2 Water by Land Use****Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
University/College (4yr)	2.71706 / 4.24975	3.5985	0.0890	2.1400e-003	6.4619
<b>Total</b>		<b>3.5985</b>	<b>0.0890</b>	<b>2.1400e-003</b>	<b>6.4619</b>

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****7.2 Water by Land Use****Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
University/College (4yr)	2.17364 / 3.99052	3.0701	0.0712	1.7200e-003	5.3627
<b>Total</b>		<b>3.0701</b>	<b>0.0712</b>	<b>1.7200e-003</b>	<b>5.3627</b>

**8.0 Waste Detail**

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**8.1 Mitigation Measures Waste**

Institute Recycling and Composting Services



## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	4.7011	0.2778	0.0000	11.6467
Unmitigated	47.0107	2.7783	0.0000	116.4670

**8.2 Waste by Land Use****Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
University/College (4yr)	231.59	47.0107	2.7783	0.0000	116.4670
<b>Total</b>		<b>47.0107</b>	<b>2.7783</b>	<b>0.0000</b>	<b>116.4670</b>

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****8.2 Waste by Land Use****Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
University/College (4yr)	23.159	4.7011	0.2778	0.0000	11.6467
<b>Total</b>		<b>4.7011</b>	<b>0.2778</b>	<b>0.0000</b>	<b>11.6467</b>

**9.0 Operational Offroad**

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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**10.0 Stationary Equipment****Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0.14	50	1500	0.73	Diesel

**Boilers**

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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**User Defined Equipment**

## Health and Behavioral Sciences-Medical Education (HBS-ME) - Merced County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

Equipment Type	Number
----------------	--------

**10.1 Stationary Sources****Unmitigated/Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (750 - 9999 HP)	0.0615	0.2752	0.1569	3.0000e-004		9.0500e-003	9.0500e-003		9.0500e-003	9.0500e-003	0.0000	28.5598	28.5598	4.0000e-003	0.0000	28.6599
<b>Total</b>	<b>0.0615</b>	<b>0.2752</b>	<b>0.1569</b>	<b>3.0000e-004</b>		<b>9.0500e-003</b>	<b>9.0500e-003</b>		<b>9.0500e-003</b>	<b>9.0500e-003</b>	<b>0.0000</b>	<b>28.5598</b>	<b>28.5598</b>	<b>4.0000e-003</b>	<b>0.0000</b>	<b>28.6599</b>

**11.0 Vegetation**

## **APPENDIX 3.0**

### **PRELIMINARY STORMWATER ANALYSIS**

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## Memorandum

07/27/2022

To: Phil Woods and Fran Telechea  
Cc: Pauline Nguyen  
From: Tyson Howard & Cody Anderson  
Project Name: UCM Cottonwood, 21-066

### UC Merced Preliminary Stormwater Analysis & EIR Assistance

#### 1.0 PROJECT BACKGROUND

The UC Merced campus is planning to develop Cottonwood Meadow to accommodate future growth and demand in the medical field. The first phase of this expansion starts with a Medical Education building on the Southeast side of the campus, adjacent to where Cottonwood Meadow is located. Cottonwood Meadow currently acts as the primary means of stormwater detention for most of the UC Merced campus. The proposed development will eliminate the stormwater capacity that Cottonwood Meadow currently provides for the campus and will need to be replaced.

#### 2.0 STORMWATER DESIGN APPROACH

The proposed stormwater management solution for this future development focuses on a centralized approach treating multiple impervious areas with a single large basin. This approach would offset the current capacity of Cottonwood Meadow - while also allocating additional volume for the detention of the proposed development - in a location southeast of parking lot P4 (See attached exhibit entitled, "Cottonwood Meadow Development & Stormwater Plan").

Criteria for this high-level analysis uses the 100-year, 24-hour storm event which equates to 0.30ft of rainfall. Cottonwood Meadow is approximately 16.6 acres, with a stormwater detention capacity of 37.70 acre-feet. The estimated runoff coefficient (C-value) for the developed condition of Cottonwood Meadow is 0.80. This results in approximately 4.98 acre-feet of additional storage volume which must be added to the current detention capacity of Cottonwood Meadow. Thus, the size of the new basin would need to be large enough to accommodate a storage volume of 42.68 acre-feet. The basin would cover an approximate footprint of 315,000sqft with an average depth of 6ft.

#### Stormwater Management Requirements

All stormwater management systems on the campus shall meet all regulatory requirements including the NPDES Construction General Permit, NPDES Phase 2 MS4 General Permit (the Existing Campus is a regulated non-traditional MS4), California Department of Fish and Wildlife, and U.S. Army Corps of Engineers.

#### Rate and Flow

The stormwater management system shall provide the necessary combination of detention and retention such that there is no increase in peak flow rate or total volume of discharge. The stormwater management system shall be capable of conveying up to the ten-year, twenty-four-hour event without nuisance flooding or surcharging of any pipe system. Specific flow rates are to be determined by individual watershed areas and times of concentration. The stormwater management system shall be capable of detaining up to the one-hundred-year twenty-four-hour storm on site to accommodate MID emergency conditions.

#### Conveyance

Open channel conveyances shall be sized to convey a twenty-five-year storm event without overtopping of channel banks. The stormwater system shall be capable of conveying a one-hundred-year, twenty-four-hour storm without causing the flooding of any Facility.

Overland conveyance may be used, but are not required, to convey larger storm events. At least six inches of freeboard shall be maintained between the finished floor of any building and the highest anticipated water surface elevation during a one-hundred-year event. To the extent possible, natural open channels shall be utilized to convey stormwater. These should be considered for local drainage as well as along greenway corridors.

### **3.0 STORMWATER MANAGEMENT RECOMMENDATION**

Rerouting stormwater runoff that outfalls into Cottonwood Meadow is constrained by existing pipe invert elevations and the general flatness of the area. This recommendation considers the macro cost/benefit criteria of maximizing future building site locations within Cottonwood's current footprint via piped storm drains and pumps. Conceptual planning has shown an opportunity to efficiently route storm drain pipes to limit the amount of future detention basin excavation.

The proposed concept will use gravity connections to the existing pipe outfalls into Cottonwood Meadow. Pipe routing will be aligned along the outer edge of the South and West roadway surrounding Cottonwood Meadow. This routing prevents future potential vehicular/pedestrian conflicts as well as maximizes proposed site programming as Cottonwood Meadow is built through a phased development. The proposed gravity system will flow to a central pump continuing the conveyance to the proposed basin.

The basin location proposes an offset of 100-feet from the adjacent existing canal. The final size and depth of the proposed basin will be determined by future detailed studies. Outflows from the basin will maintain pre-development flow rates, neither increasing or decreasing runoff, and will also deploy a built-in weir such that flows above the 100-year 24-hour storm can overtop the basin and continue along the natural drainage pattern. All outflow from the basin will be designed to connect to the existing Cottonwood Creek natural drainage path.

Document Location: P:\2021\21-066\_UCM\_Cotton\03\_Design\04\_Reports\Stormwater Management Plan\UCM Cottonwood Relocation\_Stormwater Analysis\_MEMORANDUM.docx





## **APPENDIX 4.0**

### **VMT IMPACT ANALYSIS**

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# Memorandum

Date: June 30, 2021

To: Shabnam Barati, Barati Consulting  
Kristin Nurmela, LSA

From: Ellen Poling and Mike Wallace, Fehr & Peers

**Subject: VMT Impact Analysis for the UC Merced Medical Education Building Project and 2020 LRDP**

WC21-3771.00

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## I. Introduction

This memorandum presents the analysis and results of the vehicle miles of travel (VMT) Impact analysis conducted for the proposed UC Merced Health Medical Education (ME) building (Project) and the UC Merced 2020 Long Range Development Plan (2020 LRDP). This analysis is intended to be incorporated into the Environmental Impact Report for the ME Project. The analysis is consistent with the requirements of California Senate Bill 743 (2013) and associated State Office of Planning and Research guidance on its implementation within CEQA.

## II. SB 743 and VMT Analysis Guidance

On September 27, 2013, SB 743 was signed into law, building on legislative changes from SB 375, Assembly Bill (AB) 32, and AB 1358. SB 743 began the process to modify how impacts to the transportation system are assessed for purposes of CEQA compliance. SB 743 created a shift in transportation impact analysis under CEQA from a focus on automobile delay, as measured by level of service and similar metrics, to a focus on reducing VMT.

SB 743 also required the Governor's Office of Planning and Research (OPR) to update the State CEQA Guidelines and establish criteria for determining the significance of transportation impacts based on VMT. The statute states that upon certification of the new guidelines, automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion, shall not be considered a significant impact on the environment under CEQA, except in locations specifically identified in the new guidelines, if any.





The new criteria in the CEQA Guidelines Section 15064.3 were adopted in December 2018. Section 15064.3 states that VMT is the most appropriate metric to assess transportation impacts and that, with limited exceptions, a project's effect on automobile delay does not constitute a significant environmental impact. The revised provisions under CEQA became effective July 1, 2020.

In addition to updating the CEQA Guidelines, OPR published additional technical guidance in *Technical Advisory on Evaluating Transportation Impacts in CEQA* (December 2018) (Technical Advisory). The Technical Advisory provides background on the intent of SB 743, technical considerations in the selection of VMT metrics, methodology, and significance thresholds, criteria which could be used to screen projects out from a VMT impact analysis, and information on VMT mitigation.

The Technical Advisory sets forth guidance regarding metrics that may be calculated to evaluate VMT impacts from three types of land uses: residential, office, and retail. An institutional land use, such as a university campus, is not specifically addressed in the advisory. However, for purposes of the analysis in the memo, the campus is treated as a mixed-use development with its residential land uses (student housing) corresponding to the residential land uses addressed in the Technical Advisory and its non-residential land uses (i.e., teaching, research, and student support facilities) corresponding to office use in the Technical Advisory. Non-residential uses are treated as "office development" because, like an office development that generates daily vehicle trips by workers to and from office buildings and other workplaces, non-residential development on the campus would generate new daily vehicle trips that would be made by faculty and staff that would work on the campus and by the students who would travel within and to the campus to study and conduct research. Retail land use is not applicable to the campus.

With regard to metrics, the Technical Advisory recommends use of VMT metrics that reflect the efficiency of a project and are expressed in per capita terms. For residential land uses, the Technical Advisory suggests a per capita metric based on home-based vehicle trips, i.e., the number of daily trips that a resident makes to various destinations each day and the distance traveled in making those trips. For office uses, it suggests a per capita metric based on home-based work vehicle trips, i.e., the number of daily trips that a worker makes between home and place of work, including trips made for lunch or other reasons, and the distance traveled in making those trips.

The Technical Advisory does not mandate the use of specific significance thresholds, but recommends that, for residential projects, a project VMT per resident that is 15 percent below that of *existing* residential development in the project's study area may be a reasonable threshold for determining the significance of a residential project's transportation impacts. For an office/employment-generating project, a VMT per employee that is 15 percent below that of *existing* employment development in the project's study area may be a reasonable threshold for determining the significance of an employment project's transportation impacts. For mixed-use



projects, the Technical Advisory suggests evaluating each component independently, and applying the significance threshold for each project type included. Alternatively, the lead agency may consider only the project's dominant use.

### III. VMT Methodology

The Merced County Association of Governments (MCAG) Three-County Regional Travel Demand Model (MCAG Model) was used as the basis of estimating regional and project total VMT and VMT per capita. The MCAG Model includes a base year of 2018 and multiple forecast years, including 2020, 2030, 2035 and 2042. The MCAG Model contains land use, roadway network, and travel characteristics information for Merced, Stanislaus, and San Joaquin Counties, and divides the three-county area into several traffic analysis zones (TAZs). The 2020 model was used as the baseline model for this analysis, and the year 2030 model was used for the forecast year, consistent with the expected build-out of the 2020 LRDP.

The model allows calculation of VMT based on the trip generation of each land use and the trip lengths for each trip. The four basic steps are as follows:

**Trip Generation:** The generation of trip origins and destinations of different land uses within each TAZ by trip purpose, as a function of variables such as land use type, demographics, and other socioeconomic factors.

**Trip Distribution:** The matching of trip origins and destinations, taking into account the relative activity level at each location and the travel times between each, among other factors.

**Travel Mode Choice:** The proportion of trips between each origin and destination that uses a particular transportation mode.

**Route Assignment:** The allocation of trips between each origin and destination by a particular mode to a route on the roadway network.

The models were reviewed and adjusted as described below to facilitate the VMT analysis.

#### MCAG Model Adjustments

##### *Land Use*

The MCAG Model land uses reflect the Merced County Association of Governments (MCAG) 2018 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) for the land uses and roadway network outside of the UC Merced campus. However, an examination of the land use files in the model revealed that the model does not contain the correct current and projected campus employees and student populations. Therefore, the information in the model for the TAZs that contain the campus was updated to reflect the correct campus populations under current conditions (year 2020) and under future scenarios (2030 No Project and 2030 With LRDP).



Buildout). Since the model does not have a specific student housing land use and housing in the model behaves similar to a typical household, the trip generation characteristics of on-campus housing were modified to reflect on-campus housing trip generation rates based on observed campus housing trip generation.

The MCAG Model does not include any development on the Virginia Smith Trust (VST) property to the south of the campus. However, VST is in the process of applying to the County/City for land development approval, and it is possible that some of the proposed development on the VST property might be constructed by 2030. In the event that new housing is constructed on the VST property by 2030, it is reasonable to assume that some of the students, faculty, and staff would choose to live on the VST property in close proximity to the campus, rather than in other housing more distant from the campus. This would have the effect of lowering the VMT of the campus population. Therefore, an additional analysis was prepared that includes development of a portion of the VST property located south of the campus. The portion assumed was based on current VST development plans which indicate that Phases 1.A – 1.C may be completed by 2030.<sup>1</sup> It is noted that this development has not yet been entitled, however an application for this development was submitted to Merced County in June 2021.

The 2020 Baseline and 2030 Forecast housing, population, and employment for Merced County and the City of Merced, as included in the MCAG Model, are summarized in **Table 1**. The proposed land use for the VST development south of the campus is shown in **Table 2**.

**Table 1: MCAG Model: Regional Housing, Population, and Employment**

Area	Households	Population	Employees
<b>2020 Baseline</b>			
City of Merced	30,806	79,219	33,695
Merced County	90,989	243,426	87,067
<b>2030 Forecast</b>			
City of Merced	36,538	93,908	37,717
Merced County	105,992	284,922	97,462

Source: MCAG Three County Model, May 2021

Note: The values for the County include those within the City of Merced.

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<sup>1</sup> Peck Planning and Development LLC, 'Building with Phasing Dates', transmitted to UC Merced on February 26, 2021.



**Table 2: VST Land Use (Phases 1.A – 1.C)**

Single Family	Multi-Family	Retail Employees <sup>1</sup>	Office Employees <sup>2</sup>
343	1,726	650	908

Source: Peck Planning, March 2021

Notes:

1. Retail employees estimated by Fehr & Peers using 3.3 employees per thousand square feet.
2. Office employees estimated by Fehr & Peers using 2 employees per thousand square feet.

### *Roadway Network*

The roadway networks in the MCAG Model for the years 2020 and 2030 are consistent with the MCAG RTP/SCS. The 2020 network includes completion of Campus Parkway between State Route 99 and Childs Avenue. The 2030 network includes completion of Campus Parkway to Yosemite Avenue. No adjustments were made to the model networks.

### **Analysis Scenarios**

The campus populations for the baseline year (2020), with the completion of the ME building, and build-out of the 2020 LRDP are shown in **Table 3**. The ME building would serve a total of 2,811 students and 188 faculty and staff. Because some of these students and staff are already on campus, the net campus-wide increase associated with the building is 1,269 students and 49 faculty and staff. The full development of the 2020 LRDP would result in 15,000 students, including 7,200 residents, and 2,411 faculty and staff.

**Table 3: Study Populations by Scenario**

Scenario	On-Campus Students	Off-Campus Students	Total Students	Faculty and Staff
Baseline/No Project	3,667	5,333	9,000	1,269
ME Building – Net Increase	3,667	6,602	10,269	1,318
ME Building - Total	3,667	8,144	11,811	1,457
LRDP Build-out	7,200	7,800	15,000	2,411

Source: UC Merced, May 2021

The following scenarios were analyzed:

#### ME Project Scenarios

- Baseline (2020) No Project
- Future (2030) No Project





- Future (2030) No Project with VST Development
- Future with ME Building (Net New Population)
- Future with VST Development with ME Building (Net New Population)
- Future with ME Building (Total Population)
- Future with VST Development with ME Building (Total Population)

Two Future (2030) No Project scenarios are analyzed – the first one listed above assumes no ME Building as well as no additional growth and development on the campus under the 2020 LRDP. This scenario also assumes no development on the VST property to the south of the campus. The second Future No Project scenario assumes no ME Building or other growth on the campus but that the VST property would be developed with Phases 1.A through 1.C. The Future with ME Building scenarios (both with and without the VST development) are intended to analyze the effect of just the ME Building on the regional VMT efficiency metrics.

#### LRDP Scenarios

- Baseline (2020) No Project
- Future (2030) No Project
- Future (2030) No Project with VST Development
- Future with LRDP Build-Out
- Future with VST Development with LRDP Build-Out

For the analysis of the 2020 LRDP, the Future (2030) No Project scenario assumes that while there would be no growth on the campus, the rest of the study area would experience population and employment growth. The Future No Project with VST Development assumes no growth would occur on the campus but that, in addition to other regional growth, there would be population and employment growth on the VST property by 2030. Both the Future with LRDP Build-Out scenarios include the growth of the campus under the 2020 LRDP to a projected enrollment level of 15,000 students and about 2,411 faculty and staff. Both LRDP Build-Out scenarios include the completion and full occupancy of the ME Building (since the ME Building project is within the development space and population projections of the LRDP).

#### COVID-19 Considerations

The current Coronavirus disease 2019 (COVID-19) pandemic has introduced a substantial amount of uncertainty in human lives. The pandemic has directly affected human behavior, requiring people to temporarily reduce mobility and make other changes to the manner in which they live. Indirectly it has affected the economy resulting in reduced consumer spending, business closures, and widespread unemployment. While some of these trends are considered short-term and are expected to reverse, it is likely that there could be more permanent changes in the ways humans



live and behave in the post pandemic world. As with humans, institutions such as UC Merced are also expected to make changes to the manner in which they operate. As a result of the pandemic, UC Merced will likely consider operational changes such as increases in telework and remote learning. Similarly, it is reasonable to assume that the travel behaviors of the rest of the regional population will likely change in the post pandemic world, including more remote learning, work, and online shopping. The analysis of VMT in this section is model-based and reflects trip generation rates and travel behaviors that are pre-pandemic. The net effect of the pandemic on UC Merced development and operations, including its effect on the campus VMT metrics, as well as the regional average VMT metrics, cannot be predicted at this point in time without speculation. However, the analysis presented in this memorandum reflects a good faith and reasonable effort to analyze VMT impacts with the best available analysis tools and assumptions.

## IV. VMT Metrics and Significance Thresholds

This analysis uses VMT metrics and thresholds of significance consistent with the recommendations presented in the Technical Advisory and guidance from the University and the project team. **Table 4** presents the metrics and significance thresholds.

**Table 4: VMT Metrics and Significance Threshold**

Metric	Significance Threshold
1. Campus residential VMT per resident	Impact would be less than significant if the campus residential VMT per resident is at least 15 percent below the existing regional average residential VMT per resident
2. Campus worker VMT per worker	Impact would be less than significant if the campus worker VMT per worker is at least 15 percent below the existing regional average worker VMT per worker
3. Regional average residential VMT per resident	Impact would be less than significant if there is no increase in the forecasted regional average residential VMT per resident due to the Project
4. Regional average worker VMT per worker	Impact would be less than significant if there is no increase in the forecasted regional average worker VMT per worker due to the Project

Source: Fehr & Peers, May 2021.

Metrics 1 and 2 are recommended in the Technical Advisory for use in evaluating the transportation impacts of projects involving residential and office/employment land uses, including for use in analyzing the impacts of mixed-use projects. The concept underlying both metrics is to compare the project's transportation efficiency (project VMT per capita resident or worker), with the existing regional efficiency (regional VMT per capita resident or worker) and to determine whether the project would be more or less efficient than the existing region. If the



project is sufficiently more efficient, it would result in a less than significant transportation impact. As noted earlier and in the table above, in order to be considered more efficient and result in a less than significant impact, the project's VMT per capita must be at least 15 percent below the existing regional VMT per capita.

The regional average is defined as the Merced Countywide average. There are substantially different travel and VMT characteristics between the three counties in the MCAG Model, and since the campus is located in Merced County and most students and staff live in Merced County (about 90 percent and 60 percent, respectively), Merced County was chosen as the regional comparison metric. The average VMT per resident includes all home-based trips, i.e., trips beginning or ending at the home. The average VMT per worker includes all home-work trips, i.e., all trips made between the home and the workplace.

To evaluate the transportation impacts of the campus, all new on-campus student residents were treated as residential population and their VMT per resident was assessed relative to Metric 1, and all new faculty, staff and students added to the campus as a result of the 2020 LRDP were considered workers and their transportation effect was assessed relative to Metric 2. This is because the campus functions as a workplace not only for faculty and staff, but for students who attend class, study and conduct research on-site.

With regard to cumulative impacts, the Technical Advisory notes that "[a] project that falls below an efficiency-based threshold that is aligned with long-term environmental goals and relevant plans would have no cumulative impact distinct from the project impact. Accordingly, a finding of a less-than-significant project impact would imply a less than significant cumulative impact, and vice versa. This is similar to the analysis typically conducted for greenhouse gas emissions, air quality impacts, and impacts that utilize plan compliance as a threshold of significance." As this analysis uses efficiency-based metrics listed in **Table 4** above (i.e., Metrics 1 and 2), VMT metrics that analyze cumulative impacts are not required. Nevertheless, the University has developed Metrics 3 and 4 to evaluate whether the addition of residential and worker population to the study area as a result of campus growth would have the potential to cause the forecasted regional VMT per capita to increase compared to the no project conditions.

Metric 3 is designed to estimate whether the addition of the residents (on-campus student residents) to the region due to the proposed project would result in a change in the forecasted (2030) regional average VMT per resident, and Metric 4 is designed to estimate whether the addition of new workers (defined to include not just new faculty and staff who would work at the campus but also all additional students who would travel to the campus for classes or to jobs on or off campus) to the region due to the proposed project would result in a change in the forecasted (2030) regional average VMT per worker. For this analysis, new on-campus student residents are considered new residents of the region, and all new faculty, staff and students are considered new workers in the region. Any increase in the forecasted regional average VMT per



resident or worker due to the addition of the campus population would be considered a significant cumulative impact. Conversely, if there is no increase in the forecasted regional average VMT per resident or worker due to the project, the cumulative impact would be less than significant..

## V. 2020 LRDP Impact Analysis

### Baseline VMT Metrics

**Table 5** presents the Baseline VMT metrics based on the current (2020) populations of the campus and the region (Merced County). At the present time, the campus generates substantially lower residential and worker VMT per capita than the county as a whole: 5.77 campus resident VMT per resident versus 22.10 VMT per resident regional average, and 14.52 campus worker VMT per worker versus 19.79 VMT per worker regional average. Factors that underlie these results for the campus include the following:

- Students, both on-campus residents and commuters, tend to have lower auto ownership than typical county residents.
- Students living on campus generate nearly zero VMT for their home-work trips between campus housing and campus class/study/research locations.
- The campus is located near Merced County's largest population center, providing greater opportunities for off-campus residents to live relatively close to the campus.

**Table 5: 2020 Baseline VMT Results**

VMT Type	Metric	Regional	Campus
Residential	Population	243,426	3,667
	Home-Based VMT	5,379,412	21,143
	<b>VMT per resident</b>	<b>22.10</b>	<b>5.77</b>
Worker	Employees	87,067	1,269
	Students	19,800	9,000
	Home-work VMT	2,114,776	149,130
	<b>VMT per worker</b>	<b>19.79</b>	<b>14.52</b>

Source: MCAG Three County Model, May 2021

### LRDP VMT Metrics (No VST Development Assumed)

**Table 6** presents the VMT results for campus development at full implementation of the 2020 LRDP, relative to Metrics 1 and 2. **Table 7** presents the VMT results for the 2020 LRDP relative to Metrics 3 and 4. These results are derived from the MCAG Model assuming no development of VST property (no Phases 1.A – 1.C) to the south of the campus.



As **Table 6** shows, VMT per resident for the campus at LRDP Buildout would be 5.38 which is substantially less than the Metric 1 threshold value of 18.79. Similarly, VMT per worker for the campus at LRDP Buildout would be 14.86, which is lower than the Metric 2 threshold value of 16.82. Both Metrics 1 and 2 fall below the significance criteria described in section IV, and therefore the impact of campus development under the 2020 LRDP would be less than significant.

**Table 6: LRDP VMT Impacts – Metrics 1 and 2**

VMT Type	Metric	2020	2030 No Project	2030 With LRDP
Residential	Population (Campus)	3,667	3,667	7,200
	Home-Based VMT (Campus)	21,143	20,796	38,760
	VMT per resident (Campus)	5.77	5.67	5.38
	Regional Average VMT per resident (County)	22.10	21.62	21.36
	Metric 1 Threshold: VMT per resident level that would be 15% below regional average	18.79	---	---
	Is the Project VMT per resident at least 15% below regional average?	---	---	Yes
Worker	Employees (Campus)	1,269	1,269	2,411
	Students (Campus)	9,000	9,000	15,000
	Home-work VMT (Campus)	149,130	149,130	258,805
	VMT per worker (Campus)	14.52	14.52	14.86
	Regional Average VMT per worker (County)	19.79	20.76	19.70
	Metric 2 Threshold: VMT per worker level that would be 15% below regional average	16.82	---	---
	Is the Project VMT per worker at least 15% below regional average?	---	---	Yes

Source: MCAG Three County Model, May 2021

As **Table 7** below shows, while the regional average VMT per resident would increase, in the absence of development under the 2020 LRDP, from 22.10 in 2020 to 21.62 by 2030, the addition of the campus population under the 2020 LRDP to the region would have the effect of decreasing the regional average VMT per resident to 21.26 in 2030. Similarly, the regional average VMT per worker would increase from 19.79 in 2020 to 20.76 in 2030 in the absence of development under the 2020 LRDP, but the addition of the campus population under the 2020 LRDP would cause the



regional average VMT per worker to decrease to 19.70. Thus, the implementation of the 2020 LRDP would not contribute to an increase in the forecasted regional average VMT metrics and therefore would result in a less-than-significant cumulative impact.

**Table 7: LRDP VMT Impacts – Metrics 3 and 4**

VMT Type	Metric	2020	2030 No Project	2030 With LRDP
Residential	Population	243,426	284,922	288,455
	Home-Based VMT	5,379,412	6,158,956	6,160,587
	<b>VMT per resident</b>	<b>22.10</b>	<b>21.62</b>	<b>21.36</b>
	Metric 3 Threshold: Does the forecasted VMT per Resident Increase with Project?	---	---	No
Worker	Employees	89,067	97,462	98,604
	Students	19,800	19,800	25,800
	Home-work VMT	2,114,776	2,434,438	2,451,123
	<b>VMT per worker</b>	<b>19.79</b>	<b>20.76</b>	<b>19.70</b>
	Metric 4 Threshold: Does the forecasted VMT per Worker Increase with Project?	---	---	No

Source: MCAG Three County Model, May 2021

### LRDP VMT Metrics (With VST Development Assumed)

**Table 8** presents the VMT results for the 2020 LRDP, relative to Metrics 1 and 2. **Table 9** presents the VMT results for the 2020 LRDP, in combination with VST development, relative to Metrics 3 and 4. These results are derived from the MCAG Model assuming the development of VST Phases 1.A – 1.C on the VST property immediately south of the campus.

As the **Table 8** shows, VMT per resident for the campus at LRDP Buildout would be 5.22 which is substantially less than the Metric 1 threshold value of 18.79. Similarly, VMT per worker for the campus at LRDP Buildout would be 14.68, which is lower than the Metric 2 threshold value of 16.82. Both Metrics 1 and 2 fall below the significance criteria described in section IV, and therefore the impact of the LRDP would be less than significant.



**Table 8: LRDP VMT Impacts – Metrics 1 and 2 (With VST Development)**

VMT Type	Metric	2020	2030 No Project	2030 With LRDP
Residential	Population (Campus)	3,667	3,667	7,200
	Home-Based VMT (Campus)	21,143	20,200	37,581
	VMT per resident (Campus)	5.77	5.51	5.22
	Regional Average VMT per resident (County)	22.10	21.38	21.20
	Metric 1 Threshold: VMT per resident level that would be 15% below regional average	18.79	---	---
	Is the Project VMT per resident at least 15% below regional average?	---	---	Yes
Worker	Employees (Campus)	1,269	1,269	2,411
	Students (Campus)	9,000	9,000	15,000
	Home-work VMT (Campus)	149,130	149,559	255,527
	VMT per worker (Campus)	14.52	14.56	14.68
	Regional Average VMT per worker (County)	19.79	20.74	19.63
	Metric 2 Threshold: VMT per worker level that would be 15% below regional average	16.82	---	---
	Is Project VMT per worker at least 15% below regional average?	---	---	Yes

Source: MCAG Three County Model, May 2021

**Table 9** shows that while, if VST development occurs, the regional average VMT per resident in the county would increase from 22.10 in 2020 to 21.38 by 2030 in the absence of development under the LRDP, the addition of the campus population under the 2020 LRDP to the region would have the effect of decreasing the forecasted regional average VMT to 21.20 in 2030. Similarly, if the VST development occurs, the regional average VMT per worker in the county would increase from 19.79 in 2020 to 20.74 in 2030 in the absence of development under the 2020 LRDP, but the addition of the campus population under the 2020 LRDP would cause the forecasted regional average VMT per worker to decrease to 19.63. Thus, the implementation of the 2020 LRDP would not increase the forecasted regional average VMT metrics (assuming VST development) and would result in a less-than-significant cumulative impact.



**Table 9: LRDP VMT Impacts – Metrics 3 and 4 (With VST Development)**

VMT Type	Metric	2020	2030 No Project	2030 With LRDP
Residential	Population	243,426	290,095	293,628
	Home-Based VMT	5,379,412	6,203,472	6,224,716
	<b>VMT per resident</b>	<b>22.10</b>	<b>21.38</b>	<b>21.20</b>
	Metric 3 Threshold: Does the forecasted Regional VMT per Resident Increase with Project?	---	---	No
Worker	Employees	87,067	99,220	100,362
	Students	19,800	19,800	25,800
	Home-work VMT	2,114,776	2,468,186	2,476,638
	<b>VMT per worker</b>	<b>19.79</b>	<b>20.74</b>	<b>19.63</b>
	Metric 4 Threshold: Does the forecasted Regional VMT per Worker Increase with Project?	---	---	No

Source: MCAG Three County Model, May 2021

## VI. ME Project VMT Impacts (Net New Population)

### ME Project VMT Metrics (No VST Development Assumed)

The ME Project would serve additional students and faculty/staff, but does not include any new campus housing. Therefore, this Project is evaluated for VMT Metrics 2 and 4 only.

**Table 10** presents the VMT results for the ME Project, relative to Metric 2, and **Table 11** presents the VMT results for the ME Project relative to Metric 4. These results are derived from the MCAG Model *without* the development of VST Phases 1.A – 1.C south of the campus.

As **Table 10** shows, VMT per worker for the campus for the 2030 with ME Project scenario would be 14.31, which is lower than the Metric 2 threshold value of 16.82. VMT Metric 2 thus falls below the significance criteria described in section IV. Therefore, the impact of the Project would be less than significant.

As **Table 11** shows, while the regional average VMT per worker would increase from 19.79 in 2020 to 20.76 in 2030 in the absence of the development of the proposed Project, the addition of the Project population would cause the forecasted regional average VMT per worker to decrease to 20.58. Thus, implementation of the proposed Project would not contribute to an increase in the forecasted regional average VMT metric and therefore would result in a less-than-significant cumulative impact.





**Table 10: ME Project (Net New Population) VMT Impact – Metric 2**

VMT Type	Metric	2020	2030 No Project	2030 With ME
Worker	Employees (Campus)	1,269	1,269	1,318
	Students (Campus)	9,000	9,000	10,269
	Home-work VMT (Campus)	149,130	149,130	165,824
	Project VMT per worker (Campus)	14.52	14.52	14.31
	Regional Average VMT per worker (County)	19.79	20.76	20.58
	Metric 2 Threshold: VMT per worker level that would be 15% below regional average	16.82	---	---
	Is the Project VMT per worker at least 15% below regional average?	---	---	Yes

Source: MCAG Three County Model, May 2021

**Table 11: ME Project (Net New Population) VMT Impact – Metric 4**

VMT Type	Metric	2020	2030 No Project	2030 With ME
Worker	Employees	87,067	97,462	97,511
	Students	19,800	19,800	21,069
	Home-work VMT	2,114,776	2,434,438	2,440,064
	<b>VMT per worker</b>	<b>19.79</b>	<b>20.76</b>	<b>20.58</b>
	Metric 4 Threshold: Does the forecasted VMT per Worker Increase with Project?	---	---	No

Source: MCAG Three County Model, May 2021

### ME VMT Metrics (With VST Development Assumed)

**Table 12** presents the VMT results for the ME Project relative to Metric 2, and **Table 13** presents the VMT results for the ME Project relative to Metric 4. These results are derived from the MCAG Model assuming the development of VST Phases 1.A – 1.C.

As **Table 12** shows, VMT per worker for the campus for the 2030 with ME Project scenario would be 14.25, which is lower than the Metric 2 threshold value of 16.82. VMT Metric 2 thus falls below



the significance criteria described in section IV. Therefore, the impact of the Project would be less than significant.

As **Table 13** shows, while the regional average VMT per worker would increase from 19.79 in 2020 to 20.74 in 2030 in the absence of the development of the proposed Project, but the addition of the Project population would cause the forecasted regional average VMT per worker to decrease to 20.50. Thus, implementation of the proposed Project would not contribute to an increase in the forecasted regional average VMT metric and therefore would result in a less-than-significant cumulative impact.

**Table 12: ME Project (Net New Population) VMT Impact – Metric 2 (With VST Development)**

VMT Type	Metric	2020	2030 No Project	2030 With ME Building
Worker	Employees (Campus)	1,269	1,269	1,318
	Students (Campus)	9,000	9,000	10,269
	Home-work VMT (Campus)	149,130	149,559	165,061
	Project VMT per worker (Campus)	14.52	14.56	14.25
	Regional Average VMT per worker (County)	19.79	20.74	20.50
	Metric 2 Threshold: VMT per worker level that would be 15% below regional average	16.82	---	---
	Is Project VMT per worker at least 15% below regional average?	---	---	Yes

Source: MCAG Three County Model, May 2021



**Table 13: ME Project (Net New Population) VMT Impact – Metric 4 (With VST Development)**

VMT Type	Metric	2020	2030 No Project	2030 With ME Building
Worker	Employees	87,067	99,220	99,269
	Students	19,800	19,800	21,069
	Home-work VMT	2,114,776	2,468,186	2,467,159
	<b>VMT per worker</b>	<b>19.79</b>	<b>20.74</b>	<b>20.50</b>
	Metric 4 Threshold: Does the forecasted VMT per Worker Increase with Project?	---	---	No

Source: MCAG Three County Model, May 2021

## VII. ME Project VMT Impacts (Total Population)

### ME Project VMT Metrics (No VST Development Assumed)

As noted in Section VI, the ME Project would serve additional students and faculty/staff, but does not include any new campus housing. Therefore, this section also presents VMT Metrics 2 and 4 only. The analysis in this section relies on an extrapolation of the results of the analysis of the ME Building net new population.

**Table 14** presents the VMT results for the ME Project, relative to Metric 2, and **Table 15** presents the VMT results for the ME Project relative to Metric 4. These results are derived from the MCAG Model *without* the development of VST Phases 1.A – 1.C south of the campus.

As **Table 14** shows, VMT per worker for the campus for the 2030 with ME Project scenario would be 14.31, which is lower than the Metric 2 threshold value of 16.82. VMT Metric 2 thus falls below the significance criteria described in section IV. Therefore, the impact of the Project would be less than significant.

As **Table 15** shows, while the regional average VMT per worker would increase from 19.79 in 2020 to 20.76 in 2030 in the absence of the development of the proposed Project, the addition of the Project population would cause the forecasted regional average VMT per worker to decrease to 20.58. Thus, implementation of the proposed Project would not contribute to an increase in the forecasted regional average VMT metric and therefore would result in a less-than-significant cumulative impact.



**Table 14: ME Project (Total Population) VMT Impact – Metric 2**

VMT Type	Metric	2020	2030 No Project	2030 With ME
Worker	Employees (Campus)	1,269	1,269	1,457
	Students (Campus)	9,000	9,000	12,811
	Home-work VMT (Campus)	149,130	149,130	189,865
	Project VMT per worker (Campus)	14.52	14.52	14.31
	Regional Average VMT per worker (County)	19.79	20.76	20.58
	Metric 2 Threshold: VMT per worker level that would be 15% below regional average	16.82	---	---
	Is the Project VMT per worker at least 15% below regional average?	---	---	Yes

Source: MCAG Three County Model, May 2021

**Table 15: ME Project (Total Population) VMT Impact – Metric 4**

VMT Type	Metric	2020	2030 No Project	2030 With ME
Worker	Employees	87,067	97,462	97,650
	Students	19,800	19,800	22,611
	Home-work VMT	2,114,776	2,434,438	2,474,971
	<b>VMT per worker</b>	<b>19.79</b>	<b>20.76</b>	<b>20.58</b>
	Metric 4 Threshold: Does the forecasted VMT per Worker Increase with Project?	---	---	No

Source: MCAG Three County Model, May 2021

### ME VMT Metrics (With VST Development Assumed)

**Table 16** presents the VMT results for the ME Project relative to Metric 2, and **Table 17** presents the VMT results for the ME Project relative to Metric 4. These results are derived from the MCAG Model assuming the development of VST Phases 1.A – 1.C.

As **Table 16** shows, VMT per worker for the campus for the 2030 with ME Project scenario would be 14.25, which is lower than the Metric 2 threshold value of 16.82. VMT Metric 2 thus falls below



the significance criteria described in section IV. Therefore, the impact of the Project would be less than significant.

As **Table 17** shows, while the regional average VMT per worker would increase from 19.79 in 2020 to 20.74 in 2030 in the absence of the development of the proposed Project, but the addition of the Project population would cause the forecasted regional average VMT per worker to decrease to 20.50. Thus, implementation of the proposed Project would not contribute to an increase in the forecasted regional average VMT metric and therefore would result in a less-than-significant cumulative impact.

**Table 16: ME Project (Total Population) VMT Impact – Metric 2 (With VST Development)**

VMT Type	Metric	2020	2030 No Project	2030 With ME Building
Worker	Employees (Campus)	1,269	1,269	1,457
	Students (Campus)	9,000	9,000	11,811
	Home-work VMT (Campus)	149,130	149,559	189,069
	Project VMT per worker (Campus)	14.52	14.56	14.25
	Regional Average VMT per worker (County)	19.79	20.74	20.50
	Metric 2 Threshold: VMT per worker level that would be 15% below regional average	16.82	---	---
	Is Project VMT per worker at least 15% below regional average?	---	---	Yes

Source: MCAG Three County Model, May 2021



**Table 17: ME Project (Total Population) VMT Impact – Metric 4 (With VST Development)**

VTM Type	Metric	2020	2030 No Project	2030 With ME Building
Worker	Employees	87,067	99,220	99,408
	Students	19,800	19,800	22,611
	Home-work VMT	2,114,776	2,468,186	2,501,390
	<b>VTM per worker</b>	<b>19.79</b>	<b>20.74</b>	<b>20.50</b>
	Metric 4 Threshold: Does the forecasted VMT per Worker Increase with Project?	---	---	No

Source: MCAG Three County Model, May 2021

## **APPENDIX 5.0**

### **CULTURAL RESOURCES SURVEY MEMO**

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## MEMORANDUM

**DATE:** June 14, 2021

**To:** Phillip Woods, University of California, Merced  
Campus Architect and Director of Physical and Environmental Planning

**FROM:** Kendra Kolar, LSA Associates, Inc.

**SUBJECT:** *Cultural Resources Survey for the Health and Behavioral Sciences-Medical Education (HBS-ME) Building Project at the University of California, Merced*

This memorandum documents a cultural resources survey completed for the proposed Health and Behavioral Sciences-Medical Education (HBS-ME) Building Project located within the existing University of California, Merced campus at 5200 Lake Road, Merced, CA 95340 (Attachment A). UC Merced proposes to construct a new academic building to house the HBS-ME programs in the southeastern portion of the campus between Cottonwood Loop Road and the existing Arts and Computational Sciences Building. The Project would also include installing an access road and parking lot for the new building, as well as modifying the existing storm water detention basins in Cottonwood Meadow to the south of the proposed building location. Staging of equipment and materials would be located in an area south and east of Cottonwood Meadow, across Cottonwood Loop Road (Attachment B). At the time of the field survey, modifications to existing storm water detention basins south of the Bellevue Road parking lot were also planned. These modifications were subsequently deemed unnecessary, and that area was excluded from the proposed Project Site although it is covered by this cultural resources study.

This cultural resources study was undertaken as part of the Initial Study prepared in compliance with the California Environmental Quality Act (CEQA) to identify whether historical or archaeological cultural resources may be present in the Project Site, which includes all areas that would be disturbed during the construction of the Project. The study included a records search at the Central California Information Center (CCIC) and a pedestrian field survey of the Project Site. In addition, relevant environmental and archaeological literature was reviewed to assess the potential for subsurface archaeological deposits in the Project Site. The following summarizes the methods and results of this study.

## RECORDS SEARCH

On February 2, 2021, LSA requested a records search for the Project Site from the CCIC. The CCIC is the official State repository of cultural resources records and studies in Merced County. The CCIC provided the records search results on February 3, 2021. The records search consisted of a review of cultural resource records and studies within the Project Site and a 0.5-mile radius.

The CCIC records search revealed that six previous studies overlap the Project Site, and an additional five studies are located within 0.5 miles of the Project Site. No cultural resources were previously recorded within the Project Site although the Project Site is contained within the historic Merced Irrigation District (P-24-001909). Four historic-period cultural resources have been recorded within a half mile of the Project Site; three of these (P-024-001887, -001888, -001891) are canals and contributing elements of the Merced Irrigation District. The fourth (P-024-001660) is a cattle trough.

## FIELD SURVEY

On February 3, 2021, LSA Cultural Resources Analyst Kendra Kolar conducted a pedestrian survey of the Project Site. Ms. Kolar meets the Secretary of the Interior's *Professional Qualifications Standards* for archaeology and has over 10 years of cultural resource management experience in California and the Pacific Northwest. She holds a B.A. in Anthropology from the University of California, Berkeley and a M.A. in Applied Anthropology (Archaeology, Cultural Resource Management) with a secondary emphasis in Geomorphology/Geology from Oregon State University, Corvallis.

### HBS-ME Building Area/Cottonwood Meadow

Surface conditions varied across the Project Site. In the proposed building area and Cottonwood Meadow, grass cover tended to be thick although patches of thinner grass and exposed soil, along with tree plantings and animal burrows, provided sufficient ground visibility. The existing detention basins in Cottonwood Meadow were full of water (populated by assorted wetland birds), thus restricting survey to the dry land around the ponds. A small island just south of the proposed building area was surrounded by water and not accessible for survey.

Survey in these two areas was conducted along transects spaced 10 to 20 meters apart, sometimes meandering to view exposed soil. Very gravelly (generally subrounded to rounded pebbles and cobbles) yellow-brown sandy loam was observed. Modern trash was noted in multiple locations. Two small shell fragments (possibly freshwater mussel) were found on the surface just north of Cottonwood Loop Road and 2 meters east of a storm drain and headgate. A piece of modern colorless glass was next to the shell. The shell was clearly not in an archaeological context, and no other archaeological evidence was observed in the vicinity (e.g., midden soil or additional artifacts); this suggests the shell may have been naturally-occurring, perhaps re-deposited by past construction-related disturbance or left by animal activity.

### Staging Area

At the time of survey, existing staging yards occupied the southwest part of the proposed staging area; these were enclosed by fences with locked gates and were not accessible for survey. Two large fill stockpiles covered much of the southeast portion of the proposed staging area; these were also not surveyed. Most of the remainder of the proposed staging area featured exposed gravelly (mixed angularity and rock types) yellow-brown sandy loam. Compacted gravel fill covered the ground along the east edge of the existing staging yards.

The survey was conducted along meandering transects. Particular attention was paid to the perimeter of the proposed staging area, where there seemed a greater likelihood of natural ground surface being encountered and where a structure was mapped near the canal (east of the current

Cottonwood Loop Road) on the 1914 topographic map (USGS 1914). Soil exposed in an animal burrow in the southeast corner of the proposed staging area and along the fenced southern boundary of the area consisted of red-brown silt/clay loam containing subrounded pebbles. No archaeological evidence was observed.

### **Stormwater Detention Basins (South of Bellevue Road Parking Lots)**

At the time of survey, Gate Road (south of the detention basins) was fenced with a locked gate and therefore not accessible. The lower detention basin was full of water while the upper basin was mostly dry and vegetated.

One survey transect was walked around the lower basin. Surface visibility was adequate along the waterline, in animal burrows, and in exposed patches of soil. The soil consisted of the same gravelly yellow-brown sandy loam observed in the proposed staging area.

Multiple transects were surveyed to examine the dry portion of the upper basin and the area surrounding the basin. The top of the cut slope south of the upper basin appeared to be the natural ground surface, part of an east-facing slope rising to a knoll west of the UC Merced campus. The area west and north of the basin were largely artificially contoured. The area surrounding the basin was thickly overgrown with grass, so boot scrapes were done periodically to reveal the soil. The soil consisted of dark brown silt/clay loam with pebble to cobble-sized gravel. A few fragments of modern glass and plastic were observed.

### **BURIED SITE POTENTIAL**

Fundamentally, there is an inverse relationship between landform age and the potential for buried precontact archaeological deposits (Meyer and Rosenthal 2008). Some landforms predate human occupation of the region (e.g., Pleistocene alluvial fan deposits). Archaeological deposits on these landforms, if present, would be located at or near the surface. In contrast, those landforms that formed during the Holocene (circa 11,700 years ago to the present) may contain buried surfaces (paleosols) that would have been available in the past for human habitation. Thus, assessing the potential for buried precontact archaeological evidence requires understanding the nature of the surficial geology and soils in the vicinity.

Geologic mapping shows the Project Site sitting on alluvium deposited during the Pliocene through Holocene (Wagner et al. 1991). The proposed Building Area and Cottonwood Meadow are situated largely in the Laguna Formation (Pl), consisting of alluvium dating to the Pliocene. The proposed Staging Area sits primarily on Riverbank Formation (Qr), consisting of alluvium dating to the Pleistocene or Holocene. The stormwater detention basins south of Bellevue Road straddle both of these formations.

The proposed Building Area, Cottonwood Meadow, and most of the proposed Staging Area contain Corning gravelly loam (CgB), which forms on stream terraces. The far southeast corner of the proposed Staging Area contains Redding gravelly loam (ReB), which forms on alluvial fan remnants. The stormwater detention basins south of Bellevue Road contain several soil units. In addition to Corning gravelly loam, there is Hopeton clay loam (3HA and 3HB) that forms on terraces, and Raynor clay (RaB) that also forms on terraces. All but one of the soil units mapped in the Project Site

develop in alluvial deposits that typically continue deeper than the limit of the soil profile (i.e., greater than 60 inches below surface). Raynor clay is the exception as it forms in residuum and terminates at bedrock by 60 inches below surface (NRCS 2021).

Based on the geologic mapping, the portions of the Project Site with the greatest potential for buried precontact archaeological deposits are those located on the Pleistocene to Holocene-aged alluvium of the Riverbank Formation. This includes much of the proposed Staging Area and the west end of the stormwater detention basins area south of Bellevue Road. The soil survey information indicates that the landforms in these areas consist of stream terraces and remnant alluvial fan. These landform types are generally considered to have higher archaeological sensitivity as they may have offered habitable surfaces in proximity to streams or rivers in the past. The typical profiles for the mapped soil units suggest the alluvium in these areas of the Project Site could reach considerable depth and thus have the potential to contain deeply buried paleosols.

The potential for buried archeological deposits has been reduced by extensive ground disturbance associated with expansion of the UC Merced campus. Prior to campus expansion, the Project Site was bisected by two gently sloping drainages feeding Cottonwood Creek (USGS 2015). This natural low-relief topography was no longer visible in the Project Site by 2017 due to ground re-contouring associated with campus expansion. Aerial photos documenting campus construction show extensive grading, cutting, and filling in the Project Site from 2017 through 2020. The proposed Building Area and Cottonwood Meadow were the most extensively re-contoured; however, the proposed Staging Area and stormwater detention basins south of Bellevue Road were also noticeably modified (UC Merced 2021).

## SUMMARY AND CONCLUSIONS

No cultural resources were identified in the Project Site. Based on age and type of landform, and the potentially considerable depth of subsurface alluvial deposits, the proposed Staging Area within the Project Site was assessed as having the greatest sensitivity for buried precontact archaeological resources. (The western end of the stormwater detention basins area south of Bellevue Road had the same level of sensitivity; however, at the time of this memo, the stormwater detention basins were no longer part of the proposed Project.) The remainder of the Project Site sits on landforms formed prior to human occupation in the region, and thus archaeological materials, if present, would be expected at or near the ground surface. Expansion of the campus in the late 2010s resulted in extensive grading, cutting, and filling in the Project Site, which reduced the likelihood of buried intact cultural resources being present. Furthermore, no cultural resources were encountered during grading and excavation on the campus between 2002, when construction of the campus commenced, and 2020, when the most recent campus expansion was completed. Thus, the Project Site as a whole has an overall low sensitivity for buried *in situ* archaeological resources.

## RECOMMENDATIONS

Although considered low, the possibility of encountering subsurface archaeological features or human remains cannot be discounted. The following mitigation measures that were adopted in conjunction with the approval of the 2009 Long Range Development Plan (LRDP) and the 2020 LRDP would apply to the proposed Project. No new mitigation is proposed as the Project would not result

in any new or more severe impacts to cultural resources than the impacts that were previously analyzed and disclosed in the 2020 LRDP Supplemental Environmental Impact Report.

**2020 LRDP MM 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.

**2020 LRDP MM CUL-3:** If human remains of Native American origin are discovered during ground disturbing activities, the Campus 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 American 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 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.

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Meyer, Jack, and Jeffrey Rosenthal

2008 *A Geoarchaeological Overview and Assessment of Caltrans Districts 3*. Far Western Anthropological Research Group, Inc., Davis, California.

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UC Merced

2021 Merced 2020. Website, <https://merced2020.ucmerced.edu/gallery/aerial-photos> (accessed May 2021).

U. S. Geological Survey (USGS)

1914 *Merced, Calif.* 1:31680 topographic quadrangle. USGS, Washington, D.C.

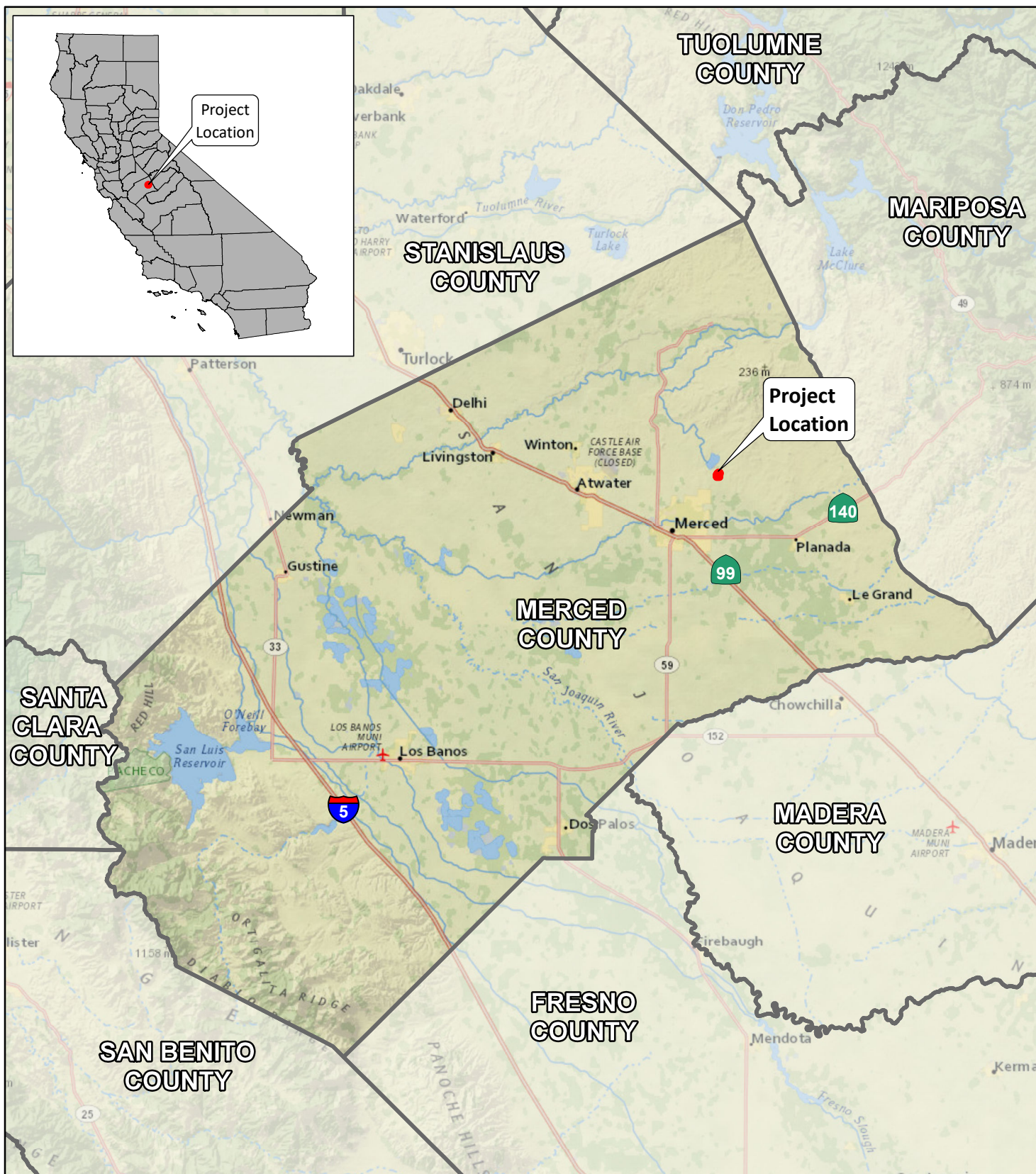
2015 *Merced, Calif.* 1:24000 topographic quadrangle. USGS, Washington, D.C.

Wagner, D.L., E.J. Bortugno, and R.D. McJunkin

1991 *Geologic Map of the San Francisco-San Jose Quadrangle, California.* 1:250,000. California Division of Mines and Geology.

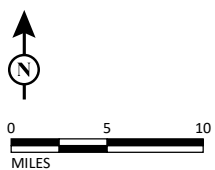
**ATTACHMENT A: PROJECT SITE LOCATION MAP**





UNIVERSITY OF CALIFORNIA  
**MERCED**

FIGURE 1



SOURCE: National Geographic World Map (2021).

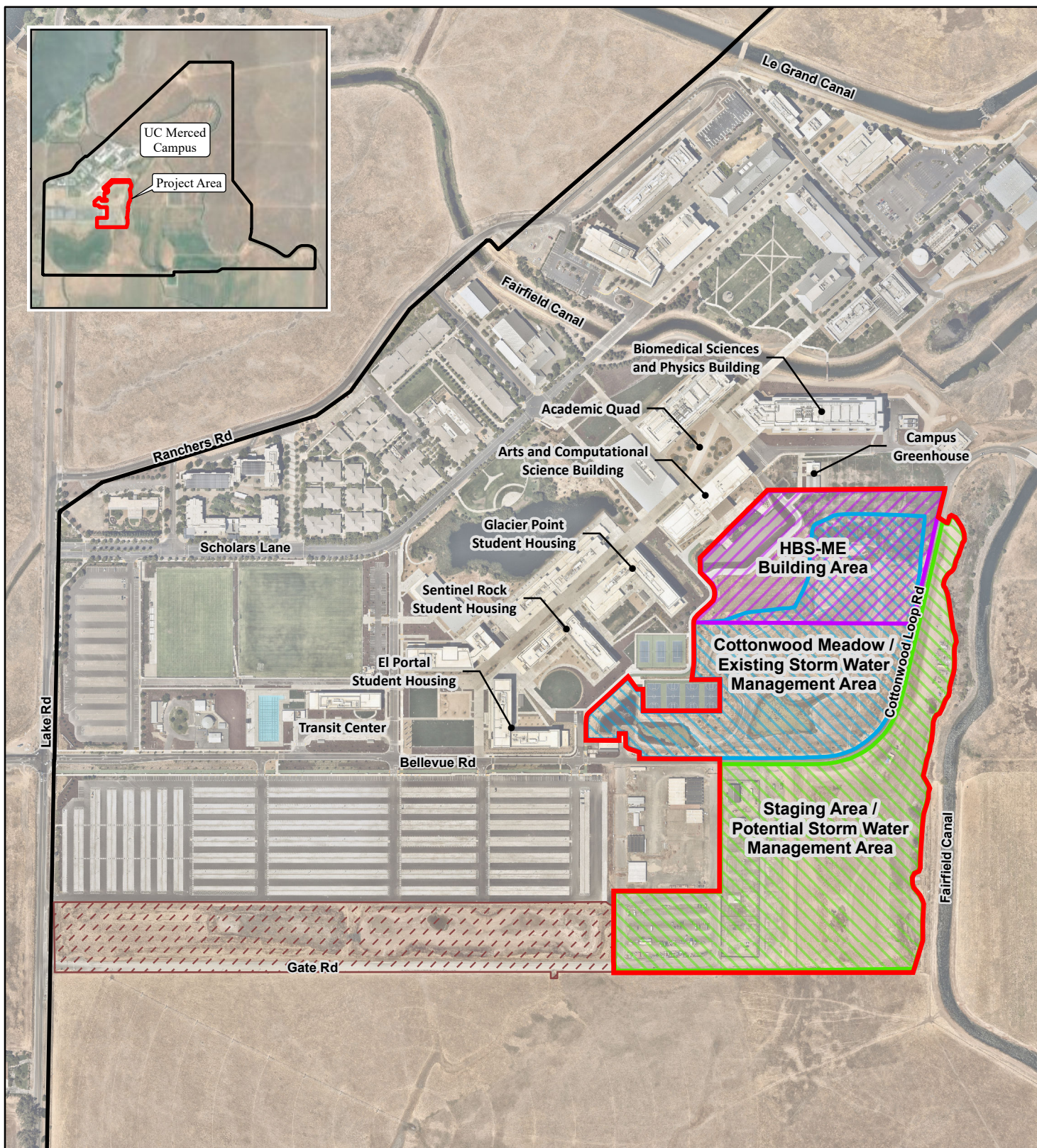
I:\BTI2002.01\GIS\Maps\Project Description\Figure 1\_Regional Location.mxd (3/24/2021)

Health & Behavioral Sciences – Medical Education  
(HBS-ME) Building Project, UC Merced  
Merced County, California  
Regional Location



**ATTACHMENT B: PROJECT SITE MAP**





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**LEGEND**

- Project Area (36.9 acres)
- HBS-ME Building Area (8.5 acres)
- Staging Area (18.0 acres)
- Existing Storm Water Management Area (13.5 acres)
- UC Merced Campus Boundary
- Included in Cultural Resources Survey; Not Part of Project Area



0 250 500  
FEET

SOURCE: Aerial from Nearmap (07/2020).

I:\BTI2002.01\GIS\Maps\Cultural\Figure 2\_Project Area (with additional survey area).mxd (6/15/2021)

**FIGURE 2**

*Health & Behavioral Sciences – Medical Education  
(HBS-ME) Building Project, UC Merced  
Merced County, California  
Project Area*